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An analysis of ERP security issues in ERP implementation process of Indian power distribution companies (Discoms)

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Abstract

Power Sector is a Critical Infrastructure element required for the successful functioning of a economy. Indian Power sector is in a rapid growth phase A special emphasis is given by the government on the electricity distribution industry to improve their operational efficiency.

ERP (Enterprise Resource Planning) is one of the most important catalyst for providing an environment towards integration of utility applications.

Success of a ERP implementation Project depends on meeting the some Important factors, which is commonly known as CSF (Critical Success Factor). Some of such factors are common in nature whatever is the Business Domain but some are definitely Industry Specific factors. The current research study is based on searching such Industry Specific factors with a Focus on “”ERP Security Issues”” of a Power Discoms.

Keywords: Power Discoms, Critical Success factors (CSF), ERP Security, implementation.

1. Introduction

ERP (Enterprise Resource Planning) is an integrated set of a software modules linked to a common database, handling all basic corporate functions. It attempts to integrate the fundamental functions of an organisation. ERP can be considered as a software solution that addresses the organisation needs after considering overall process view of the organisation in order to meet the organisational goals after tightly integrating all functions of an enterprise.

Organizations are providing significant attention and exercising extra attention for making their ERP systems more effective and efficient but even so not all ERP implementations have yielded the desired results. Factor that influence the success of a ERP implementation is also know an Critical Success factors (CSF's). ERP security is considered as one of the Important Success factor for running the ERP systems smoothly, unless the system is properly secured there is huge probability exists for Direct or Indirect Financial Losses of an Organisation. A systematic approach towards security planning & implementation is key to Successful Implementation of ERP system.

2. Current scenario of Indian Power Discoms

Indian power discoms is passing through a critical phase. Presently most of the Power distribution utilities/companies (known as Discoms) are facing cash crisis in spite of highly monopolistic business, never ending product demand and cost plus fixed tariff approach.

Some of DISCOMs are not able to earn a minimum rate of return (ROR). The power sector has accumulated a huge deficit, because of the deteriorating financial performance.

In order to save from the Crisis, a Modernisation effort has been taken by Govt. Of India through RAPDRP plan. The reform process of Power discoms was started way back in 2003 with the enactment of Electricity Act'2003.

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3. The Motivation for the study

There are around 35 Power Distribution Companies including private initiatives in India out of which about 40% Discoms have completed ERP Implementation process and some are in the process of Implementation and balance discoms yet to start their process.

The more we go for ERP implementation the need for ERP security rises.

Hence someone need to measure the critical success factors of ERP implementation related to ERP security Issues, which will guide the balance Discoms which not adopted the security measures. And this will also guide the other Power Discoms who not yet started the process or in the process of ERP Implementation.

There are no specific research was conducted so far in this area.

4. Objectives for ERP implementation in Power Discoms

The prime objective for adopting the ERP solution by DISCOMs is for Process & Efficiency improvement, Cost reduction and better Customer Services & Meeting Regulatory Norms and ATC Loss reduction.

It is felt that that while adopting the ERP solutions the DISCOMs should review the ERP security issues, so that there is no scope of security breach during /after the process which may ultimately turn into financial losses for the DISCOM's.

5. Literature Review

A. Articles based on "Critical success factors of ERP Implementation in Indian power Discoms".

a. "Need and Challenges of ERP Implementation in Discoms" - Amit Gupta -Addl.Chief Engineer of Madhya Pradesh Madhya khetra Viduyt Vitaran company Ltd., Bhopal.

The researcher tried to find out the critical success factors of ERP Implementation in Power discoms like MPMKVC. But the researcher not tried to collect data from similar or other Discoms in India, as well as no security related issues considered to arrive at a conclusion.

b. "Analysing Progress and Success Factors for ERP implementation in Indian Power industry -A case study on HPPCL" - Ved Prakash Sharma, Research Scholar, Dept. Of Computer Science, Himachal Pradesh University, Shimla.

Researcher worked to find out the most critical success factor of ERP implementation specific to HPPCL only.

Research Gap - No ERP security related issues considered as a critical success factor & no further research also not been conducted on other power discoms in order to arrive at a concrete identification of CSF's of ERP Implementation Indian Power Discoms specific.

c. "Information Technology Implementation in Indian Power Distribution" - a case study- Company: BSES (Bombay Sub -Urban Electricity Supply Company), Delhi. -Sri Dhrubaji Mandal of MDI Gurgaon. Under guidance of Prof. Mahadeo jaiswal Chairperson -Process Renovation Project MDI, Gurgaon.

