

# **A STUDY OF ERP IMPLEMENTATION IN SELECT INDUSTRIES**

**A Thesis submitted to Gujarat Technological University**

**For the Award of**

**Doctor of Philosophy**

**in**

**Management**

**By**

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**(Enrolment No. 119997392027)**

**Under the Supervision of**

**Prof. (Dr.) Rajesh Khajuria**



**GUJARAT TECHNOLOGICAL UNIVERSITY  
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## ABSTRACT

**Background:** Enterprise Resource Planning (ERP) systems have been implemented in most organizations for a few years. ERP solutions go through three phases of lifecycle: Selection, Implementation & Operation phase; the operation phase consists of the Stabilization stage and the Routine stage. Experience with ERP solutions in numerous organizations over the last decade indicates that successful implementation of ERP solutions does not necessarily lead to successful ERP usage. ERP systems offer benefit to organizations only to the extent that users accept and utilize them frequently and extensively. To improve the efficiency and effectiveness of ERP systems in their maturity stage of use, organizations need to understand the factors that impact user satisfaction.

Technology Acceptance Model (TAM) proposed by Davis (1989) has been widely used and it is well known that it can enhance understanding of the influences that increase the efficiency and effectiveness of ERP system in use. The literature shows that few published studies have examined users' adoption of ERP systems through a Technology Acceptance Model or examined external factors that have influence on the intention to use an ERP system, or ERP use in the stabilization stage.

**Aim:** The aim of this PhD research was to expose and research external factors which have influence on ERP users in the operation phase of ERP lifecycle and to investigate the impact of those factors on the use of ERP system.

**Research Methodology:** The research design for my study was primarily exploratory and descriptive in nature. It was exploratory because at the first stage it involved the provision of insights into the research topic and comprehension of the problem situation. This led me to formulate the research problem, develop the objectives of the study, isolate the key parameters of the study and plan the future course of action. The descriptive research attempts to describe systematically a situation, problem, phenomenon, service or programme; it also describes the characteristics of the respondents and the degree of association or relationship between the variables being studied. Total 5 industries were taken which were Engineering, Pharma, Chemicals, Bearing & Tyre and in each industry two companies were studied. For the purpose of this study, as the researcher was not having Sampling Frame, so Non-probabilistic

Convenient Sampling was employed. The total responses collected by the researcher were 537, but as some of the questionnaires were not properly filled, the sample size reduced to 508. Frequency distribution, Cross tabulation, Cronbach-Alpha test, Mann-Whitney test, Kruskal-Wallis test, Confirmatory Factor Analysis and Structural Equation Modeling have been used to research external factors which have influence on ERP users in the operation phase of ERP lifecycle and to investigate the impact of those factors on ERP system use.

**Results:** Examination of the path coefficients and the significance level between the constructs in the model were used to test the hypotheses. Organizational Process Characteristics dimension has a positive significant relationship with ERP Ease of Use. ERP Usefulness & ERP Ease of Use has a positive significant relationship with Attitude to ERP System.

**Conclusion:** The present research enhances our understanding of how multiple external factors can impact attitudes about ERP systems in the routine stage by incorporating three groups of external factors: PCIL, STC and OPC. One important contribution of this research is the identification of the external factors for the improvement of the efficiency and effectiveness of ERP use and the presentation of the impact of OPC and STC on attitude towards using ERP system in the organization.

**Scope for future research:** Future research can be done to identify the clusters based on ERP usage, to carry out the Correspondence Analysis between type of industries and external factors, to discriminate the industries based on external factors etc.

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**Rohadia Sameer Krishnadan**

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## List of Abbreviations

APICS	American Production & Inventory Control Society
ASEAN	Association of South East Asian Nations
BOM	Bill of Materials
CRM	Customer Relationship Management
CRP	Capacity Requirements Planning
CSF	Critical Success Factor
EERP	Extended Enterprise Resource Planning
EOQ	Economic Order Quantity
EPM	Enterprise Performance Management
ERP	Enterprise Resource Planning
FMCG	Fast Moving Consumer Good
GDP	Gross Domestic Product
MNC	Multi-National Company
MPS	Master Production Schedule
MRP	Material Requirement Planning
MRP II	Manufacturing Resource Planning
OEM	Original Equipment Manufacturer
OPC	Organizational Process Characteristics
PCIL	Personal Characteristics & Information Literacy
PEOU	Perceived Ease of Use
PU	Perceived Usefulness
RPG	R. P. Goenka
SAP	Systems, Applications & Products in Data Processing
SCM	Supply Chain Management
STC	System & Technological Characteristics
TAM	Technology Acceptance Model
WHO	World Health Organization

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# CHAPTER – 1

## INTRODUCTION

### 1.1 Preamble

In today's fiercely competitive business environment, there has to be much greater interaction between the customers and manufacturers. This means that, in order to produce goods tailored to customer requirements and provide faster deliveries, the enterprise must be closely linked to both suppliers and customers. In order to achieve this improved delivery performance, decreased lead times within the enterprise and improved efficiency and effectiveness, manufacturers need to have efficient planning and control systems that enable very good synchronization and planning in all the processes of the organization. Today, however the challenge is intense and requires a strong integration across the value chain. Enterprise Resource Planning [ERP] is such a strategic tool, which equips the enterprise with the necessary capabilities to integrate and synchronize the isolated functions into streamlined business processes in order to gain a competitive edge in the turbulent business environment.

The power of enterprise systems found in the business sector was discussed in Thomas Friedman's best-selling book "The World Is Flat: A Brief History of the Twenty-first Century" (2005). In his examination of economic globalization, Friedman explained how the global information infrastructures, including ERP, have "flattened" or standardized organizational data so that organizations world-wide can link into complex global supply chains from factories in China, to call centers in Bangladesh, to consumers in Jacksonville, Florida. The size and scope of such globally linked infrastructures has brought about a global "democratization" (Friedman, 2008). As Friedman noted, "more people grew out of poverty faster" as a result of the global integration of markets (2008, p. WKIO). Though enterprise systems can be described as a panacea for improving market standardization and globalization, such global economic infrastructure also has the ability to facilitate world-wide financial crises.

## 1.2 Evolution of ERP

Enterprise resource planning (ERP) has evolved as a strategic tool, an outcome of over four decades. This is because of continuous improvements done to the then available techniques to manage business more efficiently and also with developments and inventions in information technology field.

Prior to 1960s businesses generally relied on traditional ways of managing inventories to ensure smooth functioning of the organizations. These theories are popularly known as “*Classical Inventory Management or Scientific Inventory Control Methods*”. Most popularly used among them were Economic Order Quantity (EOQ); Bill of Material (BOM) etc. However these systems had very limited scope.

ERP system has evolved from the Material Planning System of 1980’s. There are various phases through which this evolution process has gone through. The various phases of development of resource planning system in relation to time and evolution of concept of ERP as shown in Figure 1.1.



**FIGURE 1.1 Evolution of ERP**



- ❖ **Material Requirements Planning (MRP):** MRP was an outgrowth of bill of material (BOM) processing. MRP began its life in the 1960s and became prominent in the 1970s. This technique fundamentally explodes the end product demand obtained from the Master Production Schedule (MPS) for a specified product structure (which is taken from Bill of Material) into a detailed schedule of purchase orders or production orders taking into account the inventory on hand. MRP is a simple logic but the magnitude of data involved in a realistic situation makes it computationally cumbersome. If undertaken manually, the entire process is highly time consuming. It therefore becomes essential to use a computer to carry out the exercise.

MRP proved to be a very good technique for managing inventory, but it did not take into account other resources of an organization. In 1970s, this gave birth to a modified MRP logic, popularly known as Closed Loop MRP. In this technique, the capacity of the organization to produce a particular product is also taken into account by incorporating a module called Capacity Requirements Planning (CRP). Hence, a feedback loop is provided from the CRP module to MPS if there is not enough capacity available to produce.

- ❖ **Manufacturing Resource Planning (MRP-II):** In 1980s, the need was felt to integrate the other resources of a manufacturing organization (Davenport, 2000). Hence, evolved an integrated manufacturing management system called Manufacturing Resources Planning (MRP-II). MRP-II has been defined by APICS as:

*“It is a method for effective planning of all the resources of manufacturing company. Ideally it addresses operational planning in units, financial planning in dollars and has a simulation capability to answer ‘what-if’ questions. It is made up of a variety of functions each linked together: Business Planning, Production Planning, Master Production Scheduling, Material Requirements Planning, Capacity Requirements Planning and the execution system for capacity and priority. Outputs from these systems would be integrated with financial reports, such as the business plan, the purchase commitment report, shipping, budget, inventory production, etc.”*

The Manufacturing Resource Planning suffered from a few drawbacks, like it assumed the lead times to be fixed, the capacity to be infinite, the batch sizing concept, etc. Over the years, other tools had evolved to automate the manufacturing management process like Computer Aided Design, Computer Aided Manufacturing, Computer Integrated Manufacturing, Customer Oriented Manufacturing Management System, etc.

- ❖ **Enterprise Resource Planning (ERP):** The shortcomings of MRP-II and the need to integrate these new techniques, led to the development of a total integrated solution called Enterprise-wide Resource Planning (ERP). The fundamentals of ERP are the same as that of MRP-II. However, the enterprise software makes ERP a set of business processes that is broader in scope, is capable of dealing with more business functions and has a better and tighter integration with the finance and accounting functions. The ERP system is also capable of integrating with other tools like Customer Relationship Management (CRM), Supply Chain Management (SCM) and so on, thereby supporting businesses across company boundaries.

The primary purpose of implementing ERP is to run the business efficiently and effectively in this brutally competitive and rapidly changing business environment. ERP is an enterprise-wide set of forecasting, planning and scheduling tools, which links customers and suppliers into a complete supply chain, employs proven processes for decision-making and coordinates sales, marketing, operations, logistics, purchasing, finance, product development and human resources. Its goals include high-levels of customer service, productivity, cost reduction and inventory turnover and it provides the foundation for effective supply chain management and e-commerce.

- ❖ **Extended Enterprise Resource Planning (EERP or ERP-II):** ERP-II was coined in 2000 in an article by Gartner Publications entitled *ERP Is Dead - Long Live ERP II*. It describes web-based software that provides real-time access to ERP systems to employees and partners (such as suppliers and customers). The ERP-II role expands traditional ERP resource optimization and transaction processing. Rather than just manage buying, selling, etc. – ERP II is more flexible

than the first generation ERP. Rather than confine ERP system capabilities within the organization, it goes beyond the corporate walls to interact with other systems.

### **1.3 Definitions of ERP**

Researchers and practitioners have defined ERP in many different ways. Minahan (1998) defines ERP as a complex software system that ties together and automates the basic processes of a business. ERP has been defined by various authors but with few differences.

Kumar et al. (2000) define enterprise resource planning (ERP) systems as “configurable information systems packages that integrate information and information-based processes within and across functional areas in an organization”.

Al-Mashari and Zairi (2000) states that ERP represent an optimal enterprise-wide technology infrastructure. The basic architecture of an ERP system builds on one database, one application, and a unified interface across the entire enterprise.

Nah et al. (2001) defines ERP as “An enterprise resource planning (ERP) system is typically defined as a packaged business software system that facilitates a corporation to manage the efficient and effective use of resources (materials, human resources, finance, etc.) by providing a total integrated solution for the organization’s information processing requests, through a process-oriented view consistent across the company.”

