CHAPTER-1

Introduction
1.1 PROLOGUE

Electricity is the most vital input in the development of the economy. Electricity is required for each economic activity whether that activity is from agriculture, manufacturing, commerce or even the booming service sector. It will not be wrong to say that progress of any country depends on the availability of the sufficient electricity. But it is well known fact that there is acute shortage in electricity in India. The official figure of this shortage is around 7 to 8% during normal hours while it rises to whopping 15 to 20% during peak hours. To grow at the rate of 9% it is very important that our electricity generation and distribution should also grow at this rate. If our economy has to grow at the rate of 9% then the power generation should be at least 100000MW for next five years and 110000-120000MW every year for subsequent years. It is pertinent to say that only during the period of 1970 to 1980’s power sector achieved the growth of 7 to 8%. But after this period the growth and distribution rates decreased drastically or we can say that power sector reforms were lagging and not able to support the development of economy. During the period of the 5th plan the capacity addition was of the order of 10202 MW during the 6th plan then it was 14226 MW, during the period of 7th plan it was 21400 MW which declined to 16923 MW during the period of 1992-97. During the period of 1997-02 the capacity addition was 19000MW as projected 40000MW. According to planning commission only 50% of overall targets were met in 8th, 9th and 10th five year plans. The target for the 11th five year plan was revised downwards from 78,700MW to 62,374MW. The table below shows the real picture of the power sector
### Table 1.1 Capacity Additions during April-Dec 2010 (MW) (Source India Today)

<table>
<thead>
<tr>
<th>Year</th>
<th>Thermal</th>
<th>Hydro</th>
<th>Nuclear</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Target</td>
<td>Actual</td>
<td>Target</td>
<td>Actual</td>
</tr>
<tr>
<td>Central</td>
<td>5890</td>
<td>2115</td>
<td>529</td>
<td>120</td>
</tr>
<tr>
<td>State</td>
<td>6012</td>
<td>2331</td>
<td>597.5</td>
<td>178</td>
</tr>
<tr>
<td>Private</td>
<td>5891</td>
<td>4795</td>
<td>219.5</td>
<td>192</td>
</tr>
<tr>
<td>Total</td>
<td>17793</td>
<td>9241</td>
<td>1346</td>
<td>490</td>
</tr>
</tbody>
</table>

None of the target for the thermal, hydro and nuclear sources was achieved. So this brings out a clear picture that capacity additions are not up to the mark in Indian Power Sector. Moreover Indian Power sector is dependant on the thermal sources of power around 65% as on April 2011 (Nayyar) but according to the planning commission estimates there is acute shortage of coal. Official figures are that in 2007 there were 35 million tones of shortage which will rise to 83 million tones in 2012. Figure below Shares of different sources of power. Source India Today

![Shares of Different Sources of Power](source)
So it is clear from the above data that the power growth is abysmally low and the most alarming situation is that whatever the respective State Electricity Boards (SEB) are producing they are not even able to distribute it properly. There are at least 30% losses during the distribution process which means combined losses of SEB’s will be whopping 70,000 Crores losses by 2014 (according to 13th Finance Commission Report). Majority of the losses are pilferage of electricity, improper billing and redundant technology.

According to Shahi the Power sector has taken various strides since independence. The following section throws light on the journey of power sector since independence.

- Power sector is mainly controlled by the state electricity boards. Until 1975 the state boards were primarily source of power generation. But to huge mismatch between the required and produced so in 1975 Electricity bill of 1948 was amended to provide the intervention of central government in the development of the power sector. According to this amendment, National Thermal Power Corporation (NTPC) and National hydro-electric corporation (NHPC) came into existence. Electricity was added to the concurrent list so now electricity came into the preview of both central and state government.

- Development of transmission was not up to mark during early years but during 80’s the scenario changed and HT transmission got major boost when Power Corporation of India came into existence.
Rural Electrification Corporation was formed to enhance the electrification of the rural areas. In 2001, out of 5,87,000 villages over 5 lac villages are electrified. It is evident that though some steps are taken by the centre and state governments for power reforms. The data also show that there is some improvement in HV transmission. The last but not the least the data show a very rosy picture that 5 lac villages are electrified but according to the official terminology even if one house in particular village is electrified than whole village is termed as fully electrified. But still there is 10.8% is the power deficit i.e. the gap between demand and supply in the summer of 2010 (Nayyar) and to compound this problem there are whopping distribution losses. State electricity boards except a few have not done enough to keep their distribution network intact through use of modern technologies like the Information Systems. As a result there are huge losses in the distribution network of the electricity departments. Because of the bad distribution network the technical loss is around 15 to 20% which in some cases goes up to the level of 30% to 40%. SEB’s have wrongly reporting distribution loss figures and conveniently identifying the theft of electricity as agriculture consumption which is largely unmetered.

