

**Major Project Report on
“Critical Success Factors for ERP Implementation”**

Submitted in partial fulfillment of the requirement for the
award of degree of

Executive Master in Business Administration

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CERTIFICATE

This is to certify that this project titled “**Critical Success Factors for ERP Implementation** ” submitted in partial fulfillment of the requirements for the Degree of Executive Master of Business Administration by **Saurabh** at Delhi School of Management, DTU is a record of original research work carried out by him under my guidance. Any material borrowed or referred to is duly acknowledged.

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Finally, I acknowledge the assistance of the respondents of our questionnaire who devoted their precious time to answer us which had gone a long way for the completion of the research study. Without them the findings and analysis would not be completed. We thank them for sharing their experience and expertise on this study

EXECUTIVE SUMMARY

The number of businesses and organizations embracing enterprise resource planning (ERP) has increased at a steady rate in recent years. More firms have been attracted to the discipline by the desire to integrate and consolidate management information, and make data available to decision makers throughout the enterprise. Firms implemented ERP solutions in a bid to improve resource planning, drive efficiencies and boost organizational growth.

The main objective of this study is evaluation of the Performance of ERP implementation based on Critical Success Factors such as the Business Process Re engineering, Change Management, Data Conversion and Analysis, and Architecture choices.

A questionnaire provided to obtain the views of IT users, Executives and Managers of organizations where ERP is implemented to know the critical success factors , and measure the performance of ERP systems . A quantitative approach was adopted for the study by using an online questionnaire .The total sample was composed of 60 respondents. All the responses were collected through internet by using Google.doc surveys. Furthermore, convenient sampling technique was used to collect data so the chosen boundary was employees of IBM,GAIL, and HCL companies.

Our findings indicated that Business Process Re engineering and Data Analysis and Conversion are positively related to the Performance of ERP implementation. Clear Goals and objectives , dedicated resources,Project Team Competence and Vendor support are some of the other critical success factors for ERP implementation.

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INTRODUCTION

1.1 What is ERP?

ERP Systems are software tools for managing enterprise data. ERP systems help organizations in inventory management, customer order management, production planning, human resource management, shipping, accounting and billing.

An ERP system provides enterprise database where all business transactions are entered, processed, monitored and reported.

1.2 Purpose of study

The purpose of conducting the research is to identify the critical success factors for ERP implementation. The study aims to know the popular Software Vendors for ERP, the extent of customization the organizations make after purchase of ERP Software, extent of usage of ERP software and the level of satisfaction among users after purchase of ERP Software. The following research question will be answered in this paper.

In a more specific view our research questions can be described as the following

RQ1: Does Business Process Re engineering leads to improvement in ERP Performance

RQ2: Does Change Management leads to improvement in ERP Performance

RQ3: Does Data Analysis and Conversion leads to improvement in ERP Performance

RQ4: Does Architectural choices leads to improvement in ERP Performance

1.3 Limitations

This thesis only focuses on few of critical factors in success of ERP implementation in organizations. Because of cross sectional design of study, no

causes and effects could be established. The sample size comprised of only sixty respondents and the sampling technique is based on convenience sampling, so sample is no true representation of the entire population

1.4 Thesis outline

The research process is composed of six parts. The introduction provides to the reader a background about the topic and our research problem. The literature review will present the secondary data such as articles from scientific journals, books and an overview of the theoretical framework that outline the theories and literature relevant to this study. The next chapter will cover the methodology; where research approach, design and data collection will be presented. Then empirical findings of the quantitative study will be submitted, thus the analysis and the discussion of the research study. Finally conclusion and further researches and recommendations will be outlined



Fig 1.1

2. LITERATURE REVIEW

2.1 Composition of ERP

Enterprise resource planning (ERP) is business management software—usually a suite of integrated applications—that a company can use to store and manage data from every stage of business, including:

- Product planning, cost and development
- Manufacturing
- Marketing and sales
- Inventory management
- Shipping and payment



Figure 2.1

2.2 Basic ERP Features

An ERP System achieves a number of important objectives which includes reduction in cycle time, faster transaction processing as common data is used and multiple updates on different systems are avoided. The basic ERP features are outlined below

Business Intelligence

Data Warehouses, Data Mart and Data Mining are used by managers for timely access to data about customers, competitors and Products. The data is used in the tools to understand market and spot trends to enhance profitability.

CRM (Customer Relationship Management)

CRM is a comprehensive sales and marketing approach to building long term customer relationships. CRM software has its root in sales force automation software which is designed to provide sales representative with sales activity management, knowledge management, sales and territory management, sales campaign management and customer service

Financial Management

ERP supports Accounting and Finance in Credit management, Product profitability, consolidation of information from subsidiaries, Management reporting and creating an audit trail

The financial-management applications includes tools for creating and adhering to budgets, cash-flow management, expense management, risk management and tax management.

HCM (Human Capital Management)

Human resource Processes supported by ERP are Payroll, Training and development systems, Performance management, Time and Labor Management Compensation, Position control, Skills inventory and Employee information

Manufacturing Operations

ERP supports manufacturing operations in forecasting, Sales and Operation planning, Demand management, Material resource planning, Purchasing, detailed scheduling, Production and accounting

2.3 The Business Value of ERP

Cycle Time

With ERP implementation costly bottlenecks are replaced with time and cost reduction of business processes.

Transaction Processing

With ERP implementation multiple transactions using multiple data file are replaced with faster transactions using common data, which in turn reduces the time and cost of multiple updates.

Communications

ERP implementation facilitates organizational communications with customers and suppliers by integrating systems

Information

ERP implementation facilitates cross functional access to the same data for planning and control while providing widely available information.

E-Business

ERP implementation facilitates Web-based interfaces to support integrated systems and their components.

Supply Chain Management

ERP implementation facilitates linkages with suppliers and customers by means of integrating the applications

Productivity

ERP implementation facilitates responsiveness to customers and suppliers, thus resulting in improvement in financial management and customer service.

Business Process

ERP implementation facilitates business process by re-engineering around a business model that conforms with best practices.

Financial Management

ERP implementation facilitates financial management by reducing cost of excess inventory, cost of overdue accounts receivable

2.3 ERP Life Cycle Implementation

Step1: Problem Definition

Problem definition includes identifying problems with current system. Interview and other data collection tools and techniques are used

Step2: Feasibility Study

Feasibility study includes assessing the need for a systems project, including technical, economic and management feasibility. This phase uses preliminary cost analysis techniques.

Step3: System Analysis

System Analysis includes undertaking a detailed analysis of the current system, including processes, information flows, and work organization. Logical process models, Logical data models, and organization charts of present system are used to conduct System Analysis.

Step4: System Design

System design includes development of objectives for the new system and re-engineering of processes and information. Logical process models, Logical data models, and organization charts of proposed system are used to conduct System Design.

Step5: Detailed Design

Detailed design includes design of specifications for proposed system. It uses program design specification, output design, input design and database design.

Step6: Implementation

Implementation includes activities of software implementation, training end-users, development of reporting systems, design of controls and security. Coding, testing and documentation are completed during this phase.

Step7: Maintenance

Ongoing technical support, ongoing upgrades and enhancements are primary activities during maintenance phase

Phase	Month							
	1-3	4-6	7-8	9-12	13-15	16-17	18-21	22-24
System Preparation	Syst. Prep.							
Preparation		Project Prep.						
Blueprint			BBP					
Realization				Unit Test	Cycle 1	Cycle 2		
Final Preparation							Final Preparation	
Go Live & Stabilization								Go Live

Two years ERP implementation life cycle

Fig 2.3

2.5 Managing Risk in ERP Projects

Organizational Fit Risk:

Organizational fit risk is because of failure to re-design business processes

Organizational fit risk can be minimized by top management commitment to restructuring and following an enterprise wide design which supports data integration.

Skill mix Risk:

Organizational fit risk is because of insufficient training and re-skilling or insufficient internal expertise. This risk can be minimized by effective recruiting and recruiting of specialized technical personnel.

Management structure and Strategy Risk:

This risk is because of lack of senior management support and lack of proper management control structure. This risk can be minimized by obtaining top management support and establishing a centralized project management structure.

Software System design Risk:

This risk is because of failure to adhere to standardized specifications which the software supports and lack of integration. This risk can be minimized by commitment to using project management methodology and best practices specified by vendor.

User involvement and Training Risk:

This risk is because of insufficient training of end users and ineffective communications. This risk can be overcome by providing effective user training and full time commitment of users to project management roles

. Figure below shows the risk areas that can affect the project implementation. These areas are not always related to the project itself.

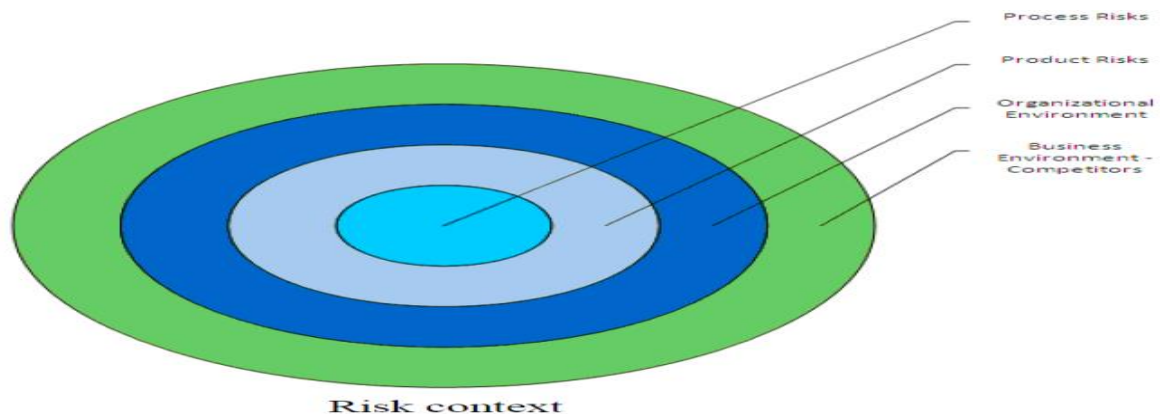
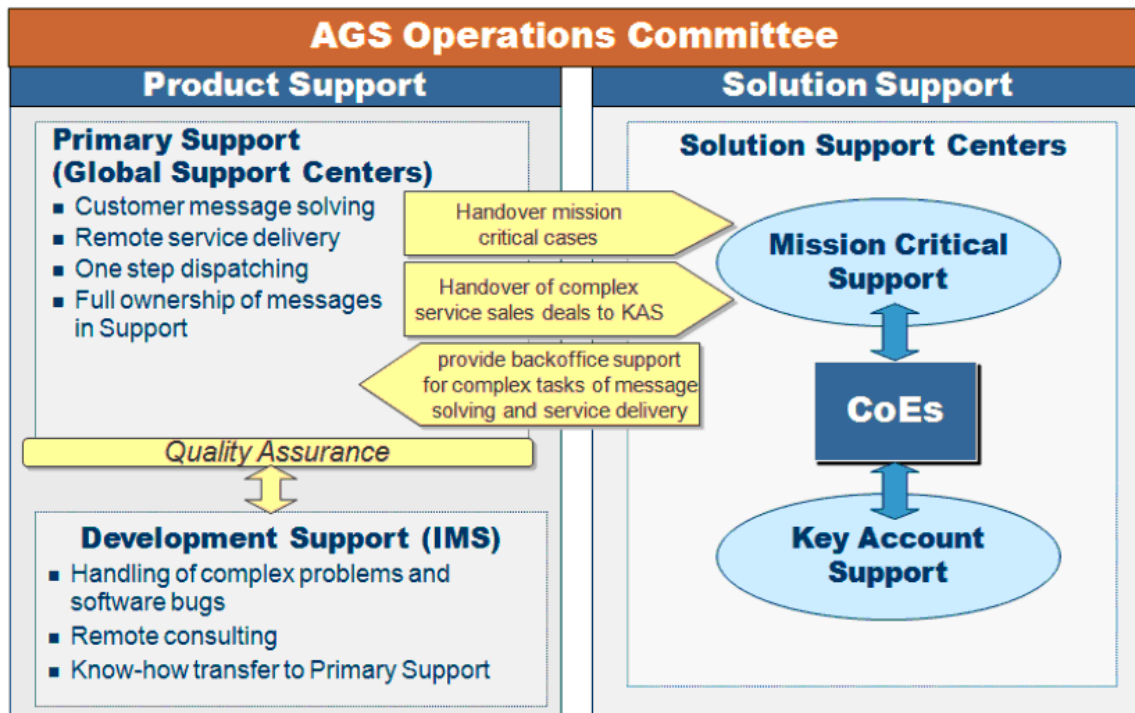