Wallace and Kremzar (2001) describes ERP as an enterprise- wide set of management tool that balances demand and supply, containing the ability to connect customers and suppliers into a complete supply chain, employing proven business processes for decision making and providing high degree of cross functional integrations among sales, marketing, manufacturing, operations, logistics, purchasing, finance and new product development and human resources, thereby enabling people to run their business with high level of customer service and productivity and simultaneously lower cost and inventories; and providing the foundation for effective e-commerce.

It is seen that with passage of time the definition of ERP has undergone changes as these systems were further extended to include inter-firms activities through

integration of front-office and back-office business applications such as supply chain management and customer relation management.

### **1.4 Advantages of ERP**

According to Gupta (2000), installing an ERP system has many advantages – both direct and indirect. The direct advantages include business integration for better decision-making, reduced inventory, improved sales and customer service, etc. The indirect benefits include better corporate image, improved customer goodwill, customer satisfaction and so on.

- **Business integration:** The first and the most important advantage lie in the promotion of integration. The reason ERP packages are called integrated is the automatic data up gradation between related business components, since conventional company information systems were aimed at the optimization of independent business functions in business units, almost all were weak in terms of the communication and integration of information that transcended the different business functions in the case of large companies in particular, the timing of system structure and directives differs from each product and department / functions and sometimes they are disconnected. For this reason, it has become an obstacle in the shift to new product and business classification. In the case of ERP packages the data of related business functions is also automatically updated at the time a transaction occurs. For this reason, one is able to grasp business details in real time, and carry out various types of management decisions in a timely manner based on that information.
- **Flexibility:** The second advantage of ERP packages is their flexibility. Diverse multi functional environments such as language, currency, accounting standards and so on are covered in one system and functions that comprehensively managed multiple locations that span a company are packaged and can be implemented automatically. To cope with company globalization and system unification, this flexibility is essential, and one could say that it has major advantages, not simply for development and maintenance, but also in terms of management.
- **Better analysis and planning capabilities:** Yet another advantage is the boosting of planning type functions. By enabling the comprehensive and unified

management of related business and its data, it becomes possible to fully utilize many types of decision support systems and stimulation systems. Furthermore, since it becomes possible to carry out flexibility and in real time the feeling and analysis of data from a variety of dimensions, one is able to give decision makers the information they want, thus enabling them to make better and informed decisions.

- **Use of latest technology:** The fourth advantage is the utilization of latest developments in information technology (IT). The ERP vendors were very quick to realize that in order to grow and to sustain that growth: they have to embrace the latest developments in the field of information technology. So they quickly adopted their systems to take advantages of the latest technologies like open systems, client server technology, internet/ intranet, computer aided acquisition and logistics support, electronic commerce etc. It is this quick adaptation to the latest changes in information technology that makes the flexible adaptation to changes to future business environments possible. It is this flexibility that makes the incorporation of the latest technology possible during the system customization, maintenance and expansion phases.
  
- **Reduced inventory and inventory carrying cost:** The manufacturing nature of many ERP users makes the issue of process and material costs savings paramount. The main factor behind these savings is that implementation of the ERP system allows customers to obtain information on cost, revenues and margins, which allow it to better, manage its overall material cost structure. This ability to manage costs is best seen in savings that organizations can obtain in their inventory systems. Customers can perform a more complete inventory planning and status checking with the ERP system. These checks and plans reveal existing surpluses or shortages in supplies. Improved planning and scheduling practices typically lead to inventory reductions to the order of 20 per cent or better. This provides not only a one time reduction in assets (cost of the material stocked), but also provides ongoing savings of the inventory carrying costs. The cost of carrying inventory includes not only interest but also the costs of warehousing, handling, obsolescence, insurance, taxes, damage and shrinkage.

- **Reduced manpower cost:** Improved manufacturing practices lead to fewer shortages and interruptions and to less rework and overtime. Typical labor savings from a successful ERP system are a 10 per cent reduction in direct and indirect labor costs. By minimizing rush jobs and parts shortages, less time is needed for expediting, material handling, extra setups, disruptions and tracking splits lots odd jobs that have been set aside. Production supervisors have better visibility of required work and can adjust capacity or loads to meet schedules. Supervisors have more time for managing, directing and training people. Production personnel have more time to develop better methods and improve quality.
- **Reduced material costs:** Improves procurement practices lead to better vendor negotiations for prices, typically resulting in cost reductions of 5 per cent or better. Valid schedules permit purchasing people to focus on vendor negotiations and quality improvements rather than spending their time on shortages and getting material at premium prices. ERP systems provide negotiation information, such as projected material requirements by commodity group and vendor performance statistics. Giving suppliers better visibility of future requirements help them achieve efficiencies that can be passed on as lower material costs.
- **Improves sales and customer service:** Improved coordination of sales and production leads to better customer service and increased sales. Improvements in managing customer contacts, making and meeting delivery promises, and shorter order to ship lead times, lead to higher customer satisfaction, goodwill and repeat orders. Sales people can focus on selling instead of verifying or apologizing for late deliveries. In custom product environment, configurations can be quickly identified and prices, often by sales personnel or even the customer rather than the technical staff. Taken together, these improvements in customer service can lead to fewer lost sales and actual increase in sales, typically 10 per cent or more. ERP systems also provide the ability to react to changes in demand and to diagnose delivery problems. Corrective actions can be taken early such as determining shipment priorities, notifying customers of changes to promise delivery dates, or altering production schedules to satisfy demand.
- **Efficient financial management:** Improves collection procedures can reduce the number of days of outstanding receivables, thereby providing additional available

cash. Underlying these improvements is fast, accurate invoice creation directly from shipment transactions, timely customer statements and follows through on delinquent accounts. Credit checking during order entry and improved handling of customer inquires further reduces the number of problem accounts. Improved credit management and receivable practices typically reduce the days of outstanding receivables by 18 per cent or better. Trade credit can also be maximized by taking advantage by supplier discounts and cash planning, and paying only those invoices with matching recipients. This can lead to lower requirements for cash-on-hand.

The benefits from ERP come in three different forms i.e. in the short-term, medium-term and long-term. When initially implemented, in a year of the organization going live with ERP, it helps in streamlining the operational areas such as purchase, production, inventory control, finance and accounts, maintenance, quality control, sales and distribution, etc. This benefit is in form of ‘automating’ the transactions which promises accuracy, reliability, availability and consistency of data.

### 1.5 Disadvantages of ERP

- The **cost** of ERP Software, planning, customization, configuration, testing, implementation, etc. is too high.
- ERP deployments are highly time-consuming – projects may take **1-3 years** (or more) to get completed and fully functional.
- Too little **customization** may not integrate the ERP system with the business process & too much customization may slow down the project and make it difficult to upgrade.
- The **cost savings / payback** may not be realized immediately after the ERP implementation & it is quite difficult to measure the same.
- The **participation** of users is very important for successful implementation of ERP projects – hence, exhaustive user training and simple user interface might be critical. But ERP systems are generally difficult to learn (and use).

- There may be additional **indirect costs** due to ERP implementation – like new IT infrastructure, upgrading the WAN links, etc.
- **Migration** of existing data to the new ERP systems is difficult (or impossible) to achieve. Integrating ERP systems with other stand alone software systems is equally difficult (if possible). These activities may consume a lot of time, money & resources, if attempted.
- ERP implementations are difficult to achieve in **decentralized organizations** with disparate business processes and systems.
- Once an ERP system is implemented it becomes a **single vendor lock-in** for further upgrades, customizations etc. Companies are at the discretion of a single vendor and may not be able to negotiate effectively for their services.
- **Evaluation** prior to implementation of ERP system is critical. If this step is not done properly and experienced technical/business resources are not available while evaluating, ERP implementations can (and have) become a failure.

## 1.6 ERP Implementation Life Cycle

Like any other project the ERP implementation also has to go through different implementation phases. There are no clear separating lines between these phases and in many cases one phase will start before the previous is complete. Although these phases may seem very linear and distinct from each other, but in real, throughout the actual implementation, the phases are in fact quite fluid. Some companies opt for one and only one ‘Big Bang’, while other companies favor sequential roll out, the life cycle phases are the same.

- |                              |   |
|------------------------------|---|
| a) Pre- evaluation screening | g) Implementation team training                     |
| b) Package evaluation        | h) Testing  |
| c) Project planning phase    | i) Going live                                       |
| d) Gap analysis              | j) End user training                                |
| e) Reengineering             | k) Post implementation (operations and maintenance) |
| f) Customization             |   |



## 1.7 ERP Market in India

In India, the need for ERP was felt soon after liberalization of the economy in the early 1990s. Indian companies realized the importance of customer focus, improving the speed of delivery and cost competitiveness to compete with MNCs. In the face of such competition, companies needed to proactively work on building their capabilities and competencies to stay ahead. They needed to competitively differentiate themselves from the rest of the industry. To help them to respond quickly to the dynamic market conditions, they looked towards Enterprise Business Solutions.

The Indian ERP market received a boost when the market leader SAP announced its plan to invest \$125 million in Indian operations in 2001 (Business Line, 2001). JD Edward's, another ERP vendor, followed suit and announced plans to set up a 100% subsidiary in India by early 2002 to enter the Indian Market. According to industry analysts, the growth of e-business provided a fillip to the ERP market. Indian companies were looking for an ERP solution that incorporated e-business elements such as CRM and SCM. This was provided for by ERP II solutions (Subhadra, 2002).

The total cost of ownership of an ERP dropped significantly with vendors offering country specific localization, besides a large pool of skilled functional and technical talent available. It was observed that awareness about the concept of ERP increased with the employee size of an organization - it was highest in the services segment, and among large organizations. The awareness level about ERP was the highest in the IT/Software segment (Subhadra, 2002).

In India companies both in the public and private sectors, have successfully implemented ERP and are reaping the benefits. Manufacturing firms in India were the earliest to embrace ERP systems, closely followed by FMCG, automotive, steel, oil, textile and pharma companies. Companies like TISCO, TELCO, Nestle, Reliance, Godrej, Larsen & Toubro, HLL, Maruti, BPCL, IOCL, Coke, Pepsi, ITC, P&G, Shoppers' Stop and Mahindra & Mahindra were some of the major companies who decided to implement an ERP system.(Jaiswal, 2003; Subhadra, 2002). Some of the highly successful ones were BPCL, IOCL, Godrej and Mahindra and Mahindra (Jaiswal, 2003).

### **1.7.1 SAP**

SAP AG is the world leader in enterprise software and software-related services in terms of revenue. Its headquarters is in Walldorf, Germany, with locations in more than 130 countries including India and the USA. It was founded in Germany in 1972 by five former IBM employees and now has more than 78,200 employees. SAP is an acronym for Systems, Applications and Products in data processing. SAP R/3 is the flagship ERP product of the company. It supports multi-languages, currencies, financial calendars, financial reporting and tax laws. It claims that the best business practices have been implemented in their solutions for each industry. SAP has installations in more than 190 countries with 3,10,000 customers and is the world's largest business software company and the world's third largest independent software provider overall. There are 12 modules and 72 sub-modules in SAP ERP, and there are close to 20,000 tables to define the data requirements of an organization. Other systems such as CRM, SCM and business intelligence can be integrated to SAP ERP. It releases new versions of ERP on regular intervals to incorporate changes in the regulations and business practices.