### 1.2 HISTORICAL PERSPECTIVE

In India the key sources for generating electric power are

1. Hydro
2. Fossil

3. Nuclear

4. Non conventional sources

The table below gives the estimates of generation from these resources

<table>
<thead>
<tr>
<th>RESOURCES FOR POWER GENERATION</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro</td>
<td>840000 MW</td>
</tr>
<tr>
<td>Pumped</td>
<td>93920 MW</td>
</tr>
<tr>
<td>Coal Reserve</td>
<td>201.9 Billion Tonnes</td>
</tr>
<tr>
<td>Lignite</td>
<td>26 Billion</td>
</tr>
<tr>
<td>Crude Oil</td>
<td>738 Million Tonnes</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>707 Million Cubic Mtrs</td>
</tr>
<tr>
<td>Uranium</td>
<td>6700 Tonnes</td>
</tr>
<tr>
<td>Thorium</td>
<td>363000 Tonnes</td>
</tr>
<tr>
<td>Non Conventional Sources</td>
<td>Biomass (17000 MW) Wind (20000 MW) Ocean (50000 MW)</td>
</tr>
</tbody>
</table>

Table 1.3 Estimates of Generation (Source: Shahi)

The ministry of power (MoP) is at the top of the broad structure of power sector in India. The Central electricity authority acts as statutory technical wing of MoP which assists the government in planning, coordination and regulation of all the power programmes in India. A number of corporations under the union government are formulated to help the power sector which includes NTPC and NHPC. Rural electrification is also an important aspect of power reforms in India. Another important aspect of power reforms is the high voltage transmission system in which the power grid corporation is assisting the MoP and to fund all the projects the Power Finance Corporation under GoI is formulated. But the main responsibility of power generation and distribution lies on the state governments. Some of the state governments have made their own state corporations. In recent times
there is also participation from the private sector. The power generation from nuclear side is done by Nuclear Power Corporation under the aegis of Department of Atomic Energy. Thus it is clear from the above discussion the electricity sector is major responsibility of the state electricity boards under the state governments although some of the contributions are also done by the central governments in the form of NTPC and NHPC. The private companies are also contributing but in very small percentages. The electricity is divided into three departments

1. Generation
2. Transmission
3. Distribution

Regarding the responsibility of centre and state government in the various categories of power management

- In the terms of the generation, the centre contribution is 22%, state contribution is 74% and the private contribution is 4%
- In the terms of the transmission, the contribution of the center is 39% the contribution of the state is 60% and the contribution is 1%
- In the terms of the distribution, the onus mainly lies on the state as the contribution of the state is 97%.

Thus it is apparent that in the terms of distribution the state governments have to do self check as their contribution is the maximum. Also in past several decades the health of the distribution is worsening. It is said that the investments on the transmission and distribution side should be as much as investment in the generation side. As much emphasis is given on the generation side as we can see that Punjab governments is
planning to start at least three new generation plants but there is no emphasis given on the
distribution side which has got maximum number of losses. The investment on the
distribution side from last 30 years is not even half of what is being required as a result of
which this side of electricity is most neglected. To illustrate this point let us review the
situation of the eastern part of the country. It is rather absurd to listen that there is power
surplus in that part of the country which has got the minimum per capita. The main
reason for this situation is the appalling condition of the distribution network. The
distribution network has not been upgraded to cater the needs of the population as a result
of which people are not getting the electricity because of this reason there is surplus of
power. This example gives the exact importance of the distribution network in the power
sector. Also in most SEB’s the distribution networks are weak and fragile which results
in the power disruptions. There are various flaws in the metering system of the
distribution network. Inadequate and less reliable metering facilities make the working of
the SEB’s very difficult. Over staffing of the distribution network is also very common
problem. There is also pilferage of the electricity which at times is alarmingly very high.
In the present time a lot of emphases given to the customer satisfaction but the SEB’s are
behaving like as if they do not know the value of this principle. Of course there are
consumers who consume electricity and do not pay but at the same time there are
customers who are willing to pay or rather they are paying. But they want quality service.
Electricity industry in last several decades has been supplying the electricity to customers
under the culture that the organizations are not marketing the power but they are giving
power. So customers feel a lot of problems at various stages be in the form of getting new
connections, metering, fluctuations etc. Then there is another concern is that there is lack
of rational approach which is prime most factor in the poor financial health of the organization. Giving Subsidy is right intention but those who really want subsidy they are not getting the advantage of this scheme rather there is blatant misuse of the subsidy in the form of giving free power to the landlords.

Frequency of the tariff revision is very low but in last five years the frequency of the tariff revision is rather much faster than in last ten years. Rate of return which was expected to be 3% in the case of most SEB’s is rather negative.