Figure 2.4

Rich organizations willing to implement very complex ERP products will seriously consider the implementation risks. I was involved in the ERP implementation in the IBM. The implementation lasted more than three years and involved a huge cost. Still it could not be called as 100% successful affair. (Complete analysis in the following sections)

Every year more than 100 external specialists were working every day to finish the implementation. The risks were huge considering the dimension of the project.

The vendor offered support not only for the product, which is a common practice, but for the implementation itself - for the solution. We can find the level of support in Figure below.



Active Global Support (source: SAP AG)

Figure 2.5

Risk management was a very important aspect in IBM implementation. The implementation was considered a critical mission for a series of reasons: business depends to a very high degree on affected business processes, high availability required, very high volume processes, very time-dependent business and also IBM was targeting this as a huge investment to attract a large number of customers because such large implementation have very rarely been successful. In combination with the complexity of the solution (global operations, heterogeneous solutions, complex business processes, new technologies) the implementation became even more critical and effective risk management was required. The risk management proposed by the vendor had the objective of identifying potential risk of failure and reduces the total cost of ownership by

reducing the duration of the implementation, providing technical guidelines to help minimize unnecessary work and avoid complications, preparing the ERP solutions to run with optimum performance, availability, and maintainability, identifying areas that could benefit from optimization. The vendor was committed in the risk management process because its expertise which involved usage of specialized tools and methodologies for risk management. The ERP implemented in IBM was SAP. Below is the overview of the risk management plan followed.

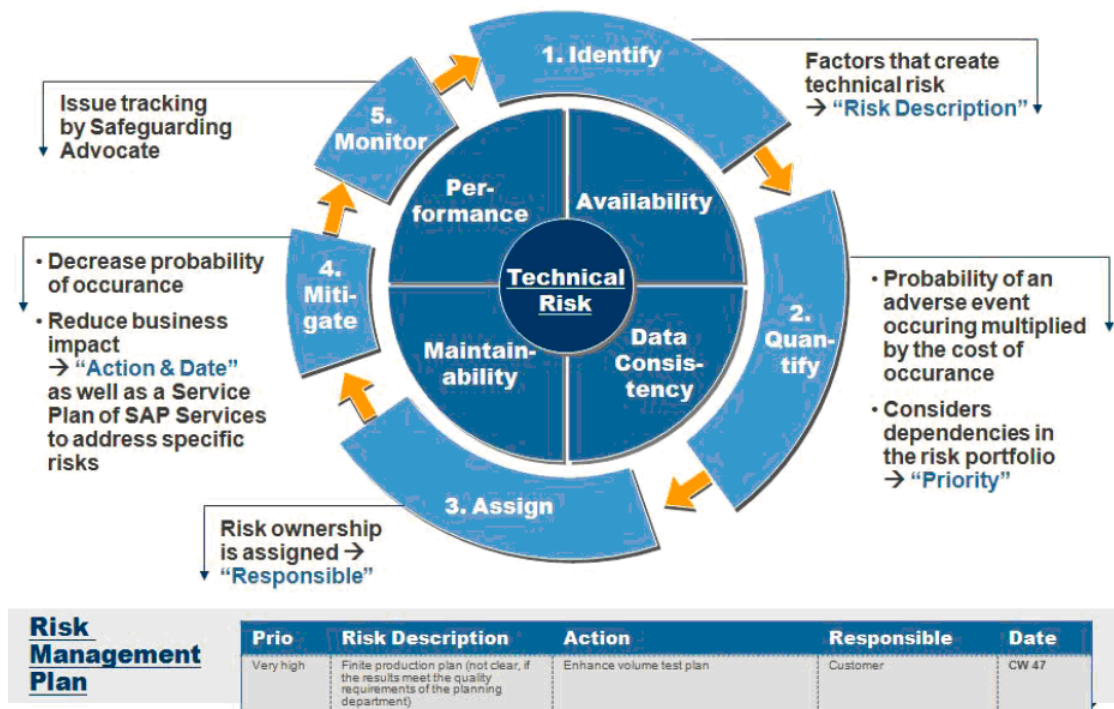


Figure 2.6

According to this guideline there are five steps in managing **technical risk**:

1. Identify the factors that create technical risks
2. Quantify - calculate the probability of adverse event occurring multiplied by the cost of occurrence
3. Assign - risk ownership is assigned
4. Mitigate - decrease probability of occurrence, reduce business impact
5. Monitor - issue tracking

2.6 Critical Success Factors for ERP implementation

Architecture Choices

To increase chances of success of ERP implementation management must choose software that closely fits its requirements such as hardware platforms ,databases, and operation systems so as to minimize customization of package.If wrong choices are made the company faces either a misfit between package and business processes or a need for major modification which is time consuming costly and risky. Choice of the right package during the initiation and adoption phases involves important decisions regarding budgets, time-frames, goals and deliverables that will shape the entire project.

Data Analysis and Conversion

If problems with data are not fixed in legacy systems, they will be apparent in the new system as well. ERP modules are intricately linked to one another, inaccurate data input into one module will adversely affect the functioning of other modules. The data residing in the legacy systems , both master data and transaction data, needs to be migrated to ERP system. This effort often involves translating or amalgamating existing data to conform to the specifications required by the ERP system. Conversion and interfaces must be ready in good time to allow for the data transfer and data verification

Business Process Re-engineering

ERP systems are essentially developed as instruments for improving business processes such as order management, purchasing or human resource management and they are built around best practices in specific industries. However, the software may not necessarily fit business processes, because implementing ERP is not just changing software systems, rather it requires repositioning the company and transforming business practices . So customization of ERP packages may be chosen to better fit a company's need or a change in business processes to fit the packages. customization of the

software results in higher implementation cost and longer implementation time. So implementing an ERP system involves reengineering the existing business processes to the best business standard. This could be possible if, an extensive analysis of current business processes is carried and identification of the potential impact of reengineering. Organization should be prepared and ready for fundamental change to ensure the success of BPR.

Change Management

The existing organizational structure and processes found in most companies are not compatible with the structure, tools and types of information provided by ERP systems, because every ERP system imposes its own logic on an organization's strategy, organization and culture. These changes may significantly affect organizational structures, policies, processes and employees, and can cause resistance, confusion, redundancies, and errors if not managed effectively. Many ERP implementations fail to achieve expected benefits possibly because companies underestimate the efforts involved in change management. Because of that, it is important that an organization goes through a carefully planned transformation that is based on adequate strategy and well-defined methodology of implementation. It will not change overnight and strategies need to be used to get employees not only to change how they work but also how they behave. Some organizations need to make long-term plans to begin to change the culture long before ERP is implemented. Such activities appear to be important from the early stages of a project and continue throughout the adaptation and acceptance stages. If people are not properly prepared for the imminent changes, then denial, resistance and chaos will be predictable consequences of the changes created by the implementation. All employees must be made to understand how the new system can both benefit the company and make their jobs easier.

Effective Communication

Communication has to cover the scope, objectives and tasks of an ERP implementation project . Effective communication in project team and within the organization is extremely important. Good communication in project team can be ensured by: weekly team meetings where team and project status updates are provided; postings on the company intranet; formal and informal information sessions; etc. Project team also should be on same location in the same area (floor) that they can have common meeting, etc. The progress of the ERP project should be readily discernible to all of the employees in the organization. It has to include project status, impending changes, training announcements through company intranet, newsletters, e-mails, etc. The communication plan has to detail several areas including the rationale for the ERP implementation, details of the business process management change, demonstration of applicable software modules, briefings of change management strategies and tactics, and establishment of contact points.

Effective Project Management

ERP systems implementation is a set of complex activities, involving all business functions, so companies should have an effective project management strategy to control the implementation process, avoiding overrun of budget and ensuring the implementation within schedule. ERP system implementation must be managed or directed by an effective project leader. The project manager/leader is defined as the person who is responsible for overall day-to-day management of the ERP system implementation effort and coordinates the use of the organization's resources with those of contractors or consultants, vendors and other parties involved in the implementation effort. This person's effectiveness is measured by his or her ability to motivate others to perform the work necessary to successfully implant the ERP system. Some degree of improvisation may also need to be part of the skill set of ERP project managers. There are five major

part of project management: (1) having a formal implementation plan, (2) a realistic time frame, (3) having periodic project status meetings, (4) having an effective project leader who is also a expert, and (5) having project team members who are stakeholders.