### **1.7.2 ORACLE**

Oracle was founded in 1977 and was focused on providing relational database management system. In 1988, Oracle entered ERP market starting with accounting system and eventually building and releasing e-Business suite that consists of ERP, SCM and CRM. Turnover of Oracle Corporation is close to US\$37 billion. Oracle, just like SAP offers industry-specific solutions. It offers ERP solutions for more than 20 industries. Headquartered in Redwood Shores, California, Oracle is the first software company to implement the Internet computing model for developing and deploying enterprise software across its entire product line: databases and relational servers, application development and decision support tools, and enterprise business applications. In addition to providing the best applications, Oracle's primary goal is the preservation of customer investments. Through acquiring Siebel and PeopleSoft, Oracle have demonstrated its commitment to becoming a true technology partner and bringing together the best and the brightest industry talent and state-of-the-art products.

### **1.7.3 ORACLE'S PEOPLESOFT**

PeopleSoft Inc. was established in 1987 with a focus on HRM. In 1995, it added solutions specific to academic institutions to its offerings. It also offers ERP solution for manufacturing organizations. But HRM and academic institutes' solutions are its flagship solutions. In June 2005, PeopleSoft merged with Oracle Corporation. While the PeopleSoft enterprise solutions are being marketed under Oracle PeopleSoft Enterprise Applications, the PeopleSoft Support, Consulting, Education, Hosting and Financing are now integrated with Oracle Services. It supports a very broad choice of technology infrastructure. Oracle's PeopleSoft Enterprise Performance Management (EPM) enables organizations to achieve world-class performance by aligning the right information and resources to strategic objectives. EPM 9 extends the strengths of the suite and continues its emphasis on usability and superior ownership experience. Its Human Capital Management unlocks the full value of any organization's workforce.

### **1.7.4 JD EDWARDS**

Jack Thompson, Dan Gregory and Ed McVaney started JD Edwards in 1977. In the early years, it designed software for several small and medium-sized computers, eventually focusing on the IBM System in the early 1980s. In August 2003, it merged with PeopleSoft, which was acquired by Oracle Corporation in June 2005. Now JD Edwards is part of the Oracle Corporation and offers two ranges of solutions – JD Edwards EnterpriseOne and JD Edwards World. It offers complete solution that consists of hardware, middleware, software and services unlike other ERP solution providers who only sell the software and rely on implementation partner to select appropriate hardware, software and provide services. It claims that their ERP has low cost of ownership, requires less training and is a high return of investment product. JD Edwards EnterpriseOne is a world-class provider of business applications to small and medium-sized companies. JD Edwards World delivers the same advanced functionality available to larger enterprises, to small businesses.

### **1.7.5 MS DYNAMICS**

Microsoft was founded in 1975. Microsoft acquired Great Plains Software, Damguard, Navision and Solomon Software between 2000 to 2002. Each of these companies had an ERP product. Microsoft Dynamics is a line of ERP and CRM software applications. Microsoft Dynamics applications are delivered through a

network of reselling partners who provide specialized services. Very few installations are made without the aid, and cost, of these resellers. In its 2013 update, the first since 2009, Microsoft removed many capabilities of users to access features such as report-writing without the intervention, and cost, of members of their approved reseller network. Microsoft Dynamics is part of Microsoft Business Solutions. Dynamics can be used with other Microsoft solutions, such as Share Point, Yammer, Office 365, Azure and Outlook. The Microsoft Dynamics focus industries are retail, service, manufacturing, financial services and public sector. Microsoft Dynamics provides business solutions for both small & medium businesses and Enterprise. Dynamics NAV is for small organizations that require at most 500 concurrent users. Dynamics AX is for larger organizations. AX can support as many as 3500 concurrent users.

### **1.7.6 QAD**

QAD Inc. was founded in 1979 and now has presence in 100 countries around the world and employs more than 1600. In 1979, QAD was founded by Pamela Lopker, who was later joined by her husband Karl Lopker, as a small start-up solution to address a large gap in complete, integrated business software for manufacturing companies. QAD MFG/PRO was QAD's flagship enterprise resource planning (ERP) suite. In 2007, they launched its successors: QAD Enterprise Applications and QAD Cloud ERP. Built from the MFG/PRO foundation, QAD solutions are designed to streamline the management of global manufacturing companies' financials, customers, supply chain, analytics, and system integrations. QAD MFG/PRO is now known as QAD Cloud ERP. It is available in 55 languages and has more than 5,500 installed sites in over 95 countries.

### **1.7.7 RAMCO**

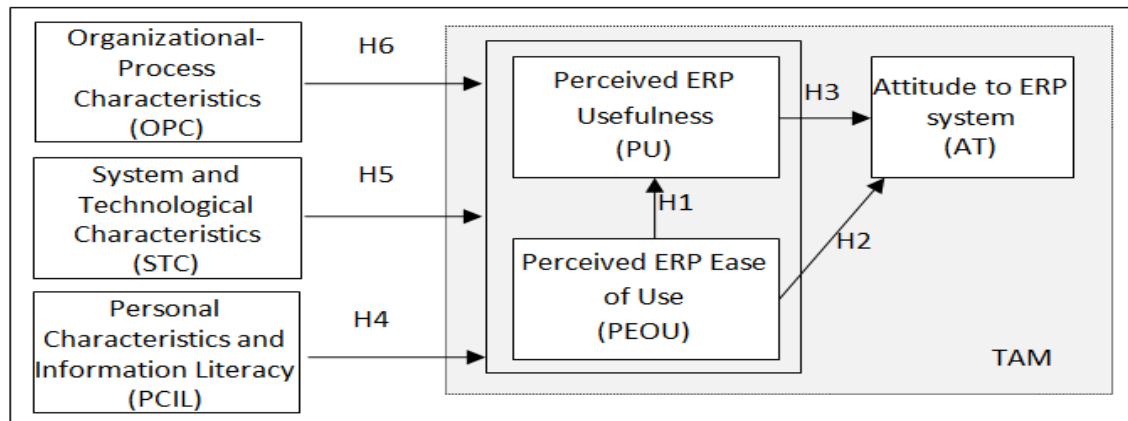
Ramco Systems is part of the USD 1 Billion diversified conglomerate, the Ramco Group of companies. Started as an R&D division of Ramco Industries Limited in 1992, Ramco Systems was later established as an independent company in 1999. Headquartered in Chennai, the company has 21 offices spread across India, USA, Canada, Europe, Australia, Middle East, South Africa and APAC. It has more than 1600 employees and 1000+ customers since inception. The company focuses on providing innovative business solutions that can be delivered quickly and cost-effectively in complex environments. Ramco is a fast growing enterprise software

player disrupting the market with its multi-tenanted cloud and mobile-based enterprise software in the area of HCM and Global Payroll, ERP and M&E MRO for Aviation. Ramco Systems focuses on Innovation and Culture to differentiate itself in the marketplace. It was awarded the Best HR Management Software, Talent Management Software and Payroll Software Awards, at the HR Vendors of the Year 2015 event organized by Human Resources in Malaysia and Singapore. Also, it was endorsed as the preferred Next-Gen MRO IT Vendor by Aeronautical Repair Station Association (ARSA).

### **1.8 Technology Acceptance Model (TAM) and ERP Systems**

Several theories have been used to explain the acceptance and use of information technology (IT), including, reasoned action (TRA; Fishbein and Ajzen, 1975), planned behaviour (TPB; Ajzen, 1991), and the TAM (Davis et al., 1989). Compared to other theories, TAM is believed to be highly parsimonious, predicative and robust (Venkatesh and Davis, 2000; Lu et al., 2003; Liu and Ma, 2006), thus, it is commonly employed by IS/IT researchers (Davis, 1989; Davis et al., 1989; Amoako-Gyampah and Salam, 2004; Lee et al., 2010). TAM posits that two beliefs - Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) - are of primary relevance for acceptance behaviour (Davis et al., 1989).

PU is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989, p. 320). PEOU refers to “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989, p. 320). The two central hypotheses in TAM state that PU and PEOU positively influence an individual’s attitude about a technology which in turn influences his or her intent and actual use of the technology. TAM also predicts that PEOU positively influences PU, as Davis et al. (1989, p. 987) put it: “effort saved due to the improved PEOU may be redeployed, enabling a person to accomplish more work for the same effort.” The key purpose of TAM is to provide a basis for measuring the impact of external factors on internal beliefs, attitudes and intentions (Davis et al., 1989). The original TAM is well established and tested and a variety of extensions regarding external factors have been developed.



**FIGURE 1.2** Technology Acceptance Model (TAM)

Several studies (Umble et al., 2002; Nah et al., 2004) suggest that ERP failure is related to user attitudes toward ERP systems. Few studies, however, have investigated ERP user acceptance and usage utilizing TAM, and most of these investigate a small number of external factors in the operational phase of the ERP lifecycle (Table I). Because ERP systems are complex and complex systems decrease usefulness and ease of use (Momoh et al., 2010), a better understanding of the factors influencing user acceptance of ERP systems is necessary to facilitate successful ERP system usage (Nah et al., 2004).

Several researchers have examined the antecedents of PU and PEOU in IS and IT. As noted by Venkatesh and Davis (2000), a better understanding of these factors would enable more effective organizational interventions that lead to increased acceptance and use of systems. Venkatesh and Davis (2000) proposed an extension of TAM – TAM2 – by identifying six determinants of PU: subjective norm, image, job relevance, output quality, results demonstrability and PEOU. Venkatesh (2000) developed a model of the determinants of PEOU, which include: computer self-efficacy, computer anxiety, computer playfulness and perceptions of external control (or facilitating conditions). Venkatesh and Bala (2008) combined TAM2 (Venkatesh and Davis, 2000) and the model of the determinants of PEOU (Venkatesh, 2000) and developed an integrated model of technology acceptance, which they labelled TAM3.

Even though TAM can be applied to a variety of technologies, the constructs of TAM need to be extended by customizing factors for specific IS (Calisir et al., 2009). Schwarz (2003) grouped the antecedents of PEOU and PU into three sets: individual

variables (e.g. computer experience, self-efficacy, prior experiences), organizational influences (e.g. management and external support, perceived resources) and technology characteristics (e.g. accessibility of the medium and interface type). Additionally, four external factors appear to influence individual variables: computer experience, computer self-efficiency, technological innovativeness and computer anxiety (Table II). We name this group of individual factors “PCIL”.

Based on prior research regarding ERP systems we placed external factors into two groups: one that represents STC and the one that represents OPC. External factors in the STC group include: data quality, ERP system functionality, ERP system performance, and user manual helpfulness. Included in the OPT group are: social influence, fit with business processes, training and education in the ERP system, ERP support and ERP communications. In these two groups, we are trying to capture a large number of CSF which influences ERP users during the operational phase.

### **1.8.1 Theoretical framework for Prediction of Technology Adoption and Use**

There are various studies, theories, and models that have been proposed to examine the factors at various stages of technology adoption and to predict the outcome. Some of them are; Theory of Reasoned Action (Fishbein and Ajzen 1975), Innovation Diffusion Theory (Rogers 1983), TAM (Davis 1989), Theory of Planned Behaviour (Ajzen 1991), Information Systems Success Model (DeLone and McLean 1992), Combined TAM and Theory of Planned Behaviour (Taylor and Todd 1995), Task Technology Fit (Goodhue and Thompson 1995), Personal Innovativeness of Information Technology Model (Agarwal and Prasad 1998), TAM2 (Venkatesh and Davis 2000), Unified Theory of Acceptance and Use of Technology (Venkatesh et al. 2003), User acceptance of Multimedia Messaging Service Model (Lee, Cheung, and Chen 2005), TAM3 (Venkatesh and Bala 2008), Model of Acceptance with Peer Support (Sykes, Venkatesh and Gosain 2009), and Mental Models theory (Zhang and Xu 2011) and ERP Use Model (Sternad et al. 2011). Some of them discussed for their suitability and ability to predict technology adoption viewed also in a context to ERP technology.