Let us take up certain key aspects of the distribution network and evaluate them

1. It is well known fact that there are huge losses in the distribution network but the SEB’s over the years have shown that much of the losses are from the rural sector. This is one of the most convenient excuses that the SEB’s often give considering the fact that most of the rural consumption is unmetered. Even we take this excuse again it is responsibility of the SEB to install meters. Here we need correct information which is missing. It was also found that in the towns there is huge amount of pilferage and theft of electricity. Also this phenomenon is very much prevalent in case of the organized large scale industrial houses whereas the SEB’s have constantly blamed the theft from the slums and hutments.

2. As already discussed that SEB’s in certain parts of the country show that there is power surplus let us take this point in detail. The average per capita consumption of electricity in India is 350 KWhr, which is one of the lowest in the world. The global average is 600 KWhr. The claim of power surplus mainly comes from the SEB’s of eastern region. Now this is the classic example of unwholesome condition of the distribution network as in the state particularly Bihar, Orissa and
West Bengal there is worst network of the distribution as a result of which people are getting not the electricity supply as a result of which the SEB’s are claiming that there is surplus of power. This example clearly underlines the importance of the distribution network in the electricity sector. And this is not an isolate case of the eastern SEB’s. It will not be wrong to say that most of the SEB’s are in dire crises.

3. Another problem that we as customer often witness is that of fluctuations and poor voltage in the power supply and the common reply that distribution people give is that there is problem in the production of the power. A deeper analysis would however give another picture. As far the problem of poor voltage is concerned, in most of the cases the distribution management is suffering from the improper capacitors. In another large number of cases the problem is again the technical inadequacies of the distribution systems. Major grid problems arise from the gaps in maintenance of the distribution network. No doubt there is shortage of electricity but what so ever SEB’s are generating at least we should able to distribute it in the right manner.

4. The electricity sector is suffering from more than 14000 crores of losses and one of the main reasons is given as subsidies. No doubt the extent of subsidy have resulted in the increase of the tariff and also the losses in the power sector but if we carefully analyze the things then one would come to the conclusion that there are whopping 30% distribution losses in normal hours which rises to 40-50% during the peak hours. Reduction in the subsidy system would not help the power sector unless the distribution losses are abridged.
5. Another aspect that is missing in the electricity sector is the lack of customer satisfaction. Customers have to undergo lot of harassment in case of any complaints regarding the metering, restoring supplies, improper bills etc. If we look the scenario worldwide regarding the practices followed for the customer satisfaction then we realize that there are glaring discrepancies in our power sector. Bombay Sub-urban Electric Supply Limited (BSES) realized this thing and tried to incorporate certain things to bring about change. To mention a few they
(Source: Shahi)

I. Decentralization of operations into five zones.

II. Each zone has full fledged customer centre with fully computerized centers.

III. Touch screen computers have been provided in the customers centers where customers could themselves access the data relating to their queries.

IV. In all the 40 receiving stations complaint centres with the telephone facility have been provided to attend the routine electric supply complaints.

V. Centralized Enquiry System with simple telephone number 1912 has been provided to attend the power related problems round the clock. It also linked with the IVR (Interactive Voice Response Facility).

VI. A large number of short term training programmes for the staff to understand the importance of the customer satisfaction.

VII. Periodic consumer meetings from different categories to get their feedback.
VIII. Computerized systems for the new connections so as to reduce the time lag between the requisitions for the new connections and getting the new connection.

IX. A control room in the Chairman Secretariat to random checks.

X. Through the brainstorming session the managers themselves set their own benchmarks.

XI. Consumers satisfaction survey is being conducted occasionally to get the feedback.

XII. Payment of the bills through the credit cards.

With all these efforts the results were very encouraging for the BSES.

6. While the state governments over the years have given more and more emphasis on the adding the generation plants but the distribution network was most neglected. The reality requires that same efforts should be made on the distribution network because it is also very important part of the electricity sector.

7. After the period of 1991 some focus was given to the distribution network also private parties started to show interest in the distribution network. As a result of which a number of models were floated. One of the most discussed models is the unbundling of the SEB’s into generation, transmission and distribution companies as separate entities. The subsequent step would be the disinvestments of the generation, transmission and the distribution. Orissa was the first state to incorporate this model. But there can not be single model to solve all the problems. Also various experts have made it clear from time to time that one single model can not replicated every where. In one state a model can deliver the
goods but same model can fail in another state. But the main important aspect is that SEB’s should implement new technologies to reduce the losses.

8. Various states have made State Electricity Regulatory Commission (SERC). The SERC has given the task of mainly care the tariff of the power sector. While the establishment of the SERC is a welcome step but it will be wrong to consider that by making the SERC will not alone solve the electricity problems. SERC only looks after the tariff structure in a particular state, but SERC does not address the critical issue of curtailing the losses directly.