- In The current research study researcher tried to find out the IT methodology applied & future, Road map of IT implementations in BSES.

- The researcher also listed some critical success factor of ERP implementation in organisation like BSES but no ERP security related issues considered in his study.

The Research Gap - Researcher picked up a specific power discoms like BSES, but other utilities who have implemented the ERP not considered and also ERP security related issues also not discussed.

B. Articles based on Other Industries

There are so many studies were conducted towards Critical Success factor determination for ERP implementation in different parts of world. Researcher has reviewed several s such articles but there is no specific research was conducted on Power Distribution Companies. And more over there is no specific studies also conducted on ERP security issues of Indian Power Distribution Companies.

References of articles as reviewed by the researcher are provided at the end of this article.

6. Overall Research Gap

Researcher have reviewed vast no. Of articles, Journal publications, web based information and found that there are no specific research conducted regarding Critical Success factor of ERP Implementation in Indian Power Distribution company's (Discoms) specifically related to ERP security issues.

7. Research Objective

- a. To identify the awareness on ERP Security among the ERP Consultants & Super/users, of Indian Power Discoms.
- b. To identify the most critical Security considerations of a ERP Implementation Process.

8. Research Methodology

The research process involved the following steps

1st a Literature review was undertaken in order to get a idea of Positioning of ERP Security issue in Critical Success Factors considered for ERP implementation considered by other Researchers and why.

2nd a questionnaire is designed on ERP security issues as a part of Critical Success Factors related to ERP implementation & operation in Indian Power Discom based on Knowledge and Experience of Researcher.

3rd In depth Interviews has been conducted with Project Managers Of Different IT Companies like TCS, IBM India, Accenture etc in order to establish the role of ERP security issues on Success factors of ERP Implementation or Support Project of Indian Power Discom's.

4th The questionnaire designed as per point no 2 was sent to different key persons like Project Managers, Power users, department heads who belongs to Different Indian Power Distribution Companies, who have implemented ERP during 2000- 2015 to assess the views of such key personnel towards ERP Security issue.

The responses i.e such primary information's was analysed with a statistical tool with a view to identify the most critical success factors towards ERP security based on their responses.

9. Data Analysis

In the past years several papers were published on the Subject of Critical Success Factors of ERP implementation. In the current research, researcher have conducted web search regarding such articles on WEB. Several such articles which are focused to Success Factors of ERP implementation are studied in General. And also reviewed 3 (three) articles published in the web relating exclusively with Critical

Success Factor for ERP implementation in Indian Power distribution companies.

After reviewing such articles, it was revealed that no articles has mentioned about the ERP security issues exclusively though there are some article which have mentioned about the data integration and data security etc.

Researcher have listed some CSF's related to ERP security issues on his work experience with Power Utility Implementation projects which have not identified by previous researchers.

Such factors have designed in 5 Point Likert scale based on Agree, Strongly Agree, Disagree, choice while sending to target groups for their opinions.

10. Analysis of Primary Data (Survey) & Discussions

Researcher conducted a survey among all the employees attached with the Information technology cell / department of Indian Power Utilities. All state power utilities including private entities considered for survey.

Survey questions were having 2 part – Part A & Part B.

Before sending the questions a pilot survey was also conducted by sending the question ere to the IT consultants working with Major IT companies in India e.g. Infosys, TCS, IBM & HP. These IT consultants are well experienced in the area of ERP implementation specific to Indian scenario.

After necessary modifications the final question ere Link sent to 443 peoples across the India, who are working with Information Technology Department of different Power Distribution companies in India in order to know whether ERP is implemented or not.

The population size of Employees belongs to ERP implemented Indian Power Distribution companies is small.

Because after evaluation of Part A of questioners it was found that in 9 states only ERP is implemented. On and average there were 8-10 people in each organisations who are directly involved in ERP implementation Process or operations.

Hence the total target population size were about 100 people. Out of that 56 responses received.

Out of total 56 responses, 35 response were complete in all respect.

Following facts were observed during the Survey:

- a. Following states have implemented the ERP solution with an aim to integrate the business operations and to improve the bottom line.