**a) Theory of Reasoned Action (Fishbein and Ajzen, 1975):** According to the Theory of Reasoned Action, people indicate higher intentions (motivation) to

perform by showing a positive behaviour (attitude). They feel that their significant others want them to perform and behave (subjective norms) likewise. This positive behaviour results in motivation and chances of performing the act are high. Here the intentions lead to actions. The components of Theory of Reasoned Action are three general constructs: behavioral intention, attitude, and subjective norm. Theory of Reasoned Action suggests that a person's behavioral intention depends on the person's attitude about the behaviour and subjective norms. The Theory of Reasoned Action has been modified to provide models with better predictability. The social factor included in this model has been shown to be an important determinant either directly impacting the intention to use or indirectly via other perceived constructs. Theory of Reasoned Action has later extended by Theory of Planned Behaviour due to its limitations in dealing with the behaviors over which people have incomplete volitional control (Ajzen 1991). This model may not be suitable to study behaviors and intentions in mandatory technology use settings hence cannot be considered for ERP systems study.

**b) Innovation Diffusion Theory (Rogers 1983):** This theory deals with individual's perceptions related to the technology or innovation and its significance in adopting a new technology (Agarwal and Prasad 1998). This theory explains the process of innovation adoption and diffusion, the way the diffusion varies, the technology adoption process by the adopters and the innovation characteristics affecting the rate of adoption. The significant contribution has been the five innovation characteristics complexity, compatibility, relative advantage, observability, and trialability that have been adopted by various researchers in predicting the rate of adoption of the systems. The construct 'complexity' has been equated to the 'perceived ease of use' construct and the 'relative advantage' has been equated to perceived usefulness construct of TAM.

The model, when applied, provides important perceived system characteristics that can be judged before the system is adopted. However, the model does not include any psychological parameter like beliefs, attitudes, intentions that are important when dealing with users. Also, the model focuses only upon technological characteristics ignoring other dimensions, like organizational factors, social factors, etc. Hence this theory is not suitable for this study.



**c) Theory of Planned Behaviour (Ajzen 1991):** Icek Ajzen extended the Theory of Reasoned Action into the Theory of Planned Behavior. As in Theory of Reasoned Action, even this theory revolves around the 'individual's intention' to perform the behavior but under volitional control. As in Theory of Reasoned Action, even this theory revolves around the 'individual's intention' to perform the behavior but under volitional control. Ajzen explains that 'intentions are assumed to capture the motivational factors that influence a behaviour; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behaviour' (1991:181). The extension includes the addition of one more predictor, perceived behavioral control to the existing model. This factor indicates the self control over behavior, explained as; at times when people intend to carry out a particular behavior they are unable to do so due to low confidence or control over behavior. The perceived behavioral control is explained as people's perception of the ease or difficulty of performing the behaviour of interest. The concept of perceived behavioral control that is referred as availability of resources, skills, and opportunities needed to use a system, is taken from self efficacy theory. The Theory of Planned Behavior however does not treat emotional variables fairly. This theory being an extension serves better than Theory of Reasoned Action but seems to be more generic (Chau & Hu, 2002) making it a low option for predicting technological adoption making it unsuitable.

**d) Information Systems Success Model (DeLone & McLean, 1992):** DeLone and McLean (1992) aimed at providing an IS success model based on extensive literature review. The Success Model has six dimensions for measuring IS success; information quality, system quality, user satisfaction, IS use, individual impact, and organizational impact. The DeLone and McLean model is based on two theories, the communications research and the information influence theory. According to the communications research, the communications output can be organized into three hierarchical levels, technical level, semantic level and effectiveness level. Technical level investigates the accuracy and efficiency of the communication system producing information. Semantic level works on the success of information in conveying intended meaning. Effectiveness level is concerned with the effect of information on the receiver. Though this theory is very useful in indicating the reasons backing the user satisfaction with the systems, it does not directly include

any user related constructs. Rather it focuses on the computer related constructs. This, therefore, does not fit into the requirement for this study that focuses specifically on cognitive constructs. However, as this study investigates the impact of technological factors, it considers system quality attribute contributed by this theory as a technological factor indirectly impacting attitude towards system use. This model is found to focus more on factors leading to satisfaction ignoring the technology and task factors (Abugabah and Sanzogni 2009).

**e) Task-Technology Fit (Goodhue and Thompson 1995):** The Task-Technology Fit model is a combination of two theories the utilization theory and the task fit theory. This model proposes that the performance outcome depends upon the fit between the technology and the task i.e. the technology should provide features and support that would fit the requirements of the task. The 'fit' would enhance the performance and therefore the utilization of technology. Goodhue and Thompson (1995) explain technology as the tool used by individuals in executing their tasks and task as actions performed by individuals in turning inputs into outputs. The Task Technology Fit is defined as the degree to which a technology helps an individual to perform portfolio of tasks. It also represents the congruence between the task requirements, individual abilities, and the technology functionalities. As the gap between the task and the functionalities of technologies increases, the task-technology fit reduces and vice versa. Abugabah and Sanzogni (2009) argue that unlike TAM, which focus on technology more than the ability of the technology to support the user, Task-Technology Fit model focuses on this shortcoming and has a direct impact upon technology utilization one of the major contributions of Task-Technology Fit. It still cannot be said to be a very effective model as it doesn't study the impact of other influence upon the users like social and individual factors that may also impact the performance outcome.

**f) Technology Acceptance Model (TAM; Davis 1989):** TAM proposed by Davis (1989), is a model based on Theory of Reasoned Action (Fishben and Ajzen 1975) which predicts how users accept and use a technology implemented. The model focuses on two theoretical constructs and predictors of attitude, behavioral Intention, and actual System Use: a) perceived usefulness (PU) defined as 'the degree to which a person believes that using a particular new technology would enhance his or her

job performance' (Davis 1989: 320) and b) perceived ease of use (PEOU) defined as 'the degree to which a person believes that using a particular new technology would be free of effort' (Davis 1989: 320) supposedly the two fundamental determinants of new technology acceptance and use. Attitude has been defined as 'the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behavior in question' (Ajzen 1991: 188). The two TAM constructs determines the attitudes of the users forming the behavioral intention for system use.

**Suitability of TAM for studying ERP acceptance:** In many studies, TAM acts as a basis for measuring the impact of other influences on beliefs, attitudes, and intentions (Davis et al., 1989). TAM being empirically justified provides the basic theory to predict system use and is focused on technology that can assist in predicting technology acceptance (Chau and Hu 2002). TAM is perceived to be one of the most predictive, parsimonious, robust and powerful model of technology acceptance vis-à-vis other models (Venkatesh 2000, Venkatesh and Davis 2000, Liu and Ma 2006, Sternad et al 2013).

Though parsimony is seen as a positive trait it also becomes a limitation as the model being simple is unable to explain the decisions and behaviors fully across a wide range of technology or in different situations (Bagozzi 2007). TAM ignores many important factors especially the subjective norms which depict the social influences on adoption decision, but is present in both Theory of Reasoned Action and Theory of Planned Behaviour from which it is linked due to theoretical and psychometric problems. The treatment with subjective norm was due to difficulty to distinguish if usage behaviour would be caused as a result of influence of referent or due to one's own attitude. Due to ignorance of the usage behaviors predicting indicators in TAM the managers may not know which levers to pull to affect the beliefs for improving technology acceptance (Liu and Ma 2006). TAM ignores coverage of group, social and cultural aspects (Bagozzi 2007).

To overcome the shortcomings of the base model, modifications have been done by Davis and numerous researchers to include social and many more factors. Multiple studies in ERP have proposed different factor combinations, with TAM as the base model. TAM is found to be most suitable as a base model for this study that is extended further with many factors to overcome the limitations and increase the

predictability, specific to ERP usage and in an organizational context.

**g) Technology Acceptance Model 2 (TAM2, Venkatesh and Davis 2000):** TAM2 is an extended model of TAM that focuses on variables affecting the perceived usefulness construct of TAM that would enable us to design organizational interventions to increase technological acceptance. The variables identified are social influence processes (subjective norm, voluntariness, and image) and cognitive instrumental processes (Job relevance, output quality, result demonstrability, and perceived ease of use). Based on previous work on social influences, TAM2 theorizes that the social influence processes can be understood well by three social influence mechanisms—compliance, internalization, and identification. However, the influence will reduce with users getting more and more experienced with the system. TAM2 contributes to the understanding of social influences neglected in the basic TAM. TAM2, however, focuses only on factors related to social influence and cognitive processes, missing on the influences that can be caused by organizational or individual factors. The current study overcomes this limitation and involves factors of all types, to study the overall impact on the TAM constructs.

**h) Unified Theory of Acceptance and Use of Technology (Venkatesh et al. 2003):** Unified Theory of Acceptance and Use of Technology integrates the essential elements from eight previous models to include four constructs as determinant of the user acceptance and usage behaviour. First, performance expectancy, defined as the degree to which an individual believes that using a system will help him or her to attain gains in job performance. Second, effort expectancy, defined as the degree of ease associated with the use of system. Third being social influence, defined as the degree to which an individual perceived that important others believes that he or she should use the system and the forth being facilitating conditions, defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system. The effect of four moderators; age, gender, voluntariness, and experience has also been studied on the core constructs. This model is very effective as the combined explanatory power of independent models, displays 70% of variance in usage intention. Though this model is wholesome with a lot of factors included and covering a broader area of investigation, it limits the factors to those involved in the

eight models chosen for Unified Theory of Acceptance and Use of Technology and seems very complicated.

Though the model presents 41 independent variables predicting intentions and eight variables predicting behaviour (Bagozzi 2007) it does not include many factors related to the specific technology (ERP). The requirement is for a customized model of technology acceptance making Unified Theory of Acceptance and Use of Technology inappropriate for this study.

**i) Technology Acceptance Model 3 (TAM3, Venkatesh and Bala 2008):**

TAM3 is a model that provides determinants of system adoption and use at an individual level. TAM3 includes four different types of determinants of perceived usefulness and perceived ease of use. First, individual differences, this includes personality and demographic details of an individual. Second, system characteristics, this includes salient features of a system helping in developing perceptions. Third, social influence, this capturing the social processes that lead to the formation of perceptions, and Fourth, facilitating conditions, representing the organizational support that facilitates the use of the system.

This model overcomes many criticisms of basic TAM like including various determinants of both the constructs PEOU and PU, having four types of determinants like individual differences, system characteristics, social influence, and facilitating conditions. It provides a comprehensive nomological network and has the potential for actionable guidance. On the other side, the model appears to be very complicated with too many determinants of both perceived constructs. Despite all the strengths of TAM3, it is a generalised model for Information Technology adoption, whereas this study intends to design a model that is customised and closely related to ERP systems. TAM3 is found to be highly complicated for this purpose. In this study, the concept of providing an integrated model is adopted from TAM3, along with focus on individual, social, organisational, and technological determinants of the perceived constructs.