9. Many of us believe that there is lack of political will to improve the situation of the power sector. But GOI has various initiatives in this direction. Starting from 1991 in India GOI has taken the task of opening up of various sectors including the power sector. The political parties over the period of time have shown interest in rejuvenating the power sector. However the maximum resistance for any positive change has been seen from the electricity department only itself in the form of unions. So it is very easy to pass the buck on the political leaders rather it is high time that electricity department should itself arise to this situation and take steps to rectify the problems.

10. There are certain boards who think that problems relating to metering, distribution losses and voltage fluctuations would automatically end with passage of time. There are boards who are just buying time by appointing various consultants for doing various studies same is being done in Punjab from time to time. But SEB’s are not implementing these studies to bring any change. Now it is high time that SEB’s should stop wasting time and should stop thinking that with time some
miracle is going to happen. There is urgent need to rectify the system especially the distribution network which is reeling under huge losses due to lack of technical improvements.

From the above discussion it is clear that proper information is needed at each and every step of distribution network for curtailing the losses. With the changing environment, the competition among the producer class has intensified and the profits are shrinking. The businessman is looking for various ways and means to cover up their profit margin. For this purpose they are using the information as a tool to promote the trade. The changing environment has changed the whole organization including its structure and its need. Perhaps it will not be wrong to say that it is the Information is designing the organization. Information is an asset and its importance is growing with each passing day. Many organizations are suffering from poor quality of information. As Redman found that

1. Managers are unaware of the quality of information.
2. At the operational level, poor information has directly leads to customer dissatisfaction and subsequently leads to increase in cost.
3. This will in turn leads to increase in indirect cost.
4. This chain will be eventually leads to failure on the part of manager to implement strategy.

Also Marchand has identified four common cultures that exists in organization

1. Functional Culture- Managers use information as a means of exercising influence or power over others.
2. Sharing Cultures- Managers and Employees trust each other to use information (especially about problems and failures) to improve their performance.

3. Enquiring Culture- Managers and Employees search for better information understand the future and ways of changing what they do to align themselves with the future trends.

4. Discovering Culture- Managers and Employees are open to new insights about crisis and radical changes and seek to create competitive opportunities.

These cultures have a great role in the use of information. But the main problem is the segregation of information into these cultures. Practical situation are very complicated and hence it is very difficult to visualize information in clear cut into these cultures. As Devenport pointed out “effective information management must begin by thinking about how people use information and not with how people use machine”. Marchand et al. have tried to develop the concept of information orientation which helps to gauge the effectiveness of information. Information is the prime resource for effectiveness of IT infrastructure. Even Drucker in his article ‘the coming of the new organization’ predicted that in 21st century organization would be based on information. Everybody in the organization would be responsible for meeting their own information needs and organization would be seen as one entity. So key to success in today’s scenario is information management. Information management objective is to satisfy the demand for information and thus deliver value the business. As pointed by Ward and Peppard pointed out- Value is delivered through

1. Enabling the business to make the right decisions.
2. Improving the effectiveness of the processes and their outcomes
3. Providing timely and focused performance information
4. The preservation of organizational memory
5. Improving the productivity and the effectiveness of the managers and staff

So the main objective of the information management is to deliver the value to the business. Information can be divided into main four segments

<table>
<thead>
<tr>
<th>High Potential</th>
<th>Strategic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key Operational</td>
<td>Support</td>
</tr>
</tbody>
</table>

![Figure 1.2 Types of Information](Source: Ward and Peppard)

1. Strategic Information

It is that type of information which is crucial to strategic and competitive business environment. Any organization can not afford to neglect this type of information. There are various strategic requirements for any organizations as pointed by Ward and Peppard

Typical strategic information requirements:

- Access to new information about markets, customers, competitors, suppliers or other external bodies to improve competitiveness.
- Establishment of electronic links with external bodies, to speed up and improve
communications and, in some cases, to lock in trading partners.

- Access to external information such as market research databases or database marketing facilities to gain external intelligence.
- Restructured existing information in order to meet the critical success factors of the business or its external partners.
- Capability to integrate and utilize multimedia data.
- Very fast access to integrated information so that visibility is provided from end to end of the key processes and information-based services can be delivered effectively throughout the processes.
- Access and filtering mechanisms for unstructured information to satisfy executive information needs relating to critical business issues.
- Performance measures to monitor progress on strategic factors.
- Modeling data to perform ‘what if’ analysis on crucial business issues.
- Better information about staff to enable more effective use of the human resource.