Chhattisgarh / Gujarat / Maharashtra / Madhya Pradesh / West Bengal/ Andhra Pradesh / Himachal Pradesh / Telangana / Delhi

- b. Following Indian states not yet implemented the ERP solution for integrating their business.

Bihar / Kerala / Karnataka / Tamilnadu /Assam / Meghalaya / Haryana / Jharkhand / Uttarakhand / Uttar Pradesh / Punjab / Rajasthan / Orissa /J&K,

- Assam & Orissa Is In The Process Of Implementing Erp.
- c. 47% of total respondents belongs to organisation who having annual turnover is more than 50000 crores.
- d. Out of total Power Distribution companies of India in 78% cases SAP-ERP is implemented balance have implemented Oracle & other ERP system.
- e. Out of total 35 complete responses received 30% responders belongs to either Senior Manager or Executive position. 20% Belongs to General manager position balance belongs to Director or other senior position.
- f. 74% of total respondents of ERP implemented companies has replied positively regarding the Consideration of Security Issues of ERP during / after implementation.

11. Key findings

While arriving at key factors related to Security of ERP during /after Implementation process specific to Indian power Distribution companies the response from survey, among the key users of Indian Power Discoms have been considered as a tool to arrive at a conclusion on this issue A Statistical weighted analysis of the responses is conducted. Responses Are shown as below in absolute percentage (%) based on their weightage.

Sl. No	Implementation Success Factors related to ERP Security	Strongly Agree	Agree	Others (includes Nither agree/disagree, strongly disagree)
*1.	Consideration of ERP security Measures during or after Go live is essential.	54	46	nil
*2.	ERP security is essential to protect your Data.	65	35	nil
*3.	Data security is required as per importance of data	65	27	8
*4.	ERP security helps to Compliance with Laws & regulations/Statutory Obligations.	46	42	12
5.	ERP security enhances trust & relationships among customers, Business Partners & stake holders	42	54	4
*6.	Identification of suitable business / Systems controls during ERP implementations is an Important task, in order to ensure ERP Success.	50	46	4
*7.	User Access to ERP system need to be based on Job Roles & also to be based on best practices of ERP system.	57	38	5
*8.	Default settings of an ERP system may create a security threat.	38	34	28

* Marked factors are observed as Most Critical Security Considerations during or after ERP Implementation of a Power Distribution company located in India.

12. Interpretation / Analysis of Survey Results

From The said table only strongly agree cases having more weight age is considered as a crucial factors during or after ERP implementation in a Power Distribution Company located in India.

Summarised results are now listed as below –

A. ERP Security Related Factors

- i) Consideration of ERP security measures during or after Go live is essential.
- ii) ERP security is necessity in order to protect data integrity.
- iii) Data security need be implemented based on importance of Data.

- iv) ERP Security is essential to keep compliance with Laws & Business regulations.
- v) Identification of suitable business & systems control is necessary during or after implementation in order to ensure successful ERP application.
- vi) User access to be provided based on job role and on the basis of best practice of ERP system.
- vii) Default settings of an ERP need to be avoided.

13. Conclusion

In order to get an overall success in an ERP implementation process, ERP security is a vital element.

Which having regulatory & financial impact. No one can ignore the same.

Most of the Indian State Utilities not yet implemented the ERP solution to integrate their business as per the information received from the Survey.

If they adopt the structured manner and give importance to the said evaluated Success factors related to ERP Security during or after ERP Implementation, it is expected that they will achieve the success in their efforts, though there are other invisible issues which may effect the whole process.

Hence there are further scope on research on this area also indicated.

14. Limitations

Research was conducted among the persons working with Indian Power Discoms who were either directly or indirectly associated with ERP implementation Process. The current research survey was done primarily through E-Mail & Telephonic conversation. In all cases before sending the Survey link to the persons concerned, a brief idea about the survey objective discussed with them over phone.

Researcher tried to cover all the state power distribution companies along with private players in the power distribution segment. But due to non-availability of response from all the key employees of Power distribution companies even after repeated reminders and phone call. Researcher restricted the time span, coverage & its analysis.

15. Scope for Further Research

More in depth study may be conducted by covering all the employees of the concerned Power Distribution companies and impact of such security related success factors may be further reviewed after analysing the Security Related Incidents in Indian Power Distribution Companies.

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