**j) ERP Acceptance Model (Sternad et al. 2011):** Sternad et al. (2011) explored a large number of external factors that influence attitudes and behavior regarding the ERP system in the post-adoption phase. They have based their theory

using the acceptance model of TAM and many factors. As too many variables were involved, the external factors were grouped under three latent variables. Personal characteristics and information literacy (PCIL), system and technological characteristics (STC), and organizational- process characteristics (OPC). PCIL, comprising of four factors: computer experience, computer self efficacy, technological innovativeness, and computer anxiety. STC, comprising of four factors: data quality, system functionality, system performance, and user manual helpfulness. OPC, comprising of five factors: social influence, fit with business processes, training and education, ERP support, and ERP communication.

This model considers multiple factors that are specific to ERP technology therefore making it more suitable for this study that dwells further upon other additional areas of influence for more predictability.

Of all the models studied TAM seems to be the best choice as a base model for predicting the technology acceptance as it covers the two most basic perceptions of users: usefulness and ease of use of technology. TAM explains about 40% of variance in usage intentions and behaviours (Nah et al. 2004). In many studies, TAM has been further supplemented by several factors thus increasing its predictability (Kwahk and Lee 2008, Calisir et al. 2009, Scott and Walczak 2009, Shih and Huang 2009, Venkatesh and Davis 2000, Sternad et al. 2011). One such study is that of Sternad et al. (2011) where they proposed the ERP Acceptance Model studying multiple influences.

## CHAPTER – 2

# OVERVIEW OF INDUSTRIES

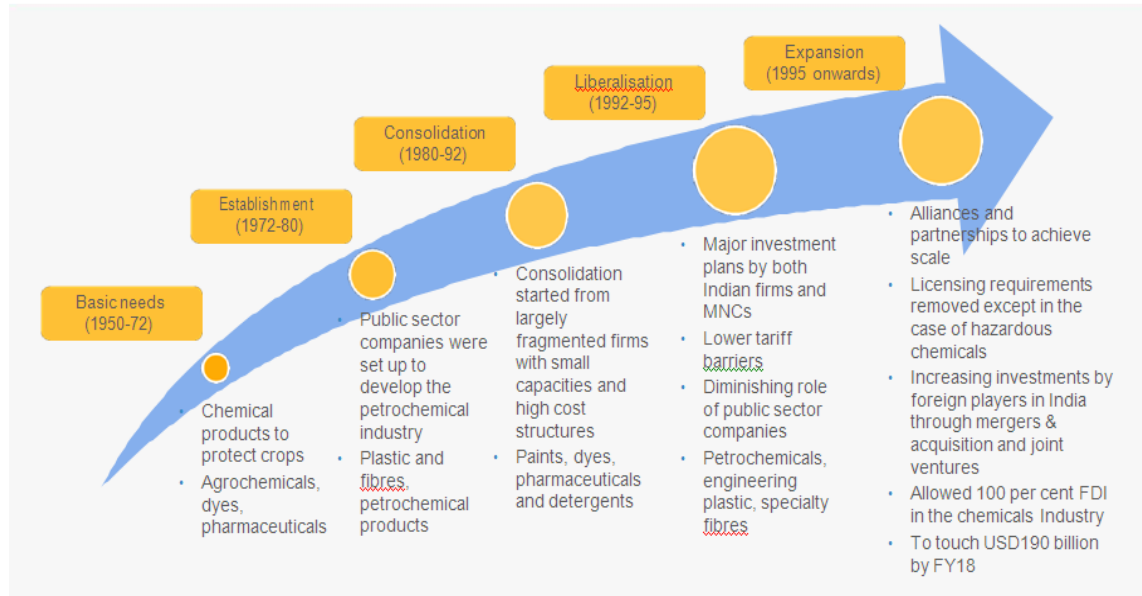
### 2.1 Introduction

The economy of India is the seventh-largest in the world measured by nominal GDP and the third-largest by purchasing power parity (PPP). The country is classified as a newly industrialized country and one of the G-20 major economies, with an average growth rate of approximately 7% over the last two decades. The main industries are Software, Petroleum products, Chemicals, Pharmaceuticals, Agriculture, Textiles, Steel, Transportation equipment, Machinery, Leather, Cement etc.

For this research study, I selected Chemicals, Pharmaceuticals, Tyres, Bearings & Engineering industries and in each industry, I selected two companies. The details of each industry and companies selected are as below:

### 2.2 Indian Chemical Industry

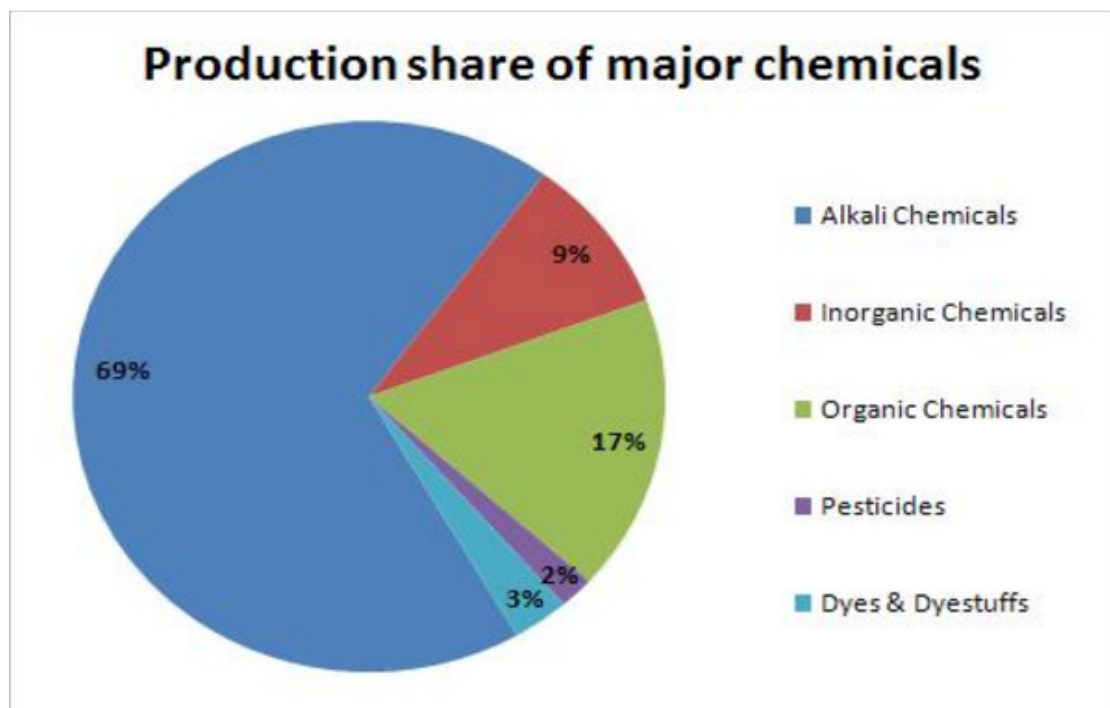
Chemicals are the basic necessity of day to day life for creature to survive on earth. The chemicals whether being natural or synthetic they are helpful to each and every creature for the survival. Right from the food we eat, clothes we wear or the cars we drive all the things are significantly based on the chemicals which helps to enhance the quality of life through various new innovations. The use of chemicals is mentioned from the ancient time to the modern era. As the development on earth started from the ancient era to modern era for the survival and the enhancement of the chemicals, their forms and their uses changed. Development of synthetic chemicals took place by setting up the chemical factory in countries and then export and import of chemicals from country to country.



**FIGURE 2.1 Evolution of the Indian Chemical Industry**  
 (Source: TechSci Research)

In terms of volume of production Indian chemical industry stood as 3<sup>rd</sup> largest producer in Asia and 12<sup>th</sup> in world. Indian chemical industry could grow at 14 per cent p.a. to reach size of USD350 billion by 2021. Indian Chemical industry is 6<sup>th</sup> in the World and 3<sup>rd</sup> in Asia in value added terms at constant prices. The chemical industry in India is a key constituent of Indian economy, accounting for about seven per cent of the GDP India accounts for approximately 7 per cent of the world production of dyestuff and dye intermediates, particularly for reactive acid and direct dyes. India is currently the world’s third largest consumer of polymers and fourth largest producer of agrochemicals.





**FIGURE 2.2 Production Shares of Major Chemicals**

The share of Chemical products in the overall exports for FY16 stood at 12.27%, while export of Chemical products was at \$32,138.49 million (Provisional) up by 1.28%, as compared to \$31,731.22 million in FY15. Of total export of chemical and related products in FY16, Drug Formulations and Biological contributed the most (40%), followed by Organic Chemicals (15.14%), Bulk Drugs, Drug Intermediates (11.17%) and Residual Chemical and Allied Products (10.91%).

The share of Chemical products in the overall import in FY16 stood at 9.69%, while import of Chemical products for FY16 stood at \$36,839.69 million (Provisional), down by 4.45% as compared to \$ 38,553.65 million in FY15. Of total import of chemical and related products in FY16, Organic Chemicals contributed around 26%, followed by Fertilizers Manufactured (19.10%), Residual Chemical and Allied Products (13.81%) and Inorganic Chemicals (12.16%).

### **2.2.1 Gujarat State Fertilizers & Chemicals Ltd (GSFC), Vadodara**

GSFC was incorporated in 1962 and its plants went into production of fertilizers in 1967. In its very first decade of existence, GSFC became known for its path-breaking achievements, to name a few, it was the first industrial complex in the country set up

in joint sector, first company to set up fertilizer plants within a short span of two years of getting requisite approvals, it was the first industrial project to secure direct and active equity participation of farmers, the first fertilizer unit to get assistance from IDBI's Assistance Fund, and the first Company to adopt the Steam Naphtha Reforming process for manufacture of Ammonia.

The turnaround story of the Company began from FY 2003-2004. Under able leadership and timely intervention of **Hon. Chief Minister Shri Narendra Modi** in taking certain bold policy decisions, the company could work on the strategies to enhance its productivity, bring down costs through technical innovations and improved management information systems. The revival measures were fully supported by Govt. of Gujarat and the Company was given complete autonomy to roll back to the track. Finally the major factors that brought company out of red were improvement in the Operational Efficiency, Reducing Cost of Sales, Regenerating Confidence in Suppliers & Customers, Moral boosting of employees, strategizing foray in the global market, consolidating through further Expansions, focusing on ideal product mix to insulate performance from downtrends etc.

Entering the second green revolution, GSFC continued its role of encouraging agricultural growth by developing and supplying Bio-Fertilizers and Bio-technology products to the farmers under one roof. The Company has also advanced Tissue Culture facilities to support horticulture and other crops. In order to provide farmers with high-tech inputs, GSFC has formed 100% subsidiary GSFC Agrotech Limited for research and production of liquid bio-fertilizers, Plant Growth Promoters-Sardar Amin Granules/liquid, Tissue culture and Seeds.

GSFC also promoted Gujarat Green Revolution Company Limited (GGRC) to promote drip-irrigation and sprinkler irrigation systems amongst farmers so as to optimize the usage of water and implementation/monitoring the Government subsidy scheme in co-ordination with GSFC. GSFC is also contemplating an investment outlay of approx. Rs. 8,000 Crores for setting up an integrated fertilizer and petrochemicals complex at Dahej. (Source: [www.gsfclimited.com](http://www.gsfclimited.com))

### **2.2.2 Gujarat Narmada Valley Fertilizers & Chemicals Ltd (GNFC), Bharuch**

It is a joint sector enterprise promoted by the Government of Gujarat and the Gujarat State Fertilizers & Chemicals Ltd. (GSFC). It was set up in Bharuch, Gujarat in 1976. Located at Bharuch in an extremely prosperous industrial belt, GNFC draws on the resources of the natural wealth of the land as well as the industrially rich reserves of the area. GNFC started its manufacturing and marketing operations by setting up in 1982, one of the world's largest single-stream ammonia-urea fertilizer complexes. Over the next few years, GNFC successfully commissioned different projects - in fields as diverse as chemicals, fertilizers and electronics.

