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**ROLE OF INFORMATION TECHNOLOGY IN POWER
SECTOR - WITH SPECIAL REFERENCE TO POWER
DISTRIBUTION IN INDIA**

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Abstract:-

Information Technology is considered critical for the efficacy of all the industrial systems and holds true for the for the power utilities which need to handle large amount of information for their efficient operation .

Power distribution is the one of the most important segment of electricity value chain where use of IT can contribute significantly in the areas of revenue and commercial management, distribution system automation and ATC loss reduction . Poor performance of SEBs in this segment, underpin the argument that the reform in the distribution segment is crucial to efficient and self-sustainable power sector in India. Though Various steps have been taken to improve the performance in the distribution of utilities in the distribution sector but little benefits have been realized from these steps.

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The successes have been limited in nature and changes have not been institutionalized to be sustainable over the longer period. There is plethora of IT options available in the market today and it is important not to get carried away by the technology wave but choose the appropriate technology, as per the industry needs at the right time for the right set of applications. There is much to learn from the best practices in IT management and IT applications from around the globe. At the same time, there is need to develop holistic approach and tailor-made IT solutions in power distribution in India.

Key words: IT (Information & Technology), AMR (Automated meter reading), SCADA (supervisory control and data acquisition system)

Introduction

Information and Technology (IT) is widely acknowledged to be crucial for efficient operation and management of all industrial systems. This is true of the power utilities, which need to handle a large amount of information for their efficient operation.

Electricity is the prime mover of growth and is vital to the sustenance of modern economy. The projected growth of Indian economy depends heavily on the performance and growth of power sector. The Ministry of power envisions reliable, affordable and quality supply for all users by 2012. While impressive growth has been registered in power sector since independence, it has not been sufficient. Increase in per capita consumption and increase in energy shortages at the same time buttress the argument of widening gap between the demand and supply of power. Per capita consumption in the year 2000-2001 was 559 (Kwh) which increased to 1000 (Kwh) in 2007-08 where as energy shortage reported in the year 1997-1998 was 8.1% which increased to 11.1% in the year 2009-2010, a case in point.

Inter-alia, T&D losses is one of the major factor hampering the viability of power sector. In India T&D losses reported are 25 % (all India average), a very high compared to international standards which are 17%. Making the matter worse, an indirect calculations show T&D losses to be much higher in the range of 40-50%. Some fundamental changes like use of information and technology are imperative in the working of power sector entities to realize reliable, affordable and quality supply to all users by 2012. For

quite a few years, utility in the developed countries have been leveraging the Information Technology (IT) for obtaining significant benefits. The Indian sector too has introduced IT solutions but the approach has been piece meal with standalone applications deployed for a limited operational requirement. IT has been used only as a tool to address a specific issue or two at a time without holistic approach. It has lead to limited integration of systems, under utilization of resources, absence of standard database, high cost of maintenance, inadequate interface and integration with other applications. These issues have adversely affected the return from IT investments. Incoherent technology strategy leads to situations where incompatible options are selected and large sums of money are wasted in attempt to integrate them .There is plenty of room for IT application within the power sector in India. There is need to look at the global practices in IT adoption in the power sector so that India can benefit from them.

Objective of the Study - This paper endeavours to study the application of IT in distribution sector and its usage in Indian power utilities.

Application of IT in power sector management

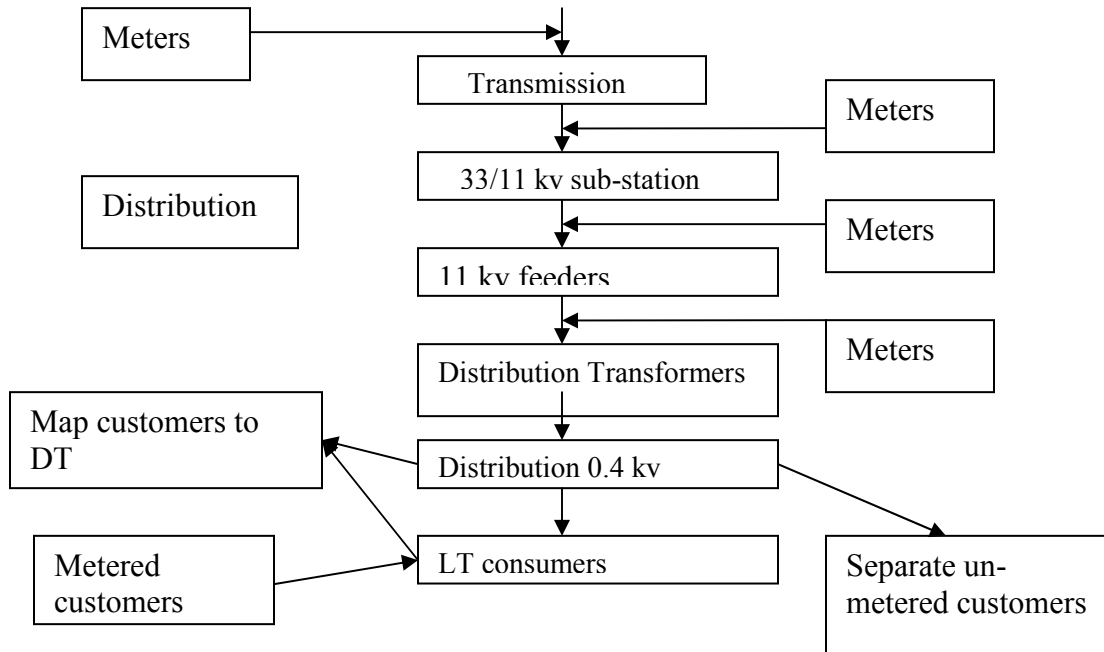
In most advanced countries, power utilities have made major gains in term of productivity, efficiency, reliability and commercial management through the modern use of IT tools. IT should be utilized to minimize human interface in commercial processes to minimize human errors and willful mistakes. A few prominent IT applications to the power sector are described below:-

