

## A STUDY OF CRITICAL FACTORS FOR SUCCESSFUL IMPLEMENTATION OF ERP IN MANUFACTURING INDUSTRIES

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### **Abstract:**

*Implementing ERP system in India poses challenges for Indian organizations. Given the high number of ERP systems that are described as unsuccessful, it is important to examine the reasons for lack of success. The study of CSFs in Indian context presents a very large scope. Since the scope is very large, manufacturing industry has been selected for the study. The actual measurement of the critical success factors or the dependency relationship between the factors will be identified. CSFs have been developed in order to aid the research process. The framework lists broad factors derived from current literature and they have been examined in this study with regard to an ERP implementation in a manufacturing environment.*

**Key Words:** *Enterprise Resource Planning, Critical Success Factor, Material Requirement Planning*

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## 1. Introduction

During the last decades, the manufacturing sector plays a major turnaround in their manufacturing strategy. Manufacturing sector had to prepare itself to face a challenges offered by opening up economies. New players came into scene having low production cost with improved product quality. Higher tariff rates are no longer available for companies to protect them from computation offered by these low cost manufactures. These challenges made organization to think about the new technology which will reduce the manufacturing cost of product and manage the inventory control in efficient manner which will help to improve the quality of the product.

Since the 1960s the manufacturing system were focused on traditional inventory control concept and most of the software packages were based on the traditional system. They were designed to work back from the sales order to determine the raw material required for production. MRP is one of the earliest computerized systems and it is one of the available techniques for planning and control of tangible inventory in operation management. MRP was traditionally based on raw material feed stock requirements and maintenance planning requirement. Since 1975 MRP has been extended from simply MRP tool to become the standard manufacturing resource planning (MRP - II) to resolve some of the most obvious operational problems. The present technology is Enterprise Resource Planning (ERP) is used to reduce the time and cost of the product in the manufacturing industry. ERP means the techniques and concepts for integrated management of business as a whole from the view point of the effective use of management resources to improve the efficiency of an enterprise management. ERP is IT software that integrate the business activities across and enterprise for product planning, parts purchasing, inventory control and product distribution, to order tracking. ERP may also include application modules such as finance, accounting, human resource, sales and distribution, marketing, production etc.

### *CSFs of Manufacturing Organizations:*

Implementing ERP system in India poses challenges for Indian organizations. Given the high number of ERP systems that are described as unsuccessful, it is important to examine the reasons for lack of success. Explanations for ERP projects which have less successful outcomes than

expected have been drawn from a number of disciplines including project management, information systems, software development and risk management. In particular, widely documented techniques for improving ERP implementation include the use of critical success factors. There is much overlap in the discussions in this area, with critical success factors being documented as positive influences on success.

The reason for selecting the articles used in the previous chapters was to gain information on CSFs of ERP implementation process. There is no information available about CSFs in Indian context within ERP literature. Several studies have listed critical success factors. Others have questioned their significance. The aim of this empirical research is to examine the validity of the CSFs in the ERP literature in the Indian context. The CSFs found in the literature are Non Indian context. The study of CSFs in Indian context presents a very large scope. Since the scope is very large, manufacturing industry has been selected for the study. The CSFs found in the literature may largely hold true in Indian context.

The actual measurement of the critical success factors or the dependency relationship between the factors will be identified. CSFs have been developed in order to aid the research process. The framework lists broad factors derived from current literature and they have been examined in this study with regard to an ERP implementation in a manufacturing environment.

## 2. Significance of the Study

The present research will be used to study the ERP system in the manufacturing industry. After implementation of ERP the cost of man power and productivity will be reduced, which is affecting the growth and productivity of value added product. Implementation of ERP has tremendous payback. Information and it Technology Monitor operation and apply corrective action directly when problems occur. The success of ERP system is depending upon the internal and external factors. The aim of the research is to study the key critical success factor of ERP implementation in the manufacturing organization which will help for the smooth working of organization and ERP system implementation.

### 3. Objectives of the Study

By considering the significance of the study the following objectives have been formulated for the present research work.

- i. To study the present status of computerization and ERP implementation in the selected manufacturing industry.
- ii. To study and critically evaluate the success factors of ERP implementation in manufacturing industry.
- iii. To find out various significant factors which bring success for ERP implementation?