GNFC started fertilizer manufacturing and marketing operations by setting up in 1982, one of the world's largest single-stream ammonia-urea fertilizer complexes. GNFC today is one of the leaders in fertilizer industry. The company is engaged in manufacturing and selling fertilizers such as Urea, Ammonium Nitrophosphate and Calcium Ammonium Nitrate under the umbrella NARMADA. GNFC has to its credit one of the largest Ammonia plant, a reference plant in the world of fuel oil based technology along with the world's largest single stream Urea plant.

The company is engaged in handling and importing Urea, Diammonium Phosphate (DAP) and Muriate of Potash (MOP) In addition, GNFC is also handling traded fertilizers like Single Super Phosphate(SSP) from Liberty Phosphate and Others, DAP and Urea. The basic objective of marketing such fertilizers is to make available wide range of fertilizers to farming community, making regular supplies of fertilizers to distribution channel and enhancing the company's turnover. The market is undergoing a sea change and there is a shift from sellers to buyers market. Therefore it is of paramount importance to make available different kind of fertilizers as per the market demand in different areas, and we at GNFC are more concerned about that. Such steps help in making the distribution channel more strong and developing a good rapport with them.

GNFC has kept pace with changing times and its vision is always focused on growth. Even as the Company was implementing its fertilizer complex, plans were underway for expansion and diversification in related areas. This resulted in the setting up of

core chemical and petrochemical plants such as Methanol, Formic Acid, Nitric Acid and Acetic Acid.

### **2.3 Indian Pharmaceutical Industry**

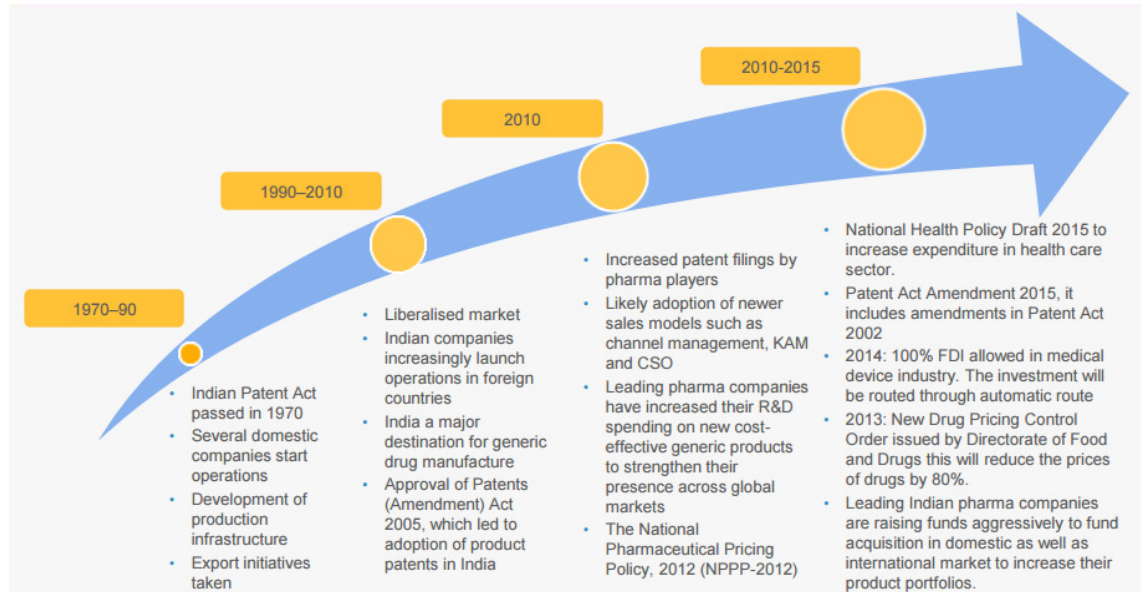
The pharmaceutical industry in India ranks 3rd in the world terms of volume and 14th in terms of value. The government started to encourage the growth of drug manufacturing by Indian companies in the early 1960s, and with the Patents Act in 1970. However, economic liberalization in 90s by the former Prime Minister P. V. Narasimha Rao and the then Finance Minister, Dr. Manmohan Singh enabled the industry to become what it is today. This patent act removed composition from food and drugs, and though it kept process patents, these were shortened to a period of five to seven years.

Indian pharmaceutical sector accounts for about 2.4 per cent of the global pharmaceutical industry in value terms and 10 per cent in volume terms and is expected to expand at a Compound Annual Growth Rate (CAGR) of 15.92 per cent to US\$ 55 billion by 2020 from US\$ 30 billion in 2015.

With 71 per cent market share, generic drugs form the largest segment of the Indian pharmaceutical sector. By mid of 2016, India is expected to be the third-largest global generic Active Pharmaceutical Ingredient (API) merchant market. The country accounts for the second largest number of Abbreviated New Drug Applications (ANDAs) and is the world's leader in Drug Master Files (DMFs) applications with the US.

Indian drugs are exported to more than 200 countries in the world, with the US as the key market. Generic drugs account for 20 per cent of global exports in terms of volume, making the country the largest provider of generic medicines globally and expected to expand even further in coming years. Pharmaceuticals Exports Promotion Council (Pharmexcil) expects pharmaceutical exports to reach US\$ 25 billion in 2015.

The Government of India plans to set up a US\$ 640 million venture capital fund to boost drug discovery and strengthen pharmaceutical infrastructure. The 'Pharma Vision 2020' by the government's Department of Pharmaceuticals aims to make India a major hub for end-to-end drug discovery.



**FIGURE 2.3 Evolution of the Indian Pharmaceutical Sector**

(Source: TechSci Research)

With 70 per cent of market share (in terms of revenues), generic drugs form the largest segment of the Indian pharmaceutical sector. India supply 20 per cent of global generic medicines market exports in terms of volume, making the country the largest provider of generic medicines globally and expected to expand even further in coming years. Over the Counter (OTC) medicines and patented drugs constitute 21 per cent and 9 per cent, respectively, of total market revenues of USD20 billion.

By 2020, India is likely to be among the top three pharmaceutical markets by incremental growth and sixth largest market globally in absolute size. India's cost of production is significantly lower than that of the US and almost half of that of Europe. It gives a competitive edge to India over others. Increase in the size of middle class households coupled with the improvement in medical infrastructure and increase in the penetration of health insurance in the country will also influence in the growth of pharmaceuticals sector.

### 2.3.1 Zydus Cadila, Ahmedabad

Zydus Cadila is a fully integrated, global healthcare provider, with strengths all along the pharmaceutical value chain. With a core competence in the field of healthcare, Zydus Cadila provides total healthcare solutions ranging from formulations, active

pharmaceutical ingredients and animal healthcare products to wellness products.

Recently, the group launched Exemptia, the world's first biosimilar for Adalimumab, the largest selling therapy worldwide for inflammatory arthritis. Zydus is also the only Indian pharma company to launch its own patented NCE – Lipaglyn, the world's first drug to be approved for the treatment of diabetic dyslipidemia.

The group's origin can be traced to 1952 when it was founded by Late Mr. Ramanbhai B. Patel, a first-generation entrepreneur and one of the stalwarts of the Indian Pharmaceutical Industry. In 1995, the group restructured its operations and Cadila Healthcare came into being under the aegis of the Zydus group. Zydus Cadila, today, is spearheaded by Mr. Pankaj R. Patel, the Chairman and Managing Director of the group.

From a turnover of Rs. 250 crores in 1995, the group posted revenues of over Rs. 9800 crores in FY16. The group had posted a turnover of Rs. 4600 crores in FY 11, making it a billion dollar company. It aims to be a leading global healthcare provider with a robust product pipeline and aspires to post revenues of Rs. 10000 crore by 2015-16 and be a research-based pharmaceutical company by 2020.

Zydus is one of the oldest players in the Indian formulations market. Besides continuously improving its market presence and market share, the group has also expanded its portfolio by entering newer therapeutic areas. The group has been launching new products with the first mover advantage and has a strong presence in both acute and chronic therapies. These strategic initiatives have helped Zydus become one of the dominant players in the Indian formulations market with the leadership position in several therapeutic categories.

The group has built strong positions in key segments of Cardiovasculars, Gastrointestinals, Women's Healthcare and holds leading positions in other therapeutic segments such as Respiratory, Dermatology, Pain Management and Anti-infectives.

The group's Zydus Discovery is dedicated to marketing the innovative NCE therapy Lipaglyn, the world's first drug to be approved for the treatment of diabetic dyslipidemia. Zydus Biovation, a superspecialty division, markets the world's first

biosimilar of Adalimumab to treat inflammatory arthritis. This includes Rheumatoid Arthritis, Ankylosing's spondylitis, Psoriatic Arthritis and Juvenile Idiopathic Arthritis (JIA). Zydus BioNext also markets this therapy for other indications such as Crohn's disease and Ulcerative Collitis.

Globally, Zydus has a strong presence in the regulated markets of the US, Europe (France & Spain) and the high profile markets of Latin America and South Africa. It also has a strong presence in 25 other emerging markets worldwide. It aims to be a leading global healthcare provider with a robust product pipeline; achieve sales of over Rs. 10000 crore by 2015 and be a research-based pharmaceutical company by 2020.

### **2.3.2 Aventis Pharma Ltd., Ankleshwar**

The ambition of Sanofi is to become a diversified global healthcare leader, focused on patients' needs. The largest pharmaceutical company in Europe and in emerging markets, Sanofi is the fourth largest worldwide. The Group's vaccine division, sanofi pasteur, is the world leader for human vaccine production and commercialization.

With nearly 100,000 employees in over 100 countries, Sanofi has core strengths in the field of healthcare: a worldwide presence, market leadership in vaccines, major biological products and a strong and long-established presence in emerging markets. Sanofi can draw on a number of powerful assets to address the new context in the global pharmaceutical market: an extensive portfolio of prescription medicines, vaccines, generics medicines, consumer health care and animal health, along with a balanced presence on both traditional and emerging markets.

Sanofi India Limited was incorporated in May 1956 under the name Hoechst Fedco Pharma Private Limited. Over the years, its name was changed to Hoechst Pharmaceuticals Private Limited, Hoechst India Limited, Hoechst Marion Roussel Limited and Aventis Pharma Limited. Sanofi, one of the world's leading pharmaceutical companies, and its 100% subsidiary, Hoechst GmbH, are the major shareholders of Sanofi India Limited and together hold 60.4% of its paid-up share capital. The shares of Sanofi India Limited are quoted on the Bombay Stock Exchange and the National Stock Exchange

Its manufacturing portfolio contains medicines for several therapeutic areas including cardiovascular, thrombotic, metabolic disorders, oncology, disorders of the central nervous system, internal medicine. Its primary business is medicines in the dosage forms of liquid injectables, tablets, capsules, ointments, drops and syrup. In July 2003, company launched Lantus, the worlds first and only once a day insulin.

It is headquartered in the city of Mumbai in India; they have got their zonal offices located in the four major cities of the country like Kolkata, Delhi, Mumbai and Chennai. Besides these, the manufacturing units of this company of India are situated at Ankleshwar, Gujarat & Verna, Goa.

