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A study on challenges of enterprise resource planning (ERP) implementation in manufacturing industry

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Abstract
Enterprise Resource Planning (ERP) is a business process management software which helps to automate many back office function, it integrates functional modules to make a work continues in the organization. Implementation of ERP is a biggest challenge for the organization because the implementation of ERP has failed then the organization is leads to shut down as well as when the Implementation is succeed then the fruitful result of organization makes all the work automization and it gives a profit what we expected. The ERP system should always be updated with the current times so that ERP work according to the situation. This ERP system will not have redundant data, so the problem of inconsistency will not occur. Implementation of ERP will satisfy the customers when the implementation is succeed as well as dissatisfy the customers when it is failed. Most of the Manufacturing Industry will fear to Implementing the ERP in their organization because implementation failed then the organization will lose the market value in the market. So, this study will help Manufacturing Industry to implement ERP without fear, which makes them and their customers happy due to increased production of their product.

Keywords: enterprise resource planning, ERP implementation, critical success factor, critical failure factor, customization, technology

Introduction

History of Erp

Enterprise Resource Planning (ERP) systems are an integral part of the business landscape these days. They help companies to streamline their business processes and to efficiently manage their operations. But how have they evolved?

1960s

As modern factory production increased and computing was born, there was a need to manage and balance production and customer demand. Subsequently, this brought about software known as Materials Requirements Planning (MRP). These previous computing programmes assisted plan manufacturing, purchasing and delivery. They helped companies to keep their stock levels low, which in turn reduced the amount of money tied up in inventory.

1970s

By 1975, MRP software was running in 700 companies. It was only affordable for the large manufacturers and ran on enormous mainframe computers that didn't even have the computing power of a present-day laptop.

In 1972, SAP was born in Germany. The company initials stood for "Systems, Applications & Products in Data Processing". It was founded to create business software that worked in real time. In an era of reel-to-reel tapes and punch cards, real-time working was something that hadn't been done before.

Financial management software was being developed at this time too, albeit in isolation from other systems.

1980s

In the 1980s, MRP developed and grew in capabilities, later becoming what many termed Manufacturing Resource Planning (MRP II). This added more manufacturing processes and greater capability, especially around capacity requirements.

1990s

It wasn't until the 1990s though that the acronym ERP – for Enterprise Resource Planning – was first used. Coined by the Gartner Group, it described software that extended MRP and MRP II to encompass other functionality to do with a company's "back office". This included fundamental such as engineering, finance and accounting, HR and project management.

By the mid-1990s, ERP software was available from suppliers such as SAP, Oracle, JD Edwards and Baan, addressing the core functions of a company.

With the looming issue of the Y2K computer bug and the imminent introduction of the euro, companies in the 1990s scrambled to update their legacy systems. Many chose this time to update their systems entirely by adopting new ERP solutions.

Subsequently, in 1998, NetSuite was founded, with the aim of creating a system that worked across a company and which was delivered over the internet.

2000s

In 2000, the Gartner Group again had a hand in the history of ERP when it described ERP II. This, it forenamed, was

internet-enabled software that granted real-time key access to the ERP result. It also described software that went beyond a company, to provide management and functionality that helped a company to integrate with systems outside of the business. This involved the integration of supply chain management, customer relationship management (CRM) and business intelligence.

During the early 2000s, interaction via mobile devices evolved and more web-based functionality emerged. Furthermore there was also much consolidation of suppliers. A number of mergers and acquisitions saw the industry transform and go into the 2010s to become dominated by a much smaller number of vendors, including Microsoft, Oracle, SAP, Infor, Sage and NetSuite.

Today

Today, ERP systems are even more advanced. They are often cloud-based, delivered via the software as a service (SaaS) model. And they have remote, web-based access via advanced apps that run on mobile devices. They are extremely flexible and every vendor's tool is different. But each function provides a company with an energetic, real-time device that runs a single, shared database of information for the whole enterprise. Modern ERP solutions not only address manufacturing, supply chain, and financial and accounting capabilities, but they also encompass other areas. Today's ERP systems have: advanced reporting and business intelligence; sales force and marketing automation; CRM; ecommerce; and service and warranty management.

Statement of the Problem

- Implementing an ERP system will integrate functional modules to reduce work.
- Implementing an ERP will hurt business activities by the characteristics of failure factor in ERP system.
- Failure of the ERP implementation may leads to shut down of the manufacturing industry.
- Employees find themselves non-compatible towards the new technology that has been introduced
- Switch over of another product due to inadequate production during the ERP implementation.