2. High Potential

It is that type of information whose value in the present time can not be gauged. But on one thing is crystal clear that in future this type of information will be very useful. Organizations use this type of information to know the latent demand of the customers.
3. **Key-operational**

Key operational is the major chunk of information type because this deals with the day to day information needs. This type of information deals with the key operational activities. Organizations over the years have mastered the art of using this type of information.

4. **Support**

This type of information is only used in support to the other aforementioned three type information types. Without the proper utilization of three types of information the support information is no use because in itself the support information does not convey much of the meaning.

To manage such diverse and vast information, organizations worldwide are using information systems strategically. The fast and timely decisions have become the key for success in every industry. But the decisions should be rational and accurate and for that purpose you need a system, which can automatically retrieve the information and propose the possible solution at a fastest rate. Environment is also changing rapidly, so it is very much important to cover up the environmental change. Appropriate and effective information system is necessary which can very well adjust itself in the organization structure. But still once the certain information system is adopted it bring itself an intensive change in the organization structure. Nowadays companies in all over the world are realizing this fact and worldwide there is a movement to design a proper and fast information system. India is no exception to the others. So to survive in this changing environment the companies needs a drastic change in their workings. Special emphasis
should be given to the information systems and its tools for effective functioning of the organization. On moving on this line many companies have developed their own system, which provided them with a competitive advantage over their next competitor. The ultimate team-oriented communication tools are visible and are used in the real situations by many companies. Even the Public Sector Undertakings are fast realizing this fact and for this they are adopting various information-related tools to improve the working.

In order to exist in the present dynamic world organizations are utilizing the concept of information systems. But with the changing scenario the whole approach of using the information system has changed. In order to fully reap the benefits of the information systems, organizations cannot afford to simply implement any information system in their present set up. Moreover, the information systems are not playing a supporting role in the organization rather information systems have taken the drivers seat. The success or failure of any organizations is dependent on the effective utilization of information systems. Information systems have come a long way. According to Ward and Peppard, the emergence of Information systems can be divided into three broad phases as shown in the following figure:

1. Data Processing (DP)
2. Management Information Systems (MIS)
3. Strategic Information Systems (SIS)

The Data processing era primarily focused on the automation of the records of the organization. In this era organizations for the first time realized the need of the implementation of Information Systems in their supporting activities. Although
information systems played only a supporting role but it marked a start in the right direction. It paved the way for the future growth of the organizations. The increasing need of right information at right time marked the beginning of the second phase of information systems which is known as MIS. This era revolutionized the whole concept of information systems. For the first time the managers stared taking the help of information systems. Earlier the information systems meant for the operational staff. For a positive change the manager’s realized the immense potential of information systems and how the organizations can reap the benefits of the information systems. Not only the developed nations jumped to this bandwagon but also the organizations in the developing countries too started participating in this new technology. The organizations not only utilized the concept of Management Information Systems but also various specialized forms of information systems came into being. This era also saw the emergence of Decision Support Systems and Expert Systems. But with the ever increasing competition the organizations needed some more specialized form of information systems. This need led to the emergence of the third era that is known as Strategic Information Systems era.

A Strategic Information System (SIS) is a system that helps companies change or otherwise, alter their business strategy and/or structure. It is typically utilized to streamline and quicken the reaction time to environmental changes and aid it in achieving a competitive advantage. SIS helps the organizations to improve competitiveness by changing the nature or conduct of business. It will not be wrong to point out that SIS encompasses both the Data Processing and MIS. As rightly pointed by Galliers and Samogyi this fact that indeed SIS is the superset of DP and MIS.
The importance of IS was felt by various industries and they have started using information systems to achieve their goals. In fact many organizations have realized the hidden power of information systems as information systems practically help the organizations to achieve the competitive position by serving the customers in a most diligent way. Mere MIS or DP information systems can not help the organizations to survive in this cut throat competition. So now globally organizations have started using the SIS as a potent tool to overcome all difficulties posed by changing environment.