One of the manufacturing sites of Aventis Pharma Ltd. is set up in the industrial estate in Ankleshwar, which is located Gujarat, India. The facility houses both the Pharma and Chemistry plants. Pharmaceuticals set up in 1989 Chemistry set up in 1987. The Manufacturing operations are carried out in two shifts in the Pharma Plant and the Chemistry plants work in 3 shifts, all 7 days a week. The finished dosage facility started in year 1989. The plant has the capacity of more than 5 billion Tablets and has all the latest technologies to produce uncoated and coated tablets and able to provide packaging in bulk, strip and blister. Currently, the finished dosage plant has regulatory approvals from Ukraine Health Authority and WHO GMP certification.

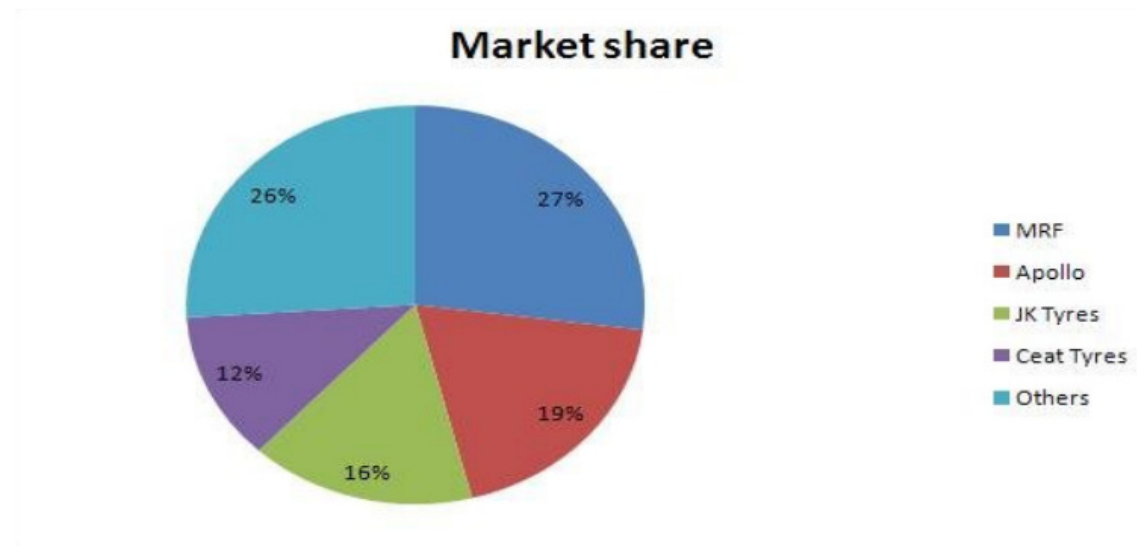
## **2.4 Indian Tyre Industry**

The Indian tyre industry has been witnessing tremendous growth for the past few years on account of growth in automobiles demand, especially in passenger vehicles and two-wheeler segments. In fact, availability of raw material (natural rubber) and ultramodern production facilities has led the country to emerge as one of the world's most competitive tyre markets. Driven by the strong demand in automobile OEM sector and replacement market, the India tyre industry has been witnessing stupendous growth from since the last two fiscal years. India's market for radial tyres in commercial vehicles section is still in its infancy.

The passenger car segment switched to radial tyres in a short period of time, with radial tyre penetration level for the category reaching 100%. However, penetration level of radial tyre has also started to increase rapidly in the light commercial vehicles and truck & bus segment. This segment will be the largest growth area over the next



few years. The tyre companies are looking for overseas plantation of rubber to meet their raw materials need which will help the companies to acquire raw material at cheaper prices. Further, tubeless tyres are gaining ground in Indian market as almost all the automobile manufacturers are launching their vehicles with tubeless tyres. This shows that tubeless tyre market has tremendous growth opportunity in the coming years. Moreover, top tyre companies in Indian such as MRF, Apollo tyres, JK tyres, Ceat have strong hold in the market, however they face immense competition from global tyre companies such Bridgestone, Goodyear etc. to sell their products in the Indian markets. The Indian MNCs too have set up units in various overseas countries and some like Apollo Tyres are even acquiring companies there.



**FIGURE 2.4 Top Tyre Companies in India & their Market Share**

(Source: [www.indiatrader.com](http://www.indiatrader.com))

In a major development, in January 2015, the US Commerce Department's International Trade Administration levied preliminary add on Chinese tyres in the US market - duty rates varying between 19.17% and 87.99%. Incidentally, the US anti-dumping duty on Chinese tyres has led to the Chinese tyre makers dumping some stocks in India, causing a 15 per cent surge in tyre imports in the first half of FY15. Representation from Automotive Tyre Manufacturers' Association (ATMA) to the Government of India (GoI) continues towards increasing the customs duty on tyres from 10% at present to 20% as the industry remain affected by the inverted duty structure.

The export market is showing signs of life after decelerating in the past two-and-a-half years due to relatively subdued demand conditions in the overseas markets. The Indian tyre industry exports to some 65 countries, but global economic slowdown stymied the growth in these past few years. For the period, April to November 2014, tyre exports (value) from India saw a modest 3.6% YoY growth; this follows a 7.3% YoY growth achieved in 2013-14 although this growth was primarily supported by the depreciating rupee. Meanwhile, exports are projected to grow 4-6 per cent in FY15 and a little faster thereafter as US' decision to slap anti-dumping duty on cheaper Chinese tyres have created opportunities for Indian tyre makers. But what has created an opportunity overseas is translating into a big threat for industry back home.

#### **2.4.1 Ceat Tyres Limited, Kalol**

CEAT, the flagship company of RPG Enterprises, was established in 1958. Its predecessor Cavi Elettrici e Affini Torino SpA was established in Italy in 1924. Today, CEAT is one of India's tyre manufacturers and has presence in global markets, and has a capacity of over 95,000+ Tyres per day. CEAT offers tyres to all segments and manufactures radials for: Heavy-duty Trucks and Buses, Light Commercial Vehicles, Earthmovers, Forklifts, Tractors, Trailers, Cars, Motorcycles and Scooters as well as Auto-rickshaws. The company is headquartered at Annie Besant Road, Worli in Mumbai. It has manufacturing plants in Mumbai, Nashik and Halol near Baroda. CEAT owns 6 Manufacturing plants, 10 outsourcing units for tyres, tubes and flaps & 3 dedicated 2-3-wheeler plants controlled by CEAT. Its vision is to be amongst the most profitable tyre companies in India by 2016 through market leadership in select categories in India and worldwide.

CEAT manufactures a wide range of tyres for various customer radials for Indian vehicles and caters to various user segments including Heavy-duty Trucks and Buses, Light Commercial Vehicles, Earthmovers, Forklifts, Tractors, Trailers, Cars, SUVs, Motorcycles and Scooters, Auto-rickshaws. It exports to over 110 countries across the world. In April 2007, the de-merger of its investment business to a separate investment and finance company was approved. CEAT is the only tyre company to be awarded the ISO/TS 16949:2002 certification. It is also the 1st Indian tyre company to get a TUV certificate.

Inspired by 'Make In Maharashtra' initiative, CEAT Tyres announced its plans to invest Rs. 400 crore in a new tyre plant in Butibori, Nagpur. Devendra Fadnavis, Chief Minister of Maharashtra, laid the cornerstone for the plant that will be set up in three phases. In the first phase (2014- 2016), Rs. 400 crore will be invested. In the Nagpur plant, the production has been started. Spread across 60 acres of land, the plant is expected to manufacture 1.2 million tyres. The new plant will have highly automated manufacturing machinery chosen from the world market. The two wheeler production volumes are expected to double in the next two years owing to the capacity.

CEAT has won various awards including Gold award for 'Best use of mobile media' at the Media Abby Awards at Goafest 2015, Silver award for 'Social cause supported by a corporate/brand' at Campaign India Digital Crest Awards 2015, Bronze award for 'Experiential' at Campaign India Digital Crest Awards 2015, Top Export award 2013-14 for excellence in export of automobile tyres, tubes and pipes, Best Direct Marketing Campaign of the year 2013, Best Supplier award from TATA Motors 2013, Employer Branding and Best HR Practices 2013 etc. (Source: www.ceat.com)

#### **2.4.2 Apollo Tyres Limited, Vadodara**

Apollo Tyres Ltd, with its corporate headquarters in Gurgaon, India, is in the business of manufacture and sale of tyres since its inception in 1972. Over the years, the company has grown manifold, establishing its footprint across the globe.

The company has manufacturing units in India and The Netherlands. It is also setting up a new manufacturing facility in Hungary, with a planned investment of €475 million. The company markets its products under its two global brands - Apollo and Vredestein, and its products are available in over 100 countries through a vast network of branded, exclusive and multi-product outlets. At the end of its financial year on March 31, 2015, Apollo Tyres had clocked a turnover of US\$ 2.08 billion, backed by a global workforce of approximately 16000 employees.

Its vision is to become significant player in the global tyre industry and a brand of choice, providing customer delight and continuously enhancing stakeholder value. Its six values are Customer First, Business Ethics, Care for Society, Empowerment, Communicate Openly & One Family.

When Apollo Tyres was established in 1972, it was a single brand enterprise. Over the years, as the organisation grew and expanded its footprint across geographies, several brands either joined or were born into its fold. Today, the company owns 5 key brands — Apollo, Kaizen, Maloya, Regal and Vredestein.

Apollo Tyres, being conscious of the triple bottom line coherence (people. Planet and profit), has developed a CSR framework identifying and prioritizing its key stakeholders. This framework clearly revolves around the principle of three I's i.e. to Involve, Influence and Impact its key stakeholders-Customers, Employees, Supply Chain Partners and Community.

After making its presence felt in Thailand and Indonesia, leading tyre major, Apollo Tyres announced on 30<sup>th</sup> May, 2016, the setting-up of its office in Malaysia, which is the third largest automotive market in the ASEAN region. Satish Sharma, President, Asia Pacific, Middle East & Africa (APMEA region), Apollo Tyres Ltd inaugurated the company's Malaysian office in the presence of select Business Partners and company officials.

Subsequent to setting-up its sales & distribution hub in Bangkok for the ASEAN region, Apollo Tyres has been increasingly focusing on expanding its footprint in South East Asia. The company is targeting a bigger share of the pie in the Malaysian replacement tyre market, which has an annual capacity of 580,000 truck-bus radials and 9.5 million passenger car tyres.

## **2.5 Indian Bearing Industry**

Bearings are mechanical devices employed to reduce friction between rotating equipment. Global bearings market is estimated at USD 60 billion, which is dominated by multinational companies like AB SKF (Sweden), Schaeffler Group (Germany), The Timken Company (USA) and Japanese companies like NSK, NTN and JTEKT. Indian bearing market is estimated at Rs 85 billion and it constitutes less than 4% of global bearing demand. In terms of consumption, about 60% requirement is catered through domestic production while remaining is met through imports.

Industrial segment constitute major share of domestic bearing demand which is largely driven by general machines/motors, electrical equipments (fans/appliances) as

well as heavy industries. Increasing automation in manufacturing units, thrust by Government's 'Make in India' program, spending towards railways and metros will support growth of manufacturing and engineering sector, which augurs well for bearing industry. Bearing industry is a technology and capital intensive industry, as end products finds application in critical applications like aviation, automobile engines, railways and others. Consequently, all major players have technology tie-up with their parent (SKF, FAG, Timken) or with a foreign collaborator (NEI, NRB, ABC).