3. RESEARCH METHODOLOGY

3.1 RESEARCH MODEL

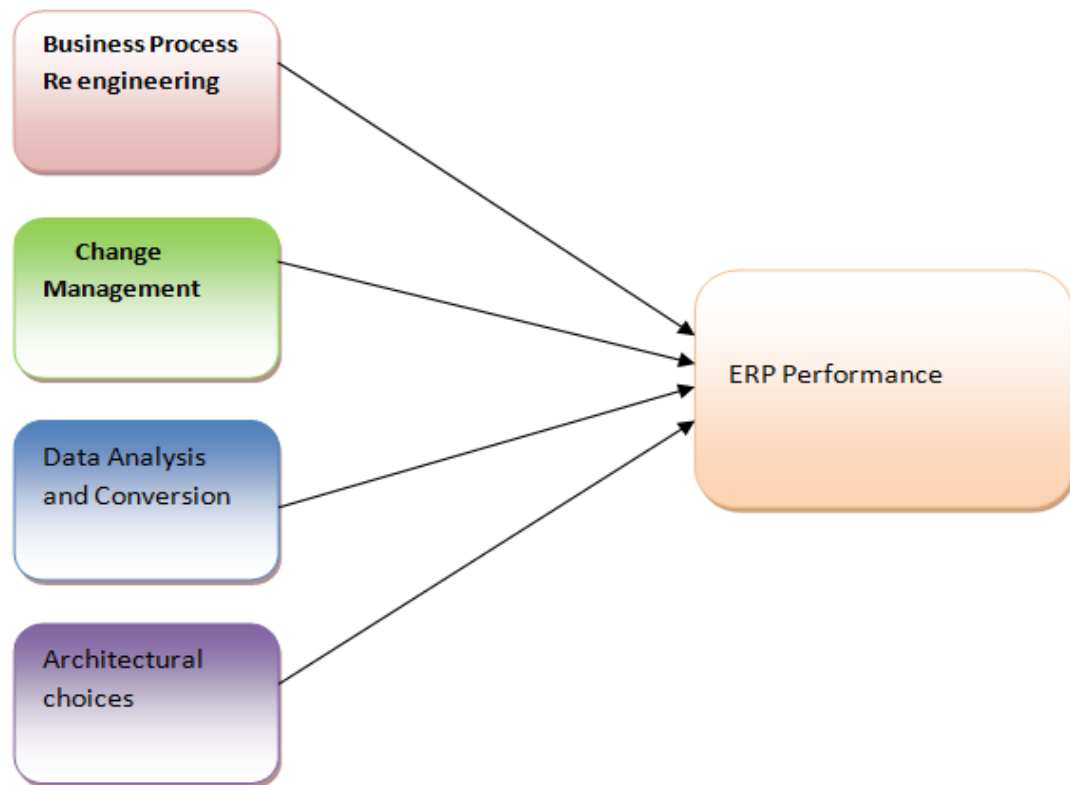


Fig 3.1

The Research model is based on below hypothesis

Null Hypothesis(H01): There exists no relationship between business Process Re engineering and ERP Performance

Alternate Hypothesis: There exists positive relationship between business Process Re engineering and ERP Performance

Null Hypothesis(H02): There exists no relationship between Change Management and ERP Performance

Alternate Hypothesis: There exists positive relationship between Change Management and ERP Performance

Null Hypothesis(H03): There exists no relationship between Data Analysis and Conversion and ERP Performance

Alternate Hypothesis: There exists positive relationship between Data Analysis and ERP Performance

Null Hypothesis(H04): There exists no relationship between Architectural Choices and ERP Performance

Alternate Hypothesis: There exists positive relationship between Architectural choices and ERP Performance

Research Methodology

3.2 Design – Cross-sectional

Collection of data on more than one case at a single point in time in order to collect a body of quantitative or quantifiable data in connection with two or more variables.

3.3 Data and Collection Method

Population	Delhi NCR
Sample Size	60
Sampling	Non-probabilistic (Convenience)
Survey Method	Questionnaire (Online)
Survey Window	5 th March – 25 th April
Survey Response	60(Valid)

3.4 Questionnaire is a multi-item Likert Scale

- ▶ Questionnaire measures
 - Importance of replacing legacy system by ERP implementation
 - ERP Software Vendors used
 - Satisfaction level from purchase of ERP
 - Extent of Customisation
 - Usage of ERP Software
 - Post purchase assistance by Vendor for ERP
 - Strategic advantages of ERP

- Improvement in Performance areas with respect to operations
- Better Corporate image by ERP implementation
- Critical success factors

3.5 Reliability and Validity

The questions were taken from literature review where the questionnaire had already been validated by experts in the field and cronbach calculations done to measure reliability

1. DATA ANALYSIS AND INTREPRETATION

All the below pie charts were made from self analysis using Microsoft Excel 2010

4.1 How important is replacing aging legacy system?

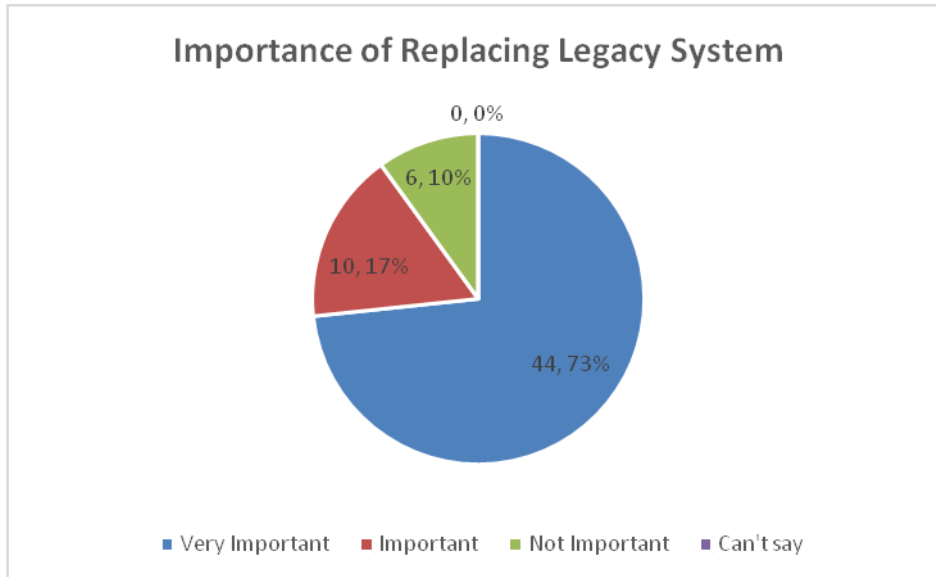


Fig 4.1

Interpretation

The above pie chart shows that 73% of respondents i.e 44 number of respondents feel that it is very important to replace the legacy systems.17 % of respondents feel that it is important and only 10 % of respondents feel that it is not important to replace the legacy systems

4.2 Please indicate which software vendor supplied you ERP Software

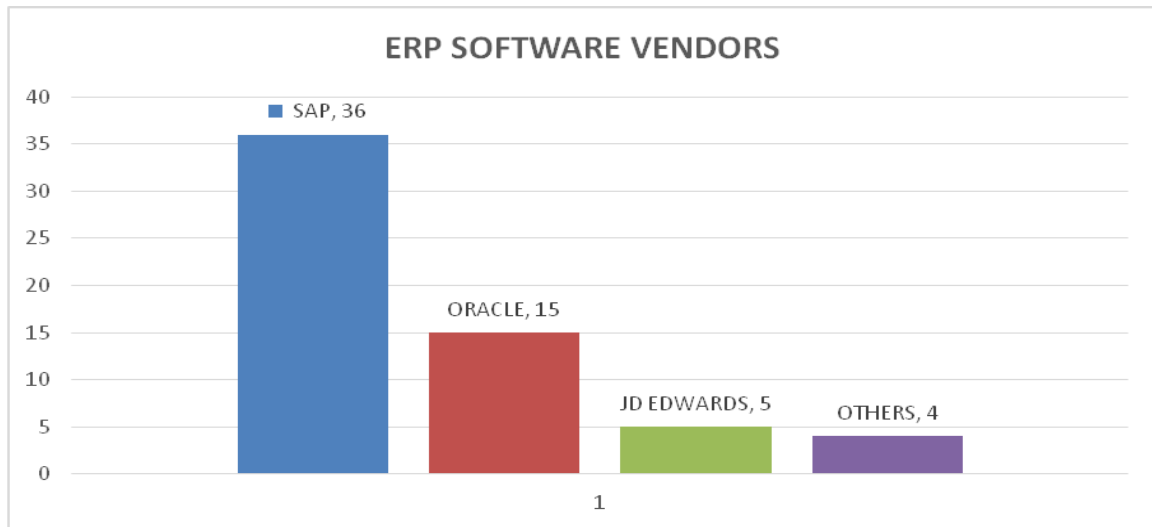


Figure 4.2

Interpretation

The above bar chart shows that majority of the respondents had SAP(36) as the ERP software vendor followed by Oracle(15) and then JD Edwards(5)

4.3 Is your company satisfied with the purchase of ERP Package?

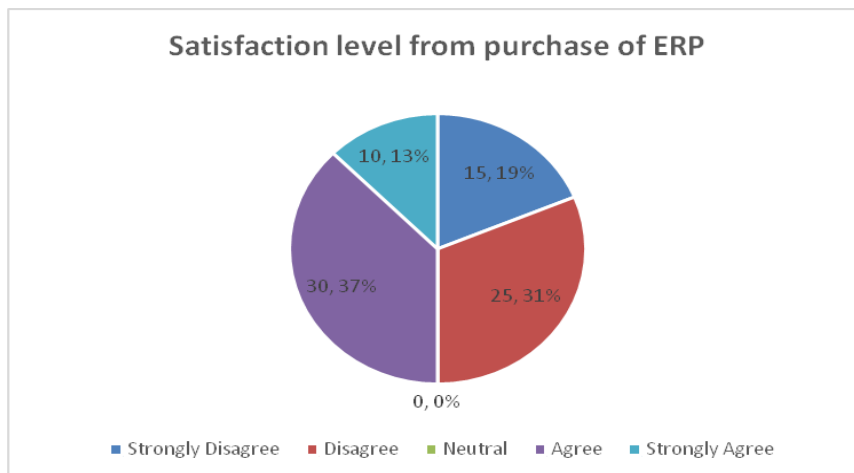


Figure 4.3

Interpretation

The above pie chart shows only 13 % of respondents strongly agree with satisfaction from purchase of ERP package whereas 19 % of respondents strongly disagree with the satisfaction derived from purchase of ERP package.

4.4 When you buy ERP Solution ,to what extent does your organization customise the software?

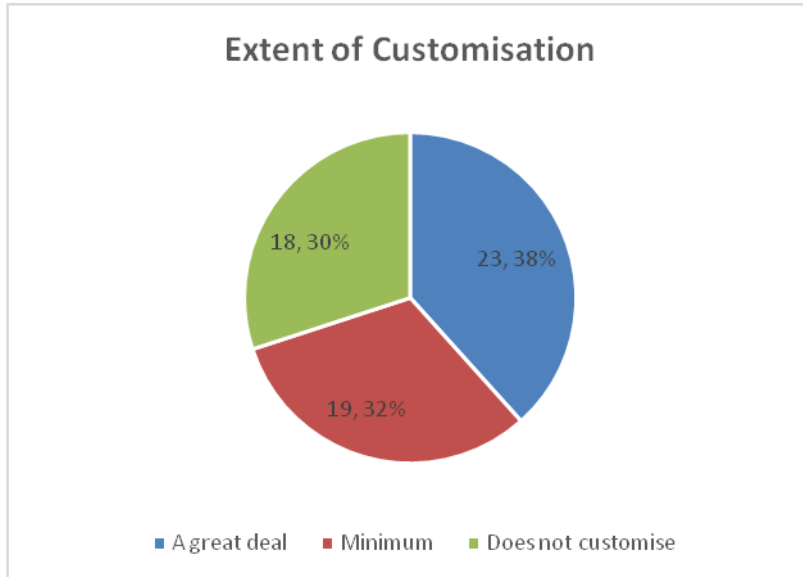


Figure 4.4

Interpretation

The above bar chart shows that 38 % of respondents had to get the Software customized to a great deal to make the ERP package suitable for their requirements, where as 30 % of respondents did not had to customize their software to meet their requirements.