This verity is further elaborated by the fact that various organizations globally have started using the SIS. For example SABRE reservation system of American Airlines and the direct terminal based ordering system of American hospitals supplies. Some other
examples are Merrill Lynch, Thompson holidays, McKesson and Dun. Before the advent of SIS, the information systems in the business was never taken so seriously rather it was only taken as internal resource, and then it was there at the discretion of top management. The SIS changed this viewpoint of organizations. For the first time the organizations started thinking about the external world like competitors, customers or even the changing environment. It changed the focus of the organizations. Now the information systems is now merely a tool in the hands of managers to use it for their use but now information system is a tool to gain the competitive advantage, considering the outside world because now organizations cannot do business by closing the door. The organizations have to interact with the outside world and they need an information system to do that. This answer is provided by the SIS. Now with the help of SIS the organizations are shaping their strategies. But it is also very important that not to use SIS blatantly to cover the goof ups. As pointed by Kings, that “Competitive argument is beginning to be used excessively primarily to rationalize projects that cannot be justified otherwise”. Earl also pointed out that merely focusing on IT/IS will not lead to strategic advantage. He rightly pointed out that “concentrate on rethinking business by analyzing current business problems and environment change and considering IT /IS just one ingredient of the solution”. Porter has pointed out various SIS opportunities at the industry attractiveness level, the generic level and the value chain level. The industry attractiveness level he cited the example of data communication network installed by various airline and pharmaceutical companies (distributors) to lock in customers on the generic strategies level, Porter argued about the matching systems to strategies. But it is at the value chain level which exhibits the best usage of SIS. As it offers the enterprise a
chance to focus on the primary activity and try to implement the SIS in primary activity. The Macfarlan visualizes the SIS as taxonomy by which the firm can measure its Information system effort in respect of strategic and non strategic systems. Wiseman (1988) pointed out that SIS is an IS used to support or shape the competitive strategy of any organization. SIS represents a new IS variety, radically different from conventional perspective that it used to play. The conventional role of IS was primarily to provide the information to support management activities. Initially MIS used to deliver reports and aid management in decision making. But the SIS is a new information management product line. It provides the benefits which are not visualized by MIS. It bridges the gap between IS and business, giving competitive advantage to firms. It changes the focus of organizations from functions of application to the use of applications. According to the Wiseman (1988), identifying potential SIS depends upon the organization conceptual framework for both its strategy and its information systems policy. If suitable conceptual framework is not used then the advantage of SIS can not be achieved. However if the method by which a firm’s information system is used to support or shape its competitive strategy is understood, then the firm is said to have developed SIS vision. Parsons has pointed out that for a firm pursuing an overall cost leadership position, IS should be used either

a) Directly reduce the overall cost.
b) Contribute to overall cost reduction through the functional areas.

In short the specific IS application that contribute to cost leadership are very different from the applications that contribute to a differentiation goal. “Cost leadership requires aggressive construction of efficient scale facilities, vigorous pursuit of cost reduction
from experience, tight cost and overhead control, avoidance of marginal customer accounts and cost minimization in areas like R & D, service, sales force, advertising and so on”.

But the information systems should not be merely viewed as a tool to reduce cost. As pointed by McLaughlin et al. investment in the information system should not be judged on the parameter of cost only, but also by the potential for adding value that is extent to which the marginal revenue exceeds the marginal cost of the investment. Hence the organizations should view various strategic opportunities. Benjamin et al. stressed on the strategic opportunities presented by the information system. He pointed out that the utility of the information systems depend on the following two critical issues

1. Can the information system be used to make a significant change in the way that a company does business, so as to gain the competitive advantage

2. Should a company concentrate on using the information system to improve its approach to the market place, or should it center its efforts around internal improvements.

Further Notowidigdo divided the strategic information systems into the internal systems that have direct benefit to the company and the external system that have direct benefit to the company’s customers, but which indirectly benefits the company.

On the same parameter Porter has discussed that the overall objective of deploying the IS is to improve the competitiveness, it can be broken down into three particular objectives, with changing emphasis as the use of IS has evolved
1. To improve the efficiency of operations
2. To increase the effectiveness of management
3. To improve the competitiveness of the business

The management has short viewpoint on the information system because management only view the information system as stop gap arrangement and this leads to ineffective utilization of the information system. Strassman has rightly pointed out that lack of any pattern of performance improvement is probably due to the lack of focus for the deploying the technology and the pre-occupation with piecemeal, efficiency-seeking cost reduction. Somogyi and Galliers have pointed out that earlier the major task of information system was to provide information to the various departments of the organization. But over period of time the role of information systems has changed a lot. The information systems are now seen as a tool to provide the competitive edge. The role of information system in business has emerged as a strategic one and IS professionals were elevated in status accordingly. These information systems are known as Strategic Information Systems.

They gave following usages of information systems

1. Building barriers of competition
2. Changing the basis of competition
3. Changing the balance of power in supplier relationship
4. Tying in customers
5. Switching costs
6. Creating new products and services
The Strategic Information Systems have following advantages. As pointed by Ward and Peppard

1. External factors- Traditionally information systems were focused on the internal processes and issues. But the Strategic Information Systems focuses on the external factors such as customers, competitors, suppliers and other industries

2. Adding value- Usually information systems focused on the cost reduction. The Strategic Information Systems not only focused on the cost reduction but also on the important issue of adding value. Historically information systems were seen as a way of increasing efficiency by doing it cheaper which is not way to succeed in the present competitive world.

3. Sharing the benefit- With the use of Strategic Information Systems it is possible to share the benefit with other departments of the organizations, with the suppliers, customers and consumers.