### 4. Hypothesis of the Study

- i) The success of ERP implementation is dependent upon the respond to the changes in ERP technology.
- ii) The success of ERP system implementation is dependent on support of administrative staff.
- iii) The success of ERP system implementation is dependent on support of end user

Rank	CSFs	Avg.
1	Consistent and long term vendor support (updates and up gradation, new versions and releases, programs patches and bug fixing mechanism, industry specific implementation knowledge sharing)	4.82
2	Adequate networking system to operate ERP system (protection against data loss in connectivity, geographical coverage and connectivity, networking administration and maintenance)	4.82
3	Correct functional mapping / adequate software configuration and testing and troubleshooting (conference room pilot/test room)	4.82
4	Process development, testing and troubleshooting in case of gap bridging (use of appropriate process modeling methods / techniques, vigorous and sophisticated testing, troubleshooting and integration)	4.82
5	Monitoring and evaluation of performance (milestones set to measure progress against goals)	4.80
6	Well defined scope of implementation (business processes to be covered, extent customization, number of locations to be included and number of plant/units)	4.72
7	Adequate training and education to the core team members during the implementation (training methodologies, time duration, training material,	4.72

cross examination and process of complete knowledge transfer)
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**5. Sample Design**

The stratified convenience sampling and purposive sampling methods will be adopted during the course of this study. For solving any type of problem, study of the whole population or universe is impossible. It is therefore decided to pick up sample units that can represent the universe. There are approximately 730 employees are working in the present organization and out of these 150 are administrative officers and 150 are end users are working on the present ERP system. It is decided that to select 25 samples from administrative officers and 25 samples from actual end users which is to be 16.67% of total population of administrative staff and end users.

**6. Empirical Study**

**Table No 1**

**Table showing the rank wise Top Ten critical success factors**

Rank	CSFs	Avg.
8	Adequate/Required implementation time span. (symmetrical relationship between scope and time frame depending upon business complexities )	4.70
9	Top management clear vision / mission statement (clear vision, mission, objective, benefits, resources, timeline and key performance indicators for ERP project)	4.70
10	Disaster recovery plan during and after ERP goes live (online, daily or period data backups, testing of backup on another server and power backup and securities)	4.68

**Table No. 2**

**How fast do you respond to the changes in ERP technology?**

Designation	Very Often	Often	Frequent	Total
Manager	11	2	1	14
	78.57%	14.29%	7.14%	100.00%
Associate Manager	12	4	1	17
	70.59%	23.51%	5.88%	100.00%
Asst. Manager	9	9	1	19
	47.37%	47.37%	5.26%	100.00%

Total	32	15	3	50
	64.00%	30.00%	6.00%	100.00%

Source: Survey Data

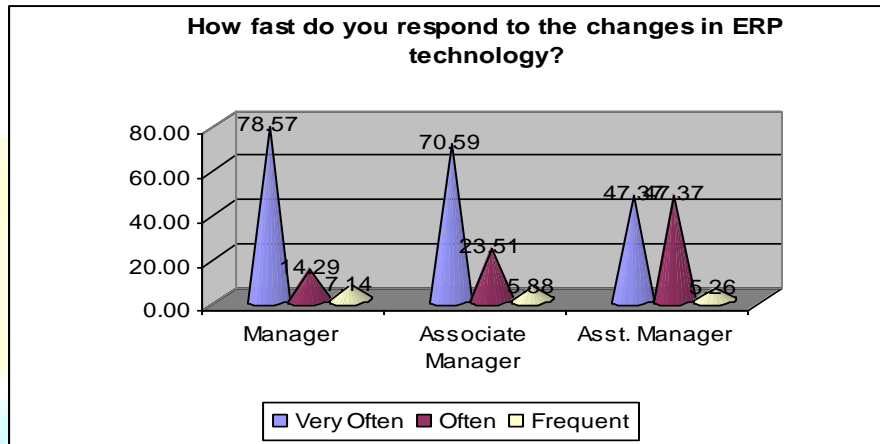


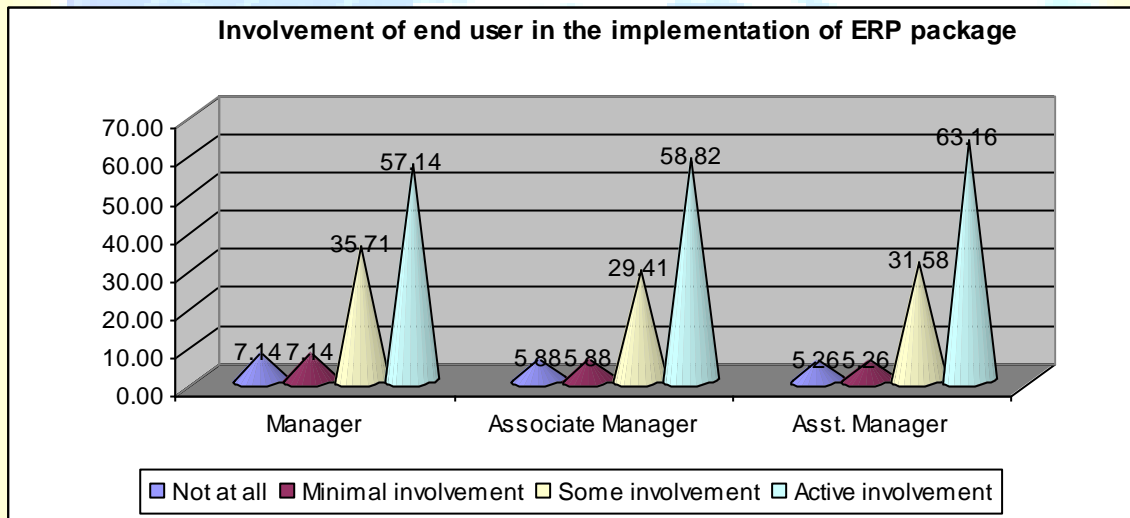
Table No. 2 consist the information about the how fast the responses are given to change the technology. Majority of the assistant manager mentioned that the 47.37% responses are given in the technology up gradation in ERP system. Whereas 78.57% and 70.59% manager and associate manager are agreed that the very often response is give to the changes in the technology for the implementation of ERP system. It is to concluded that the majority of manager (78.57%) and the associate manager (70.59%) are responding the changes in the technology is very often.