4.5 Are you using ERP software to it's full extent?

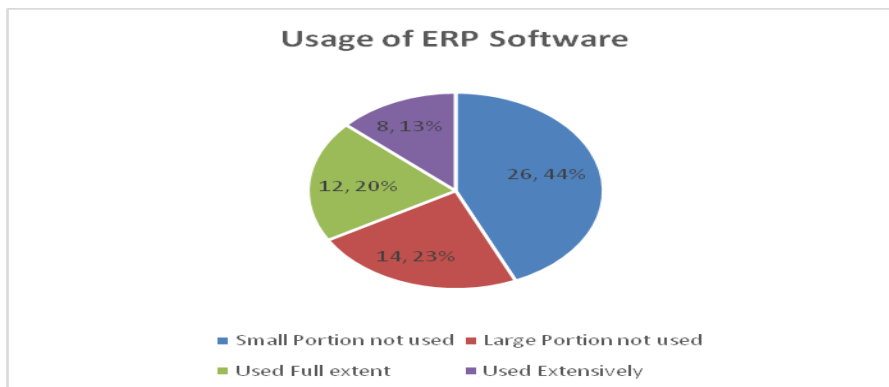


Figure 4.5

Interpretation

The above bar chart shows that 20 % of respondents have used ERP software to it's full extent, where as 23 % of respondents have not utilized large portion of ERP software.

4.6 ERP Vendor provided your company with strong support after you purchased the product

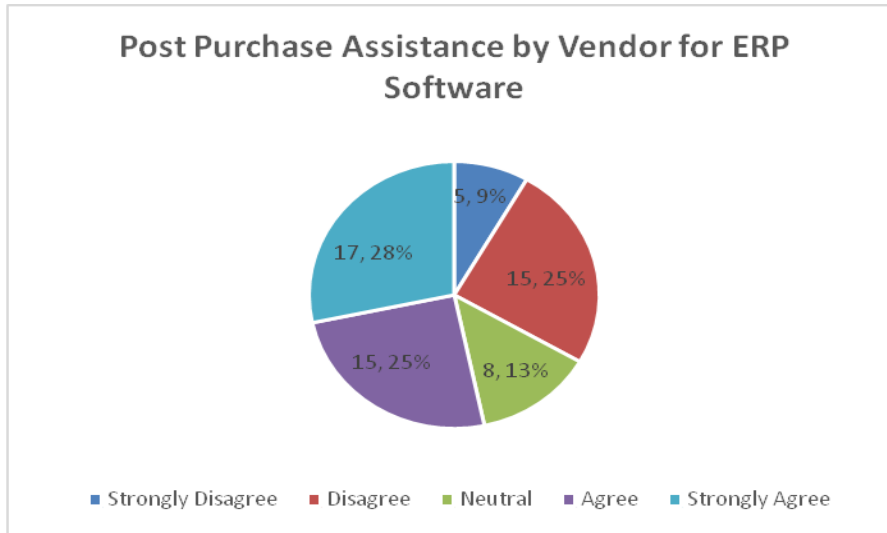


Figure 4.6

Interpretation

The above bar chart shows that 28 % of respondents have used the Vendor's support for ERP after purchase of ERP software whereas 9 % of respondents strongly disagree to support of Vendor for ERP software

4.7 Did You use any outside consultant to assist you in ERP implementation?

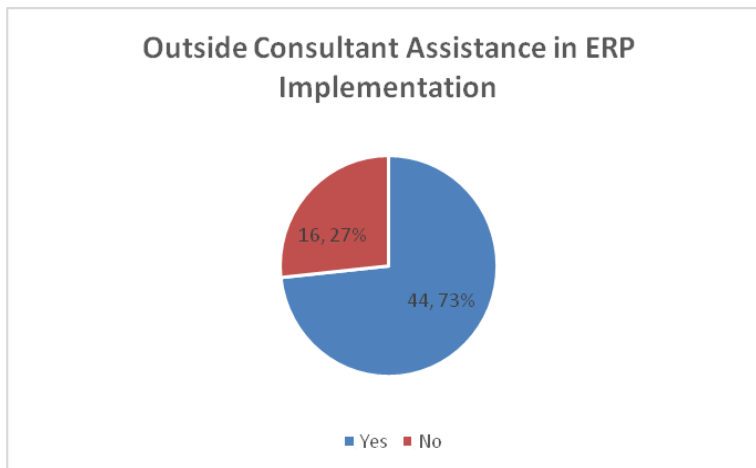


Figure 4.7

Interpretation

The above bar chart shows that 73% of respondents have used the Outside consultant assistance in ERP implementation whereas only 27% of respondents did not use outside consultant assistance for ERP implementation

4.8 Does the ERP System provide the accurate information needed at the right time?

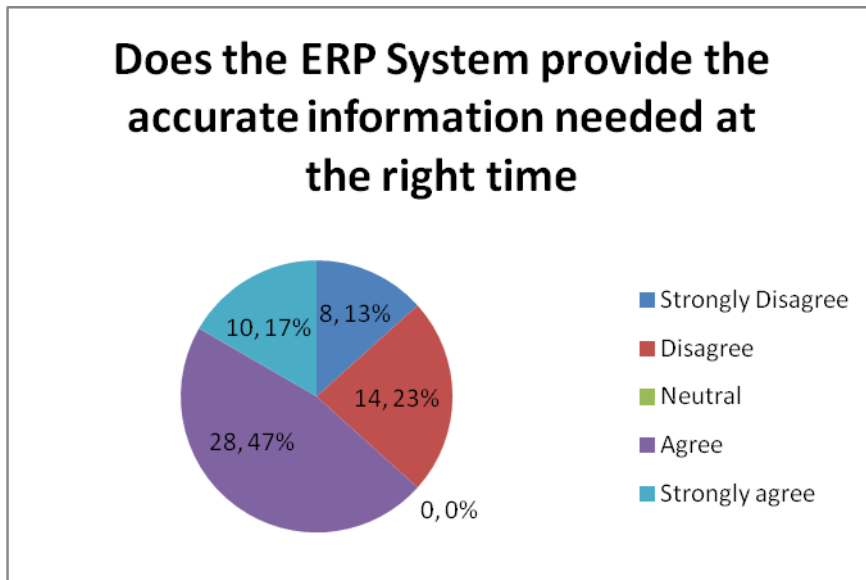


Figure 4.8

Interpretation

The above bar chart shows that 47% of respondents agree that ERP software provides the accurate information at the right time whereas 17% of respondents strongly disagree that ERP software provides the accurate information at the right time.

4.9 Does your ERP Software give your organisation the better collaboration?

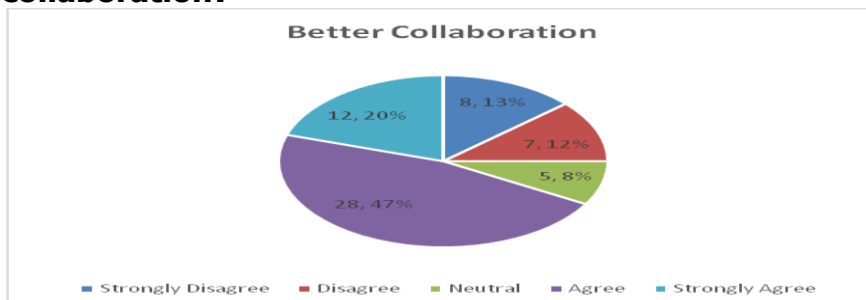


Figure 4.9

Interpretation

The above pie chart shows that 47% of respondents agree that ERP software provides better collaboration among team members. 13% of respondents strongly disagree that ERP software provides better collaboration among team members

4.10 Does your ERP Software give your organisation the Improved Communication?

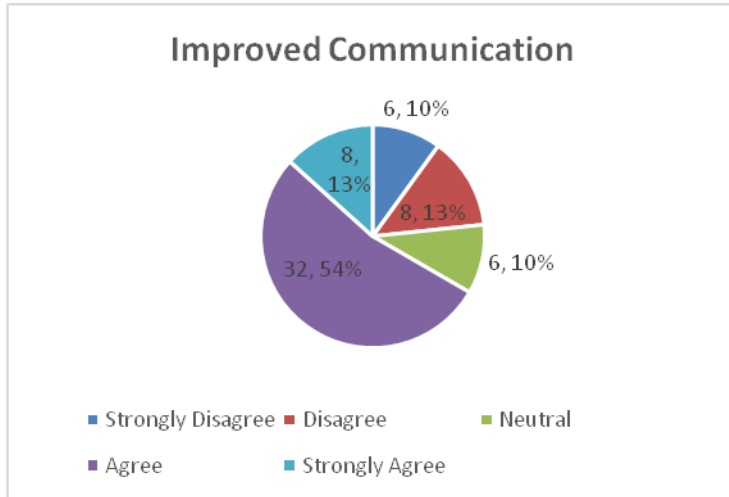


Figure 4.10

Interpretation

The above pie chart shows that 54% of respondents agree that ERP software leads to better communication whereas 10% of respondents strongly disagree that ERP software leads to improved communication.

4.11 Does your ERP software lead to Greater Flexibility?

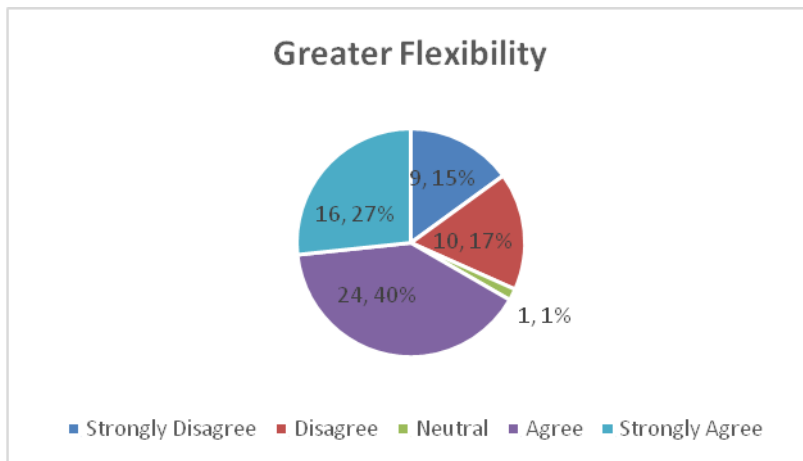


Figure 4.11

Intpretation

The above pie chart shows that 40% of respondents agree atht ERP software provides the greater flexibility in terms of customisation.17% of respondents disagree that ERP software helps to provide greater flexibility.