4. Understanding customers- It is very important in today’s world to understand the customer and then design the operation accordingly. With the help of Strategic Information System it is possible to understand the customers and then accordingly design the operations.

5. Business Driven- Traditionally the information systems were technology driven in the organizations but with the advent of Strategic Information Systems the focus is not on the technology but now the focus are on the business. Keen has rightly pointed out that “Major failures in using IT/IS are often based on much better technology and bad business vision. Successes come from good enough technology and a clear understanding of the customer”
6. Incremental Approach- The Strategic Information system stresses on the fact that the design of the system should be based on the incremental approach. It should not be a hasty decision to implement the information system in each and every department of the organization. But a clear understanding is required and then the information systems should be designed in a piecemeal approach.

7. Using the information- The output of the Strategic Information Systems can be used extensively to rebuild the organization because the Strategic Information Systems are designed by taking into account various important factors as such internal as well the external factors, customers and proper understanding of the business.

Ward and Peppard further elaborated the features of Strategic Information Systems (SIS).

SIS has following capabilities

1. Decision support systems that enable to develop a strategic approach to align Information Systems (IS) or Information Technologies (IT) with an organization’s business strategies.

2. Primarily Enterprise resource planning solutions that integrate/link the business processes to meet the enterprise objectives for the optimization of the enterprise resources.

3. Database systems with the “data mining” capabilities to make the best use of available corporate information for marketing, production, promotion and innovation. The SIS systems also facilitate identification of the data collection strategies to help optimize database marketing opportunities.
4. The real-time information Systems that intend to maintain a rapid-response and the quality indicators.

The SIS not only helped the companies to achieve their goals but also changed whole perspective of looking at the concept of information systems. The SIS even helped the organizations to even change the strategies, goals and even the mission depending on the current scenario. The earliest example of strategic information systems was in the American Airlines and American Hospitals. The SIS was not only limited to developed nations but after the opening of economies the developing nations also started recognizing the need of Strategic Information Systems and started implementing the concept of Strategic Information Systems in their organizations. Not only the private multinational companies stared using the information systems but also the public enterprises started talking the need of SIS. This study focuses on the distribution network of PSPCL.

1.3 ORGANIZATION PREVIEW

After formal approval by the state Cabinet on April 15, 2010, Chief Minister Parkash Singh Badal passed an order dissolving the PSEB and replaced it with two state-owned companies. The decision, which has come seven years after the new Electricity Act, 2003, called for restructuring of the state electricity utilities along professional lines, has resulted in separation of transmission from generation and distribution functions. The transmission will be looked after by Punjab State Transmission Corporation Limited (PSTCL), while the generation and distribution functions will be managed by Punjab State Power Corporation Limited (PSPCL). PSPCL has more than 65000 employees whereas PSTCL has 3500 employees. Distribution reforms have been identified as the
key area in the power sector reforms process as maximum revenue loss is occurring in this part of electricity industry. For the success of this process, reliable and sufficiently detailed data must be provided to facilitate decision making process in all the activities of the Distribution network. Controlling cost, improving efficiency and reducing commercial losses has become essential for a utility in order to be successful in the highly competitive environment. With the complex geographically diverse networks having number of spur lines and alternative feeds from the different sources, the creation, the updating and management of distribution data is a challenge. Huge data volumes and need for the faster response to consumers mandates use of extensive Information Systems in the power distribution. Prior to this unbundling the Punjab State Electricity Board (PSEB) was a statutory body formed on 01/02/1959 under the Electricity Supply Act, 1948. As discussed earlier on 15th April 2010, PSEB was unbundled into PSPCL and PSTCL. The generation capacity rose from 554MW and 6924 MW and energy consumption enhanced from 701 MUs to 32658 MUs whereas the number of consumers have increased from 6.07 lac to 69.17 lac. The per capita consumption is 1000 units compared to the National Average of 600 units. As shown in table no 1.4 and table no 1.5 below.

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Load in MW</th>
<th>Consumption in MU’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>56.94 lac</td>
<td>11321</td>
<td>9020</td>
</tr>
<tr>
<td>Industrial</td>
<td>1.14 lac</td>
<td>6879</td>
<td>10947</td>
</tr>
<tr>
<td>Agricultural</td>
<td>11.05 lac</td>
<td>7378</td>
<td>10469</td>
</tr>
<tr>
<td>Others</td>
<td>0.04 lac</td>
<td>353</td>
<td>2222</td>
</tr>
<tr>
<td>Total</td>
<td>69.17 lac</td>
<td>25931</td>
<td>32658</td>
</tr>
</tbody>
</table>