Objective of the Study

- To determine the key drivers for ERP adoption in manufacturing industry.
- To identify the problems faced by manufacturing industry while implementing an ERP system.
- To analyze the impact of improved technology in production department prior to ERP implementation.
- To study how the customization of ERP satisfies the ERP clients/customers.
- To suggest a suitable solution for successful ERP implementation in manufacturing industry.

Research Methodology

Research Design

The research design used for this study is Descriptive Design. The organization which are implemented ERP successfully are selected for data collection. 50 samples are selected for study.

Sample Size and Sampling Technique

The sample size was purposely kept small due to the constraint of time and resources. The sampling techniques used for this study was non random sampling (i.e.) Judgemental Sampling. Totally 50 respondents were selected on the basis of researcher convenience.

Data Collection

A Multiple-choice structured Questionnaire was used for the collection of primary data for this study. A questionnaire was distributed in different organization through e-mail by the researcher and taken back after completion of required information.

Tools for Analysis

Tools used in this Research are.

- Reliability Analysis
- Chi-square
- Analysis of Variance(ANOVA)
- Weighted Average

Data Analysis and Interpretation

Reliability Analysis

Reliability of the questionnaires is computed by the alpha coefficient of the items (questions) in the questionnaire. Cronbach's alpha of 0.7 and above indicates a high level of internal consistency in the questionnaire.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.705	.707	21

Hypothesis 1

H_0: There is no association between ERP Implementation and Database updated

H_1: There is an association between ERP Implementation and Database updated

Output

howlongbeforeerpimpletented * databaseupdated Crosstabulation

Count

		databaseupdated					
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
howlongbeforeerpimpletented	0-2yrs	4	0	1	0	0	5
	3-5yrs	3	7	2	1	0	13
	6-8yrs	0	1	5	1	1	8
	9-11yrs	0	3	2	3	3	11
	more than12yrs	2	6	0	1	4	13
Total		9	17	10	6	8	50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.049[a]	16	.001
Likelihood Ratio	40.706	16	.001
Linear-by-Linear Association	7.714	1	.005
N of Valid Cases	50		

a. 25 cells (100.0%) have expected count less than 5. The minimum expected count is .60.

Calculated Value: 38.049 Tabulated Value: 26.30

Result

Here the calculated value is greater than the tabulated value thus H0 is rejected. So, there is an association between ERP Implementation and Database updated

Hypothesis 2

H_0: There is no association between ERP Implementation and Quality of the Product

H_1: There is an association between ERP Implementation and Quality of the Product

Output

howlongbeforeerpimpletented * qualityofproduct Crosstabulation

Count

		qualityofproduct					
		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
howlongbeforeerpimpletented	0-2yrs	4	6	6	4	3	23
	3-5yrs	3	9	7	3	0	22
	6-8yrs	0	0	1	1	0	2
	9-11yrs	0	1	0	1	1	3
Total		7	16	14	9	4	50

ANOVA

qualityofproduct

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	968.950	3	322.983	4.666	.016
Within Groups	1107.600	16	69.225		
Total	2076.550	19			

Calculated Value: 10.728 Tabulated Value: 26.30

Result

At 95% confidence interval the significant value is less than 5%, thus H0 is rejected. So, there is a relationship between ERP Implementation and Quality of the Product

Weighted Average

It helps to rank the objective of ERP Implementation. Based on the weightage for each elements the objectives of ERP has been ranked in the following order

Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
centralization	50	1.00	6.00	164.00	3.2800	1.87399
costefficiency	50	1.00	6.00	200.00	4.0000	1.37024
replacingolditsystem	50	1.00	6.00	143.00	2.8600	1.49843
processefficiency&cycletimereduction	50	1.00	6.00	186.00	3.7200	1.72662
automization	50	1.00	6.00	177.00	3.5400	1.59348
preciserepport	50	1.00	6.00	178.00	3.5600	1.96042
Valid N (listwise)	50					

Result

Based on the data collection, the analysis has been processed and the result order is.

1. Cost Efficiency
2. Process efficiency and Cycle time reduction
3. Precise Report
4. Automization
5. Replacing old IT system
6. Centralization

Managerial Implications

1. It is proven that the ERP Implementation is related with the database updation. So that the data needed by the customer/client will be available easily.
2. After the Implementation of ERP the quality of the product should increase. As it is, the quality of the product has been increased in analysis.
3. The weighted average tool has been used to order the objective of the ERP Implementation. As that, objective has been ordered

Conclusion

In this paper, we have discussed the different types of result in implementing ERP in the organization. Always the implementing of ERP has two face, one is success and other one is failure. Success of ERP Implementation in one company will motivate other organization to Implement ERP also failure of ERP will lose the other organizations hope in Implementing ERP, because of the nature of ERP Implementation failure.

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