4.12 Does your ERP software lead to Increased Efficiency in terms of quality and quantity of work?

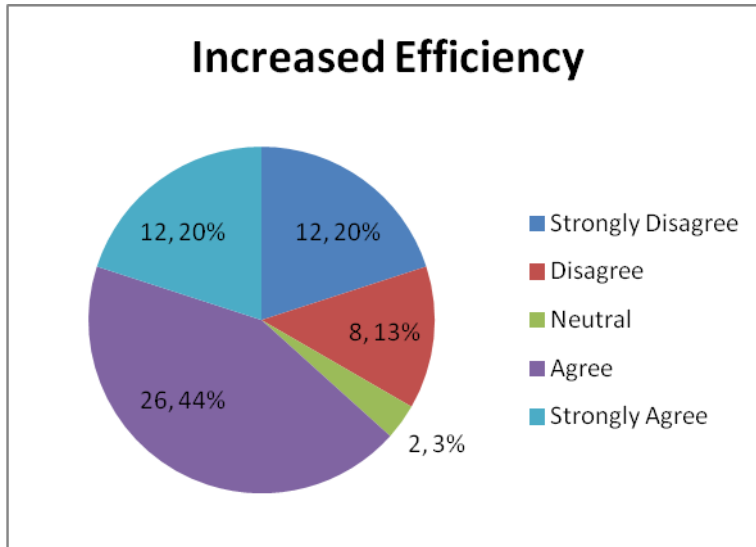


Figure 4.12

Intrepretation

The above pie chart shows that 44% of respondents agree that ERP software leads to increased efficiency whereas 13% of respondents disagree that ERP provides greater efficiency.

4.13 Does your ERP software lead to Reduced Cycle Time?

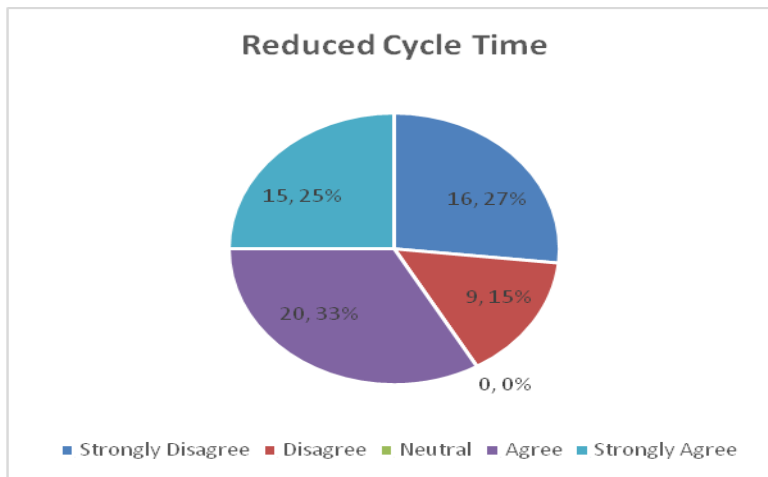


Figure 4.13

Intrepretation

The above pie chart shows that 33% of respondents agree that ERP software leads to reduced cycle time. 27% of respondents strongly disagree that ERP leads to reduced cycle time

4.14 Does your ERP software lead to Lower Operating Cost?

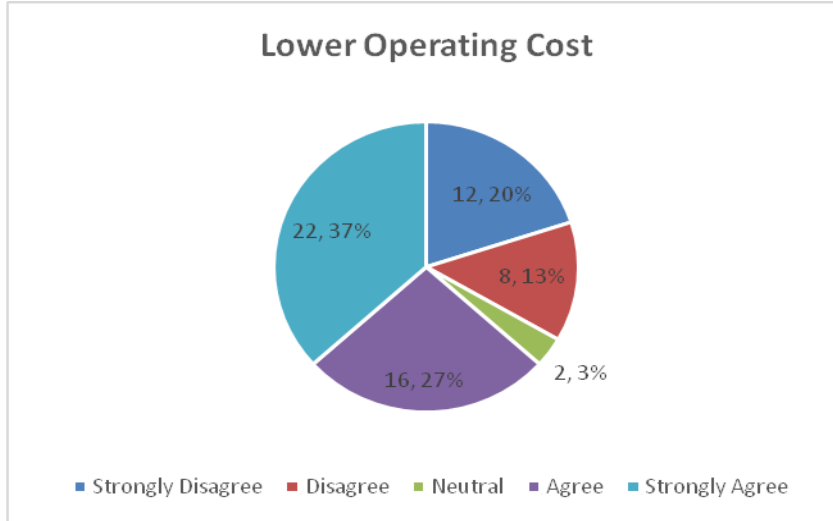


Figure 4.14

Intpretation

The above pie chart demonstrates that 37% of respondents strongly agree that ERP software lowers the operating cost whereas 13% of respondents disagree to it.

4.15 Does your ERP software lead to Increased Revenue?

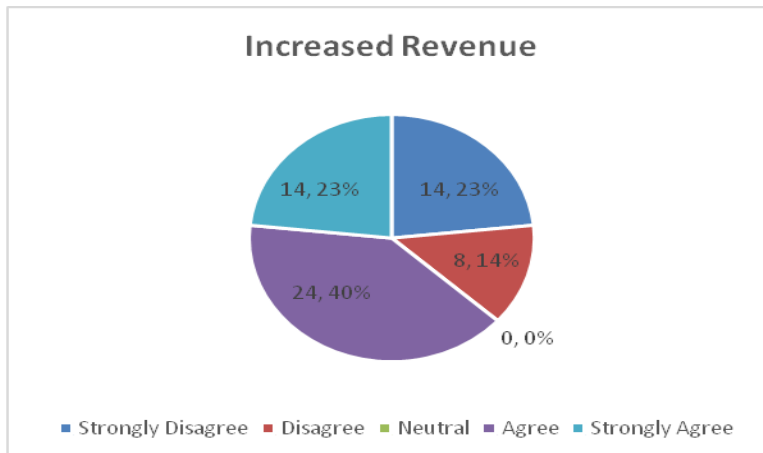


Figure 4.15

Intpretation

The above pie chart shows that 40% of respondents agree that ERP software leads to increased revenue whereas 14% of respondents disagree that ERP software leads to increased revenue

4.16 Does your ERP software lead to Higher Profit Margin?

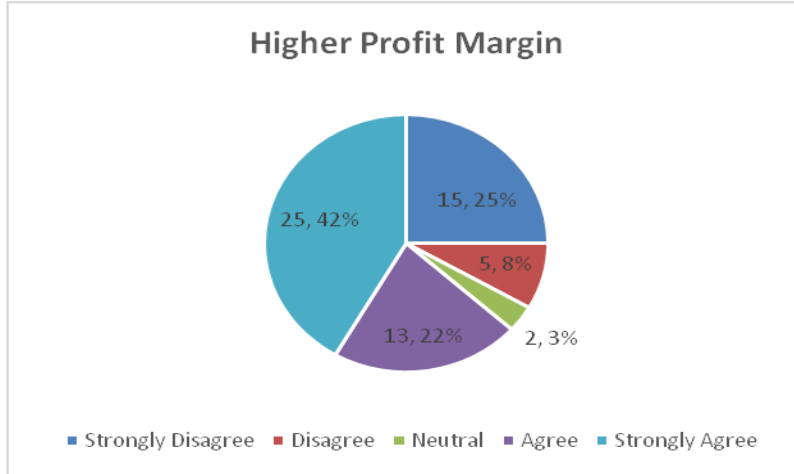


Figure 4.16

Intpretation

The above pie chart shows that 42% of respondents strongly agree that ERP software leads to higher profit margin whereas 25% of respondents strongly disagree that ERP software leads to higher profit margin

4.17 Does your ERP software lead to Improvement in Performance areas with respect to Operations?

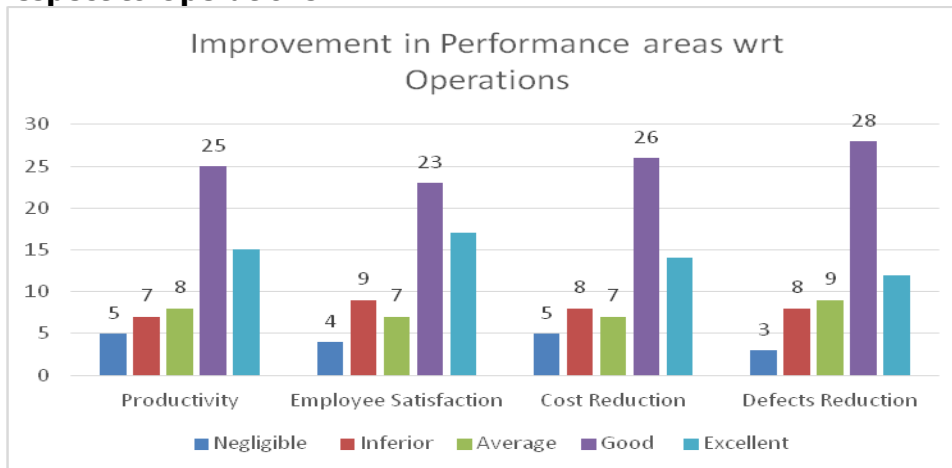


Figure 4.17

Intpretation

The above bar chart shows that 25,23,26 and 28 number of respondents feel that ERP has led to good improvement in Productivity, Employee Satisfaction, Cost Reduction and Defects reduction respectively

4.18 Do you think successful implementation of ERP in a firm add better corporate image?

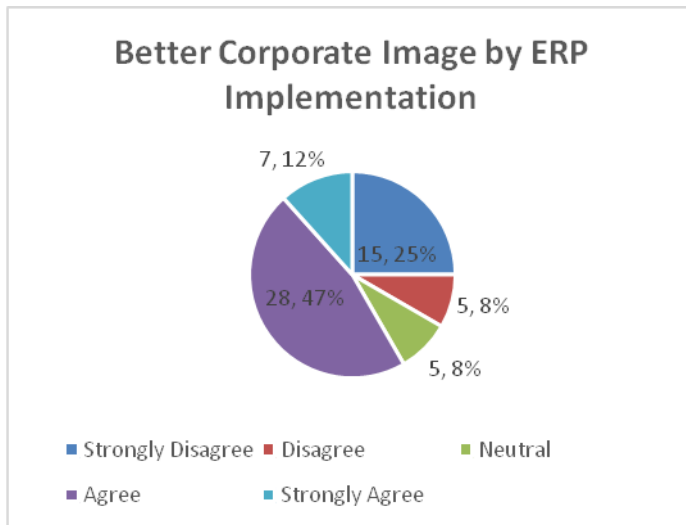


Figure 4.18

Intpretation

The above pie chart shows that 47% of respondent agree that ERP implementation leads to better corporate image whereas 25% of respondents strongly disagree that ERP implementation leads to better corporate image.