1. Integrated metering, billing and collection systems – the objective is to integrate billing, payment and collection to eliminate scope for tampering and manipulation and thus improve collection. Payments are currently made in person in most of the places. Only in few places payments can be made online or through ATM. IT can be used for making electronic payments including direct debit payments.
2. Energy Accounting system to conduct energy audit- At present meters are installed at 33 kv feeders and at some places on 11 kv feeders .Meters are not installed at DT level. Total energy input to a circle is known accurately but not the total energy sold, because of many customers are unmetered. As such energy

losses at different stages are unknown. Energy accounting has started at some places but with inaccurate data. Due to lack of information, the control is ineffective and the responsibility cannot be fixed. It is necessary to know energy input and energy sold at various stages of sub-transmission and distribution to identify areas of high losses. Moreover information on loading, voltage and consumption at different levels can be used for network management and reduction in outages. For this purpose meters with real time communication facility should be installed at 33 kv feeders, 11kv feeders and 11/4 DTs. Unmeterd customers are to be separated and supplied power from different transformers. Map customers to respective DT's and build communication channels to transfer data from the meters to the central meter reading control system.

Remote reading is preferred over download facility through handheld device. It provides real time pictures while handheld device can give only snapshots. This information can be used for network management and in distribution automation.

Transmission & Distribution



3. Complaint handling – At present, consumers find very hard to lodge their complaints. The customers usually have to go to the substation for supply related complaints and the concerned offices for the bill related complaints. Power utilities can have Call centers with IVR for outages and bill related complaints.

Current state of IT in the Indian power sector-

In India distribution business is characterized by manual and complicated processes, inadequate controls, lack of commercial focus, limited transparency and lack of reliable information. As a result, the operations are highly inefficient with substantial revenue leakages and poor customer orientation. The use of IT has been low and in pockets. The several standalone applications have limited ability to effectively interface and integrate with other applications or with potential applications to be deployed in future. Although the level of deployment of IT varies significantly across

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the utilities, the key applications have been in multilevel aggregation of data or large scale data processing.

The following table provides an illustrative list of IT deployment in the distribution business.

Application Areas	Organizations
Use of distribution automation such as SCADA, substation automation and data acquisition technologies	APSEB(Hyderabad), BSES,CESC,KSEB(Thiruvananthapuram), RSEB(Jaipur) TNEB (Chennai), WBSEB (Jalpaiguri)
Automated Meter Reading(AMR)	AP Transco, BEST,BSES,MSEB,Tata Power
Use of handheld devices in the field	APSEB(CESCO),BSES,MSEB,UPSEB
Customer Information System	AEC,AP(CESCO), BSES,CESC,MSEB
Call Centre System	BSES, CESC, APSEB (Hyderabad)
Billing System	Most SEB's
Energy Accounting System	MSEB (in urban areas)

With the reforms and restructuring of power sector the way the power distribution business is done has changed. Stiff competition from private and public sector, fundamental changes in pricing and tariff structures, growing environmental concerns are the challenges before Indian power sector. The use of IT tools can make significant differences in overcoming these challenges and bringing about efficiency in the power distribution.

Conclusion –

Application of IT has enormous potential to transform distribution business given the current use of IT by distribution organizations in India compared to adoption of IT by global distribution utilities. In global utilities, Information technology plays a central role in a best-of –class distribution utility as the platform for execution of business processes and the information base for decision making at operational and strategic levels.

A huge investments will be required to attain global standards but given the financial position of utilities in India, this much investment is not feasible at one go. Therefore they need to adopt a phased approach towards IT implementation. The investment in IT should be driven by business needs and payback periods. This requires holistic long term strategy for the adoption of IT. However it should be remembered use of IT is not a panacea but a palliative. IT acts as only transformation agent and enable business processes to deliver performance.

References

- Gupta, S. 2003. “Application of information technology to improve power distribution”. *Power reforms: technological and financial*. IIT: Kanpur**
- Geetika,Pandey N. 2006. *E-government for improving performance of power sector in India*. Research paper**
- M., Anutosh,W., Rahul and K., Anil.2000. “An assessment of information technology for power sector.” Research Paper. Tata Infotech Limited: Mumbai**
- IT Task force report for power sector. Infosys: India.**
- R., Uwe, T., Nathalie, G. Dagmar and T., Peter.2011. “Technology development prospects for the Indian power sector .”Information Paper. IEA: France**

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