Table 1.4 Consumer Mix on 31-3-10. (Source: PSPCL IT Deptt.)
<table>
<thead>
<tr>
<th>Particulars</th>
<th>Installed Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Own Thermal</td>
<td>2620</td>
</tr>
<tr>
<td>Own Hydro</td>
<td>995</td>
</tr>
<tr>
<td>PEDA/Micro Hydel</td>
<td>85</td>
</tr>
<tr>
<td>Share In BBMB</td>
<td>1258</td>
</tr>
<tr>
<td>Share in Central Sector/IPP Projects</td>
<td>1966</td>
</tr>
<tr>
<td>TOTAL</td>
<td>6924</td>
</tr>
</tbody>
</table>

Table 1.5

Generation Capacity of Punjab (As on 30.09.10) (Source: PSPCL IT Deptt.)

But there is constant mismatch between the demand and supply of electricity. In 2010-11, the requirement is 9399 MW and supply is 7880 MW as shown in the table below. So there is considerable mismatch between what is required and what is being generated.

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand (MW)</th>
<th>Unrestricted requirement</th>
<th>Met With</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007-08</td>
<td>8672</td>
<td>7340</td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td>8743</td>
<td>7428</td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td>9786</td>
<td>7407</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>9399</td>
<td>7880</td>
<td></td>
</tr>
</tbody>
</table>

Table 1.6 Demand and Supply (Source: PSPCL IT Deptt.)

Apart from this mismatch there are whopping 23.59% losses in distribution network. As per latest reports, the total commercial losses of PSPCL are 9713 crores and distribution losses are whopping 24%.

<table>
<thead>
<tr>
<th>Commercial Losses</th>
<th>9713 crores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Loans (Long term, Working Capital and GOP Loan)</td>
<td>15164 crores</td>
</tr>
<tr>
<td>Revenue Gap</td>
<td>40 paise/KWhr</td>
</tr>
<tr>
<td>Distribution Losses</td>
<td>Above 24% (09-10)</td>
</tr>
</tbody>
</table>

Table 1.7 Distribution Losses (Source: Annual Financial Statement.)
The government of Punjab is constantly endeavoring to enhance the generation capacity but the distribution network is most neglected area. In 2009-2010 the distribution losses were 22.12% and for 2010-11 the distribution losses are 23.59%. It conveys an important message that at least whatever is being generated, PSPCL should distribute it properly. To start new generation plant it will take considerable time. The need of the hour is to control these alarmingly high distribution losses.

<table>
<thead>
<tr>
<th>Year</th>
<th>Loss (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-09</td>
<td>19.92</td>
</tr>
<tr>
<td>2009-10</td>
<td>22.12</td>
</tr>
<tr>
<td>2010-11</td>
<td>23.59</td>
</tr>
</tbody>
</table>

1.8 Distribution losses Past Profile (Source: PSPCL IT Deptt.)

The SEB’s under the control of the state governments have become an instrument of getting political mileage. Wrong tariff structure, subsidized power to large group of consumers, interference in day to day activities in the form of postings, transfers are just a few constraints under which the state electricity boards are working. In the end the consumer is suffering. In the view of above listed problems the MoP and GoI has taken number of vital initiatives in the recent past. MoP has proposed six level intervention strategy.

1. National level- covering policy and legal framework
2. State level – covering tariff fixation, unbundling and curtailing subsidies
3. State electricity board level- covering restructuring, accounting and Information Systems
4. Distribution circle level- covering outage reduction reliability, accountability
5. Feeder level – covering reliability, voltage stabilization, metering, HT/LT ratio

6. Consumer level – covering metering, billing and consumer satisfaction

For the first time the attention was given to the distribution network in the electricity sector. In clear cut terms it is emphasized to strengthen the distribution activities. Proper budget allocations are being done to enhance the distribution network. Even the state governments have realized the importance of distribution. At the same time MoP and GoI has also started renovation and modernization of the old power plants. As mentioned above electricity has now added in the concurrent list. Proper investments are now being made in the R & D to create additional MW. The electricity bill 2001 is perhaps the most important step in this direction. The main features of electricity bill are

A. Re-organization of SEB
B. All supplies are to be metered
C. Progressive Reduction of Subsidies
D. Stringent penalties against theft

The MoP has recognized the value of Information technology in rectifying the faults in the distribution network. This study is a step in this direction as this study is going to present a model for strategic information systems in the PSPCL.

1.4 Objectives of the Study

1. To study the current functionality of the organization and how information is flowing to the strategic level in Distributor Network of PSPCL.

2. To identify the current problems faced at the strategic level in the Distribution Network of PSPCL.
3. To identify the key factors for the development of strategic information in the selected department of PSPCL

4. To identify and study the various blocks and supporters in existing information system.

5. To suggest a Model for the development of Strategic Information System in PSPCL's Distribution Network.