4.19 How important is Architecture choices for ERP implementation?

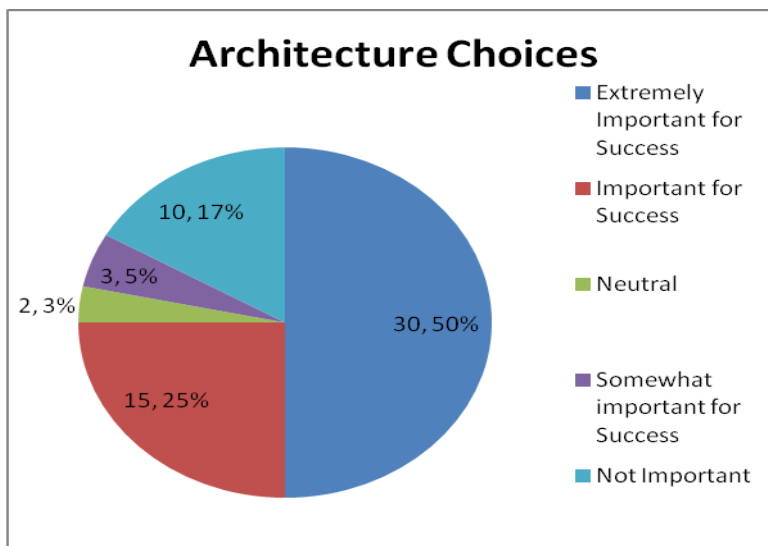


Figure 4.19

Intpretation

The above bar chart shows that 50% of respondents agree that architectural choices is extremely important for success.17% of respondents agree that architectural choice is not important for success.

4.20 How important is Business Process Re-engineering for ERP implementation?

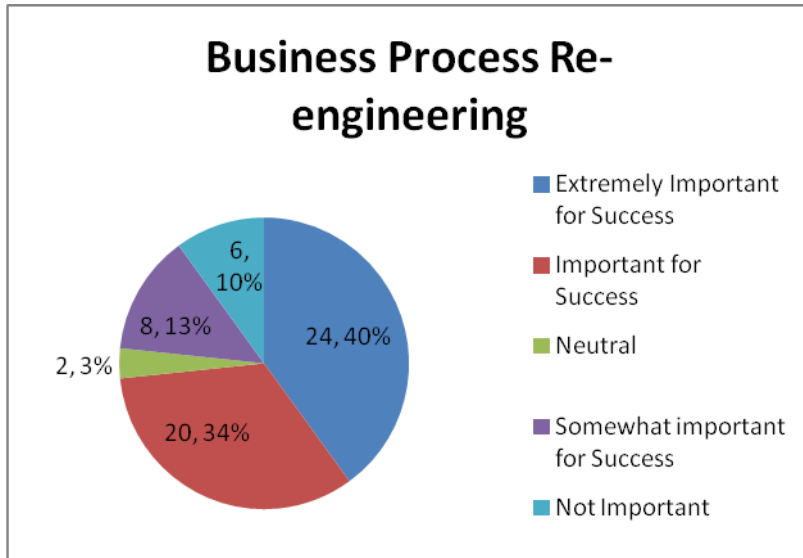


Figure 4.20

Intpretation

The above bar chart shows that 40% of respondents agree that Business Process Re engineering is extremely important for success.10% of respondents feel that Business Process re-engineering is not important for success.

4.21 How important is careful Package Selection?

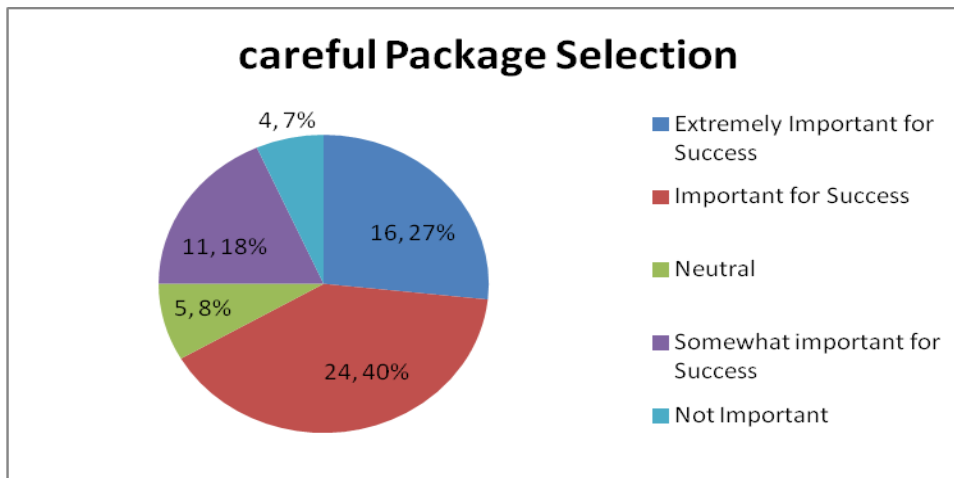


Figure 4.21

Intpretation

The above bar chart shows that 40% of respondents agree that careful package selection is important for ERP implementation whereas 7% of respondents agree that careful Package solution is not important for success.

4.22 How important is Change Management for ERP implementation?

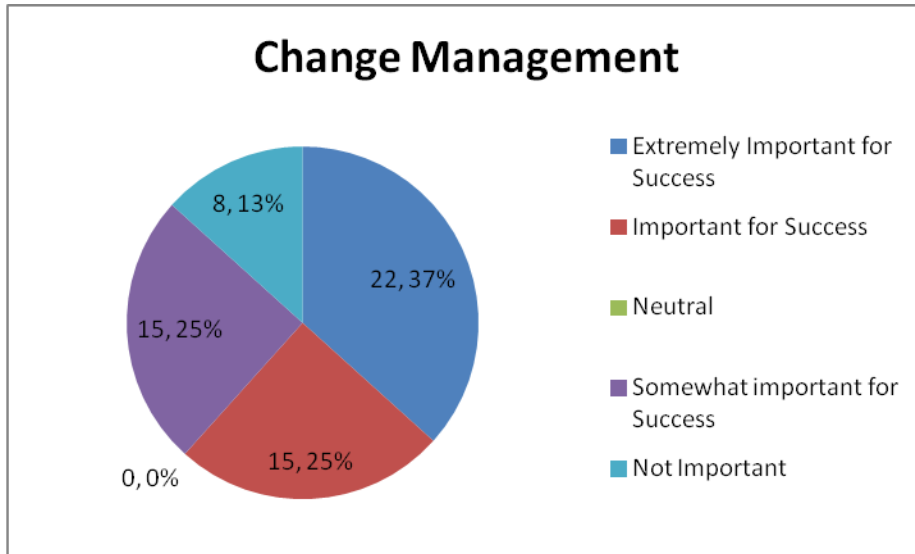


Figure 4.22

Intpretation

The above pie chart shows that 37% of respondents agree that Change Management is extremely important for ERP implementation. 13% of respondents do not agree that Change Management is important for ERP implementation.

4.23 How important is Clear goals and Objectives for ERP implementation?



Figure 4.23

Intpretation

The above pie chart shows that 47% of respondents agree that clear goals and objectives are extremely important for success. Only 3% of respondents do not agree that Clear goals and Objectives are important for ERP implementation.

4.24 How important is Data Analysis and Conversion for ERP implementation?

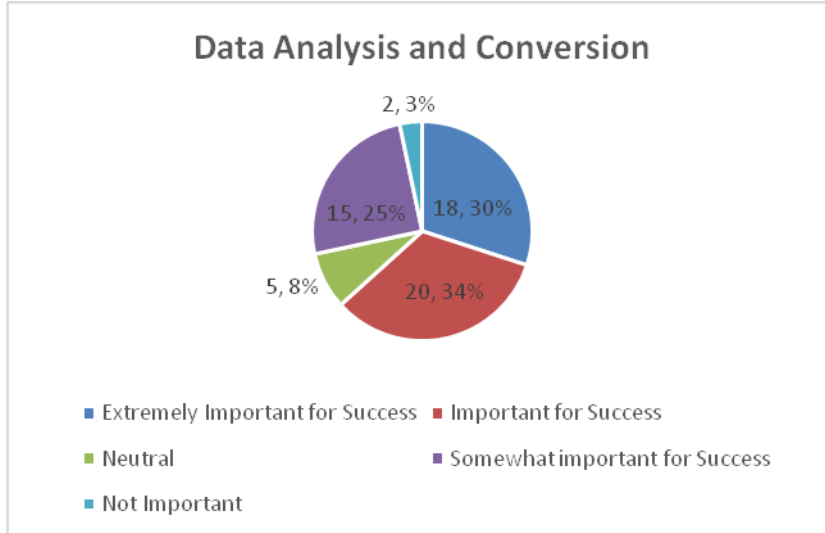


Figure 4.24

Intpretation

The above pie chart shows that 30% of respondents agree that Data Analysis and conversion is extremely important for success. 3% of respondents agree that Data Analysis and conversion is not important for success.

4.25 How important is Dedicated Resources for ERP implementation?

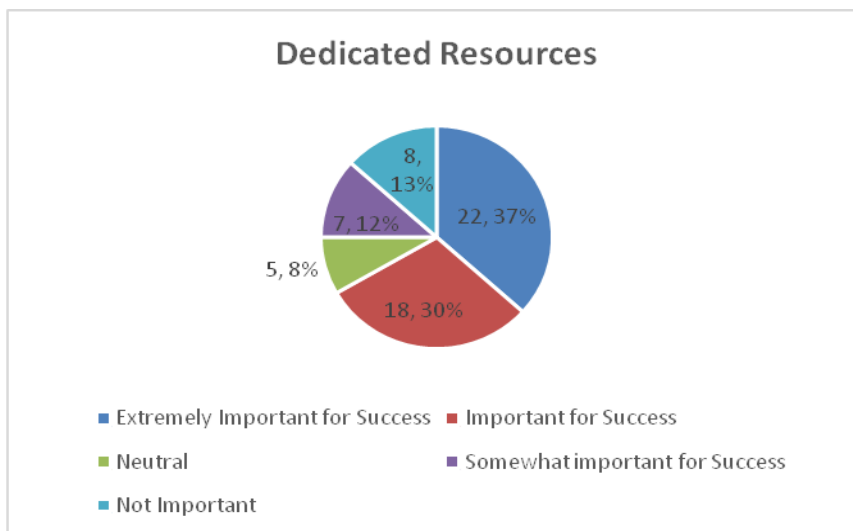


Fig 4.25

Intpretation

The above pie chart shows that 37% of respondents agree that dedicated resources are important for success of ERP implementation. 13% of respondents agree that Dedicated resources are not important for ERP implementation.