**Table No. 3**  
**Involvement of end user in the implementation of ERP package**

Designation	Not at all	Minimal involvement	Some involvement	Active involvement	Total
Manager	1	1	5	7	14
	7.14%	7.14%	35.71%	57.14%	100.00%
Associate Manager	1	1	5	10	17
	5.88%	5.88%	29.41%	58.82%	100.00%
Asst. Manager	1	1	6	12	20
	5.26%	5.26%	31.58%	63.16%	100.00%
<b>Total</b>	3	3	16	30	50
	6.00%	6.00%	32.00%	60.00%	100.00%

Source: Survey Data



The table no.3 gives the information about the involvement of end users in the implementation of ERP package. The majority (57.146%) , 58.82% and 63.16% manager associate manager and assistant managers are agreed about the involvement of end user in the implementation of ERP package is required the active involvement. Whereas the managers are agreed that the some involvement of end users in the implementation of ERP package is 42.86%. Therefore it is to be concluded that the opinion of managerial level is high in the active involvement.

## 7. Testing of Hypothesis

**H0: The success of ERP implementation is dependent upon the respond to the changes in ERP technology**

For four degree of freedom at 5% level of significance, the table value is 9.488. The calculated value of  $\chi^2$  is 4.77925 which is much less than the table value and hence the hypotheses stands for accepted. Therefore, it may be concluded that success of ERP implementation is dependent upon the respond to the changes in ERP technology.

**H0: The success of ERP system implementation is dependent of support of administrative**

For three degree of freedom at 5% level of significance, the table value is 7.811. The calculated value of  $\chi^2$  is much less than the table value and hence the hypotheses stands accepted. Therefore, it may be concluded that The success of ERP system implementation is dependent of support of administrative

**H0: The success of ERP system implementation is dependent of support of end user**

For six degree of freedom at 5% level of significance, the table value is 12.59. The calculated value of  $\chi^2$  is much greater than the table value and hence the hypotheses stands rejected. Therefore, it may be concluded that the success of ERP system implementation is not dependent of support of end user.

## 8. Findings

- It is to be found that the five main modules have been implemented in the organization namely – Materials Management, Production & Planning, Quality Control, Finance and Human Resource Management.
- It is to be found that the only SAP ERP Package is installed in the organization.
- It is observed that the study of CSFs for ERP systems will support companies in promoting knowledge within enterprises.
- It is also helps to enhance the understanding and aid the identifying of how essential CSF to increasing the enhances of the successful implementation of ERP systems.



- The implementation of ERP systems in organizations is an enormously complex undertaking there for the to ensure success implementation, organizations must learn how to identify the critical issues that affect the implementation process and know when in the process to address them effectively to ensure that the promised benefits can be realized and potential failures can be avoided.

## 9. Conclusions

- It is to be concluded that the on an average 40% managers are working in the material department where as 45.45% associate manager are working in the quality control department and 50% assistant manager are working in the production and planning department.
- It is to be concluding that the majority of the male workers are working in the manufacturing industry.
- Based on the data collected during the survey it is concluded that the functionality of the ERP package and best practices are vary manager to manager.
- It is to concluded that the majority of manager (78.57%) and the associate manager (70.59%) are responding the changes in the technology is very often.
- It is found that the majority 92.86% and 94.12% of the manager and Associate manager are fully satisfied about the infrastructure provided for the implementation of ERP system.
- Majority of 85.71% and 70.59% manager and associate manager are agreed that the very often response is given to the changes in the technology for the implementation of ERP system.
- The majority (85.71%) managers, 88.24% Associate manager and 73.66% assistant manager are agreed about the cost of ERP package is very high. It is to be concluded that the cost of ERP package is very high.

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