4.26 How important is Project Team Competence for ERP implementation?

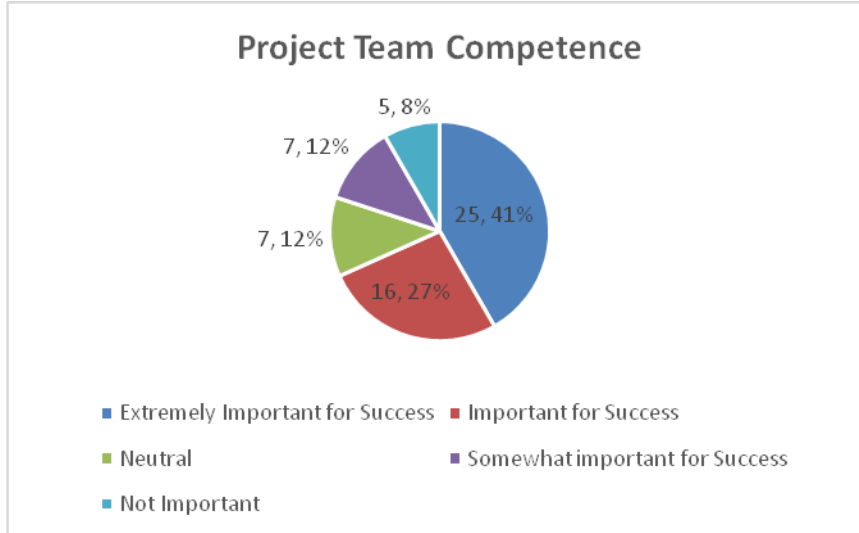


Figure 4.26

Intpretation

The above pie chart shows that 41% of respondents agree that Project Team competence is extremely important for ERP implementation. only 8% of respondents think that Project Team competence is not important for success.

4.27 How important is Vendor Support for ERP implementation?

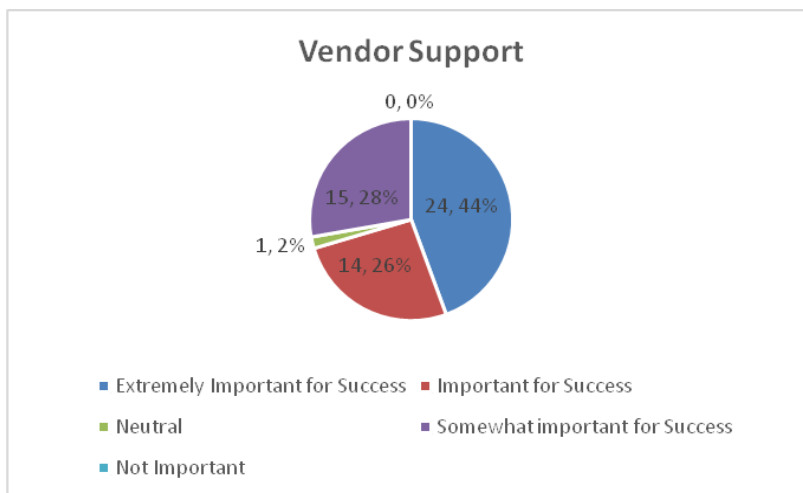


Figure 4.27

Intpretation

The above pie chart shows that 44% of respondents agree that Vendor support is extremely important for success of ERP implementation. 26% of respondents agree that Vendor Support is important for success

4.28 How important is Use of Consultants for ERP implementation?

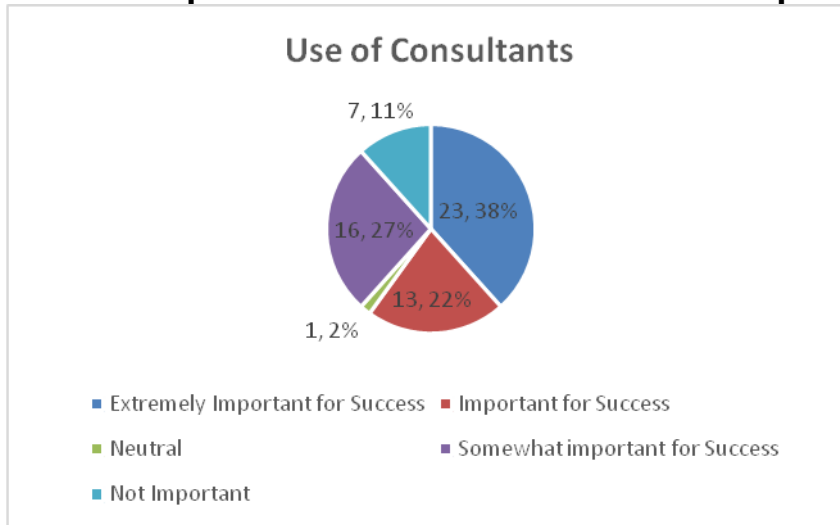


Figure 4.28

Intpretation

The above pie chart shows that 38% of respondents agree that use of consultants is extremely important for success. 11% of respondents feel that use of consultants is not important for success.

4.29 How important is Interdepartmental Co operation for ERP implementation?

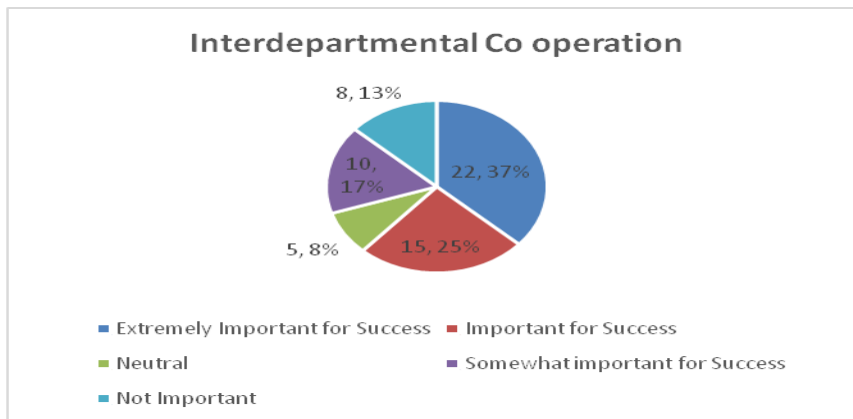


Figure 4.29

Intpretation

The above pie chart shows that 37% of respondents agree that Interdepartmental Co operation is extremely important for ERP implementation. 13% of respondents feel that Interdepartmental co operation is not important for success.

HYPOTHESIS TESTING AND DISCUSSION

4.30 Impact of Business Process Re engineering on ERP Performance

Null Hypothesis: There exists no relationship between business Process Re engineering and Performance enhancement due to ERP implementation

Alternate Hypothesis: There exists positive relationship between business Process Re-engineering and Performance enhancement due to ERP implementation

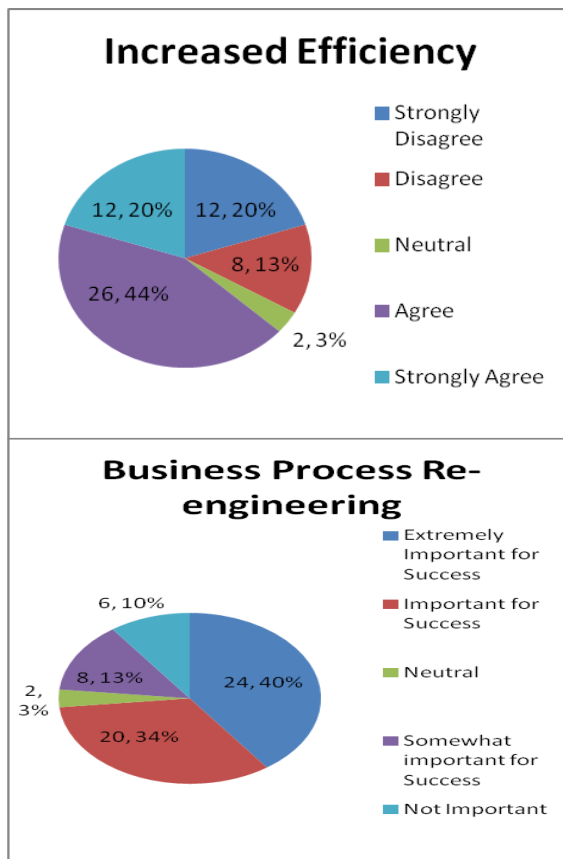


Fig 4.30

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.677	1.056		2.534	.014
	Business Process Re-engineering	.08	.147	.08	.056	.004
a. Dependent Variable: Performance						

Table 4.1

As the significance value for Business Process re engineering is 0.004, the null hypothesis is rejected and there exists a positive relationship between Business Process Re engineering and Performance (Efficiency increase) enhancement due to ERP .

4.31 Impact of Change Management on ERP Performance

Null Hypothesis: Explicit knowledge sharing has no relationship between Change Management and Performance enhancement due to ERP implementation

Alternate Hypothesis: There exists a positive relationship between change management and Performance enhancement due to ERP implementation

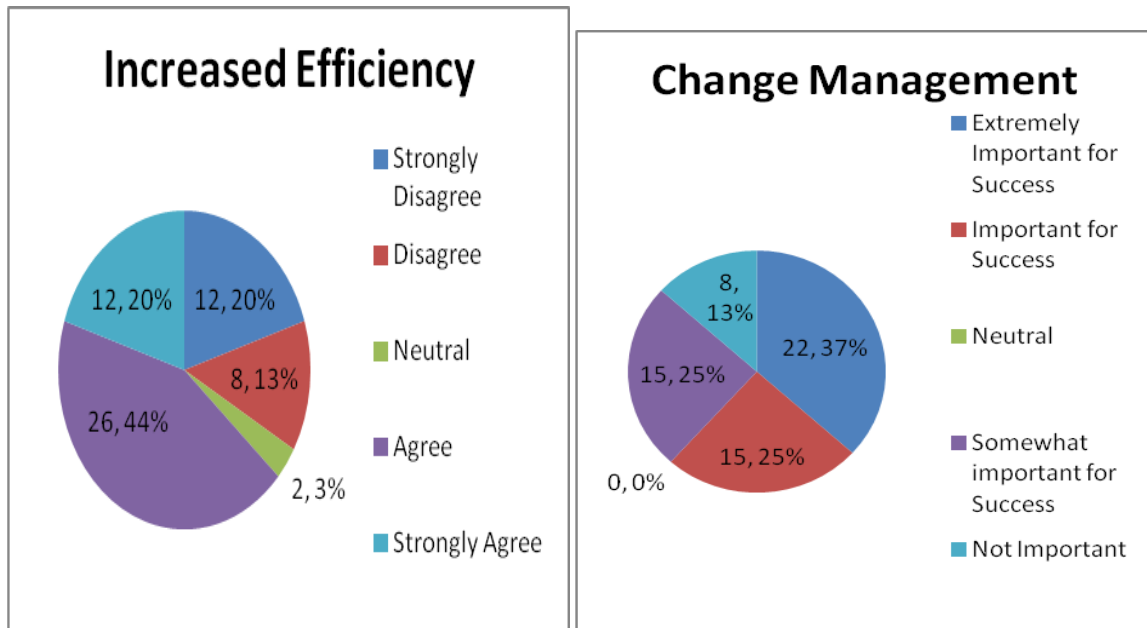


Fig 4.31

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.677	1.056		2.534	.014
	Change Management	.063	.131	.065	.483	.631
a. Dependent Variable: Performance						

Table 4.2

As the significance value of Change Management is 0.631, null hypothesis is accepted and there exists no relationship between Change Management and Performance achieved due to ERP implementation.

4.32 Impact of Data Analysis and Conversion on ERP Performance

Null hypothesis: There exists no relationship between

Data Analysis and Conversion and Performance enhancement due to ERP implementation

Alternate Hypothesis : There exists a positive relationship between Data Analysis and conversion and Performance enhancement due to ERP implementation

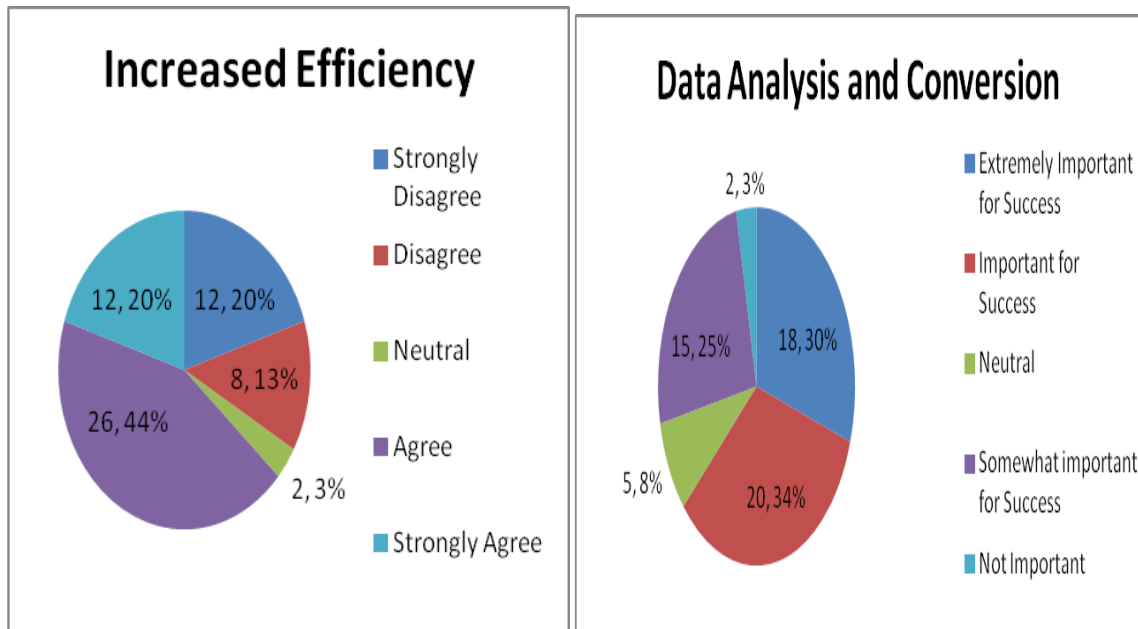


Fig 4.32

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.677	1.056		2.534	.014
	Data Analysis and Conversion	.135	.130	.144	1.036	.003

a. Dependent Variable: Performance				
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Table 4.3

As the significance value of Data Analysis and Conversion is 0.003, null hypothesis is rejected and there exists positive relationship between Data Analysis and Conversion and Performance achieved due to ERP implementation.

4.33 Impact of Architectural choices on ERP Performance

Null hypothesis: No relationship exists between Architectural choices and Performance enhancement due to ERP implementation

Alternate Hypothesis: There exists a positive relationship between Architectural choices and Performance enhancement due to ERP implementation

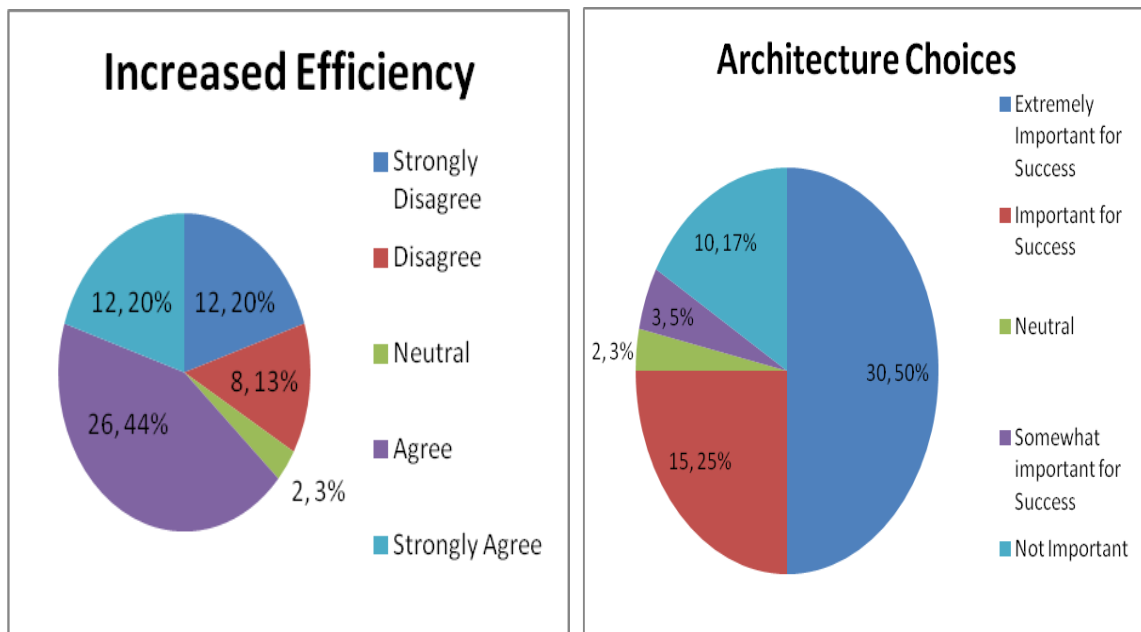


Fig 4.33

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.677	1.056		2.534	.014
	Architectural Choices	.022	.132	.023	.166	.868

a. Dependent Variable: Performance

Table 4.4

As the significance value of Architecture choices is 0.868 after regression analysis, null hypothesis is accepted and there exists no relationship between Architectural choices and Performance achieved due to ERP implementation.

4.34 CONCLUSIONS

- Positive relationship exists between Business Process Re-engineering and Performance enhancement due to ERP Implementation
Performance enhancement due to ERP=2.677 +.08*Business Process Re- engineering.

As the significance value for Business Process re engineering is 0.004, the null hypothesis is rejected and there exists a positive relationship between Business Process Re-engineering and Performance (Efficiency increase) enhancement due to ERP implementation

- No relationship exists between Change Management and Performance enhancement due to ERP Implementation based on regression analysis significance value at 95 confidence interval
Performance enhancement due to ERP=2.677 +.063*Change Management.

As the significance value of Change Management is 0.631, null hypothesis is accepted and there exists no relationship between Change Management and Performance achieved due to ERP implementation.

- Positive relationship exists between Data Analysis and Conversion and Performance enhancement due to ERP Implementation
Performance enhancement due to ERP=2.677 +.135*Data Analysis and Conversion.

As the significance value of Data Analysis and Conversion is 0.003, null hypothesis is rejected and there exists positive relationship between Data Analysis and Conversion and Performance achieved due to ERP implementation.

- No relationship exists between Architecture Choices and Performance enhancement due to ERP Implementation

Performance enhancement due to ERP=2.677 +.135*Architecture Choices.

As the significance value of Architecture choices is 0.868 after regression analysis, null hypothesis is accepted and there exists no relationship between Architectural choices and Performance achieved due to ERP implementation.

4.35 RECOMMENDATIONS

- Before ERP implementation adequate due diligence should be done by studying the issues and benefits obtained from ERP implementation in related organizations.
- Training is very important to getting ready end users to accept new system. A training plan must be defined, bearing in mind the users' know-how, their needs, technology, etc.
- None information system can make miracle spontaneously. Before implementation of every information system including of ERP, improving and customizing processes should be concentrated upon.
- The implementation of ERP packages in organizations should be done in phases, and subsequent implementation should be done based on success of individual phase
- In-depth requirement analysis should be performed so as to ensure that both the pain points as well as core functionalities which exist today should be achievable by ERP implementation
- ERP software implemented should ensure that paper work is minimized and repetitive work is automated to maximum possible extent

- Robust Solution design should be put in place after taking viewpoints from all stakeholders and users of IT systems
- A thorough study of ERP system should be done where ERP is implemented and cost benefit analysis should be carried out by the organizations before implementing ERP
- The ERP Software should be tested extensively by end users to check performance issues and ensure that all required functionality is met
- Ensure that Vendor support is available for ERP software and any issues found should be resolved within time bound Service level agreements

4.36 LIMITATIONS OF STUDY

- This study focuses on few of critical factors in success of ERP implementation in organizations for hypothesis testing
- Because of cross sectional design of study , no causes and effects could be established
- The sample size comprised of only sixty respondents and the sampling technique is based on convenience sampling, so sample is no true representation of the entire population
- This study is restricted to only ERP implemented companies
- Research is conducted at Delhi-NCR region only

REFERENCES

ERP Selection Methodology

<http://www.aggregata.com/pdfs/IS%202006%20doc.pdf>

Vendor Analysis

<http://www.180systems.com/articles-and-research/best-practice/software-selection-methodology/>

What is ERP?

<http://www.netsuite.com/portal/resource/articles/erp/what-is-erp.shtml>

Literature review

http://en.wikipedia.org/wiki/Enterprise_resource_planning

Basic ERP Features

<http://erppandit.com/erp-features.html>

Business Value of ERP

<http://revistaie.ase.ro/content/56/19%20-%20Avram.pdf>

Advantages and disadvantages of ERP

<http://www.excitingip.com/2010/advantages-disadvantages-of-erp-enterprise-resource-planning-systems/>

Reaping ERP benefits

<http://www.greenbeacon.com/GreenBeaconWebsite/Microsoft-CRM-ERP-Solutions/EnterpriseResourcePlanningERP.aspx>

Consideration for ERP implementation Requirement Analysis

<http://www.180systems.com/articles-and-research/best-practice/software-selection-methodology/>