Bearings are mainly manufactured using high grade steel or alloy steel, which exposes them to global steel price movement. In general, raw material accounts for about two third of company's cost structure or around 58% of bearing manufacturer's revenue. While bearing manufacturers have relatively strong pricing flexibility owing to technology knowhow and strong aftermarket presence; their profitability was also impacted during FY12-FY14 in the backdrop of increase in steel prices and weak demand. Out of bearing raw material cost, bearing rings/races constitute major share of raw material followed by that of rollers, cages and seals. (Source: Report on Indian Bearing Industry by ICRA)

Indian railways too employ bearings extensively which are used in wheel axles, drive units, traction motors, etc. Railways are a crucial expense of investment in the ongoing Twelfth Plan period. The arenas anticipated for private investment during the planned period comprise of Elevated Rail Corridor in Mumbai, fragments of the DFC, revamping of existing stations, power generation/energy saving projects and freight terminals. The rolling stock addition is projected to incline 70% by the end of the Twelfth Five Year Plan over the Eleventh Five Year Plan. We believe that such an incremental outlay would be a key carter for bearings prerequisites from the railway segment.

India is currently the seventh-largest automobile producer in the world with an average annual production of 20.3 million vehicles, and is on the way to become the fourth largest automotive market by volume, by 2015. With the increasing growth in demand on the back of rising income, expanding middle class and a young population base, in addition to a large pool of skilled manpower and growing technology, will propel India to be among the world's top five auto-producers by 2015. Going ahead,

with the revival in the domestic market (which are already showing initial signs of revival) and higher export sales, the projections for bearings industry appear promising.

Given decent extensive demand scenarios in the domestic market and with India evolving as a preferred low-cost sourcing destination, bearings manufacturers are likely to capitalise on the increasing production capacities and technological capabilities. Further, companies are likely to continue to diversify their product portfolio and de-risk their businesses. Though, competition is anticipated to increase and prices of raw material are likely to trail an upward movement. This is expected to exert pressure on the industry's profit margins. In such a scenario, cost control programmes would assume greater significance for the industry players, both big and small.

### **2.5.1 ABC Bearings Limited, Bharuch**

Incorporated in the year 1961, company founded as Antifriction Bearings Corporation in Technical Collaboration with STEYR DIAMLER PUCH AG, Austria for making Thrust Bearings. In 1998, it had technical alliance with NSK, Japan. In 2002, its name was changed to ABC Bearings Limited. In 2005, SAP system was installed. All its offices, godowns & plants were online connected with SAP. ABC Bearings Limited has been manufacturing Taper Roller Bearings (TRB), Spherical Roller Bearings and Cylindrical Bearings (CRB), Universal Joint, Standard Universal Joints. The Company caters mainly to OEMs in the automotive industry, and after-sales market for auto bearings also. The TRBs reported for approximately 85% of the company's total revenue. It is a Public Limited company and is listed on Mumbai Stock Exchange.

ABC Bearings Limited is one of the principal companies in the TRB segment along with Timken India Ltd, SKF India Ltd and NEI Ltd. The company also endeavored into the Industrial Bearing and Slewing Bearing segment, and has set up manufacturing lines in 2010-11 & 2011-12, respectively at Bharuch Plant. ABC is a key manufacturer of Taper Roller Bearings (TRB) & Cylindrical Roller Bearings (CRB), utilized in the Automotive MCV / HCV, Tractors and Replacement Market. The Company has recently established the manufacturing facilities for Slewing Bearings-OD, up to 3500 mm. Also it is in act to tie up with the manufacturers of

wind turbine generator and earth-moving equipments.

It is headquartered in Mumbai and headed by Mr. S. M. Patel, Chairman, Mr. P. M. Patel, Managing Director, and Mr. T. M. Patel, Executive Director. Total income is Rs. 1805 million and Net Profit is Rs. 55 million (year ending March 2016).

ABC Bearings Limited received best quality supplier, quality & cost performance awards from Toyota Kirloskar Motor (Toyota India), Bangalore. Also received best cost reduction achievement award from Toyota Kirloskar Auto Parts Pvt. Ltd., Bangalore and long association award from TATA Motors.

The management extended the environmental responsibility throughout entire supply chain, moving one step ahead towards our one of the environmental objectives, minimizing the consumption of natural resources, during year 2015-16 joint efforts with the suppliers; they minimized the use of input material through suppliers' process optimization. They design lighter bearings keeping the load carrying capacity same as previous which helps customer to improve energy efficiency. They also design and manufacture the bearings with higher load rating within the existing boundary dimensions which gives longer service life or allows customer to use down sized bearings for same application. (Source: [www.abcbearings.com](http://www.abcbearings.com))

### **2.5.2 FAG Bearings India Limited, Vadodara**

FAG Bearings India Limited was incorporated in 1962. Since January 2002 FAG has been integrated into a strong network because that is when FAG, together with INA and LuK formed the Schaeffler Group. INA and FAG became the world's second largest rolling bearing manufacturer.

FAG India's headquarter and manufacturing facilities are located in Vadodara, Gujarat, India. Quality management at FAG India is a dynamic process that is operating on daily basis to ensure that continuous improvements are made. The Indian plant is certified per ISO 9001 and TS 16949. Active environmental protection is an integral part of all areas of our business. We are convinced that positive environmental management helps to secure the progress and success of our Company. The FAG India plant has been certified to ISO 14001. FAG India has its presence in automotive and across all core industrial segments.

Indian automotive industry has rapidly progressed in the last decade. FAG India has

been a proud partner in this technical progress providing Indian industry with bearings of contemporary technology and global quality standards. FAG's advanced system solutions for wheels, power train and engine accessories support the automotive industry's need for higher levels of integration, increased safety, driving comfort and environment protection. No wonder, FAG is No.1 supplier of hub bearings to the Indian Passenger Car Industry.

Since inception of FAG India, the Indian Railways has been an important customer and FAG India is recognized as the most reliable source for critical applications viz. Traction Motors, Journal Roller Bearings, Transmission, Auxiliary Motors, etc. Just on track with the Railways.

FAG India caters to all major industry segments including: Construction Machinery, Electrical Engineering, Fluid Technology, Conveying equipment, Industrial Gears, Mining & Cement, Power Generation, Agricultural Engineering, Steel plants, Motorcycles, Textile Machinery, Machine tools, Wind power, Pulp and Paper and so on. Recent times have seen the Indian manufacturing industry metamorphose into a global force to reckon with. FAG India has been an integral part of this industrial revolution providing innovative bearing systems for a wide range of applications. Proximity to the customer and intimate knowledge of individual requirements has enabled FAG India to provide innovative solutions on time and within budgets.

FAG bearings from the Indian plant are exported to Europe, US and Asia. International customers using FAG India products include: Daimler Chrysler, Volvo, Volkswagen, Renault, Voith, Otis and General Dynamics.

Mr. Rajendra Anandpara is Managing Director of FAG Bearings India Ltd., one of the flagship companies of Schaeffler Group. Leveraging Schaeffler's core strength in innovation, Mr. Anandpara successfully implemented various organization-wide initiatives to enhance customer centricity, engineering capability, productivity and process orientation at FAG India.

## **2.6 Indian Engineering Industry**

The engineering is a diverse sector encompassing a number of sub sectors related to the manufacturing from metals and their ores. It is a diverse industry with a number of



segments, and can be broadly categorized into two parts, namely, heavy engineering and light engineering. There are however a number of sub sectors within the engineering sector namely iron and steel; other base metals and their products; mechanical machinery; electrical machinery; transport equipment (including automotives); instruments and appliances; time measuring instruments; musical instruments; arms and ammunition; and furniture and related articles. The Indian Engineering sector has witnessed a remarkable growth over the last few years driven by increased investments in infrastructure and industrial production. The engineering sector, being closely associated with the manufacturing and infrastructure sectors, is of strategic importance to India's economy.

India on its quest to become a global superpower has made significant strides towards the development of its engineering sector. The Government of India has appointed the Engineering Export Promotion Council (EEPC) as the apex body in charge of promotion of engineering goods, products and services from India. India exports transport equipment, capital goods, other machinery/equipment and light engineering products such as castings, forgings and fasteners to various countries of the world.

India became a permanent member of the Washington Accord (WA) in June 2014. The country is now a part of an exclusive group of 17 countries who are permanent signatories of the WA, an elite international agreement on engineering studies and mobility of engineers.

In India, the engineering sector which has witnessed un-parallel growth in the past few years plays a vital role for the development of other industrial sectors of the economy. India's engineering industry accounts for 27 per cent of the total factories in the industrial sector and represents 63 per cent of the overall foreign collaborations as on December 2013. The engineering sector is one of the largest contributors to exports accounting for 25.1% of the total exports during 2014-15. India's engineering exports in 2014-15 was \$ 78 billion which is 10.7% higher than the corresponding figure of 2013-14. Capacity creation in sectors such as infrastructure, power, mining, oil and gas, refinery, steel, automotive, and consumer durables are driving demand in the engineering sector.

The engineering sector is the largest of the industrial sectors in India. India has a

comparative advantage in some of the engineering sub sectors in terms of manufacturing costs, market knowledge, technology and creativity. The Government of India also plays a crucial role in developing the engineering section of the economy. The engineering industry has been de-licensed and enjoys 100 per cent foreign direct investment (FDI). Further, the National Policy on Electronics is formulated by the Government of India to boost India's electronics systems and design the manufacturing industry and improve its share in the global market.

### **2.6.1 L & T Engineering, Vadodara**

Larsen & Toubro is a major technology, engineering, construction, manufacturing and financial services conglomerate, with global operations. L&T addresses critical needs in key sectors - Hydrocarbon, Infrastructure, Power, Process Industries and Defense - for customers in over 30 countries around the world.

L&T is engaged in core, high impact sectors of the economy and our integrated capabilities span the entire spectrum of 'design to deliver'. With over 7 decades of a strong, customer focused approach and a continuous quest for world-class quality, they have unmatched expertise across Technology, Engineering, Construction, Infrastructure Projects and Manufacturing, and maintain a leadership in all our major lines of business.

L&T Heavy Engineering manufactures and supplies custom designed equipment & critical piping to process industries such as fertilizer, chemical, refinery, petrochemical, and oil & gas, as well as to sectors such as thermal & nuclear power, aerospace and defense.

L&T is globalizing its operations, with increasing focus on tapping international business opportunities. Over the years, L&T has outgrown its national boundaries and extended its activities into the Indian Ocean Rim countries. L&T's international presence is increasing, with worksites in 20 countries that encompass South Asia, South East Asia, the Middle East, Russia, CIS countries including African countries.

In January 2011, its Chairman Shri. A. M. Naik announced that the company would be restructured into nine independent virtual companies with a CEO, CFO and HR head, its own profit and loss account, and board with at least three independent

directors. Each board does not have any legal or statutory standing, but merely advises management.

The original nine virtual companies which operated in different segments were subsequently increased to 12, for which the companies formed are: Building and Factories, Transportation & Infrastructure, Metallurgical & Material Handling, Power Transmission and Distribution, Hydrocarbon and Chemicals, Water, Smart World & Communication, Geo-Structure, Power, Infotech, Finance, Heavy Civil Engineering, and Engineering Services. Hydrocarbon and Chemicals later became a real company, with independent standings and stocks.

In 2014 Larsen & Toubro ranked 500 on Forbes list of 2000 world's largest and most powerful public companies based on revenues, profits, assets and market value. 54 Indian companies made it to the prestigious list, and L&T is the highest-ranked company in the engineering and construction section and 10th among all Indian public and private sectors.

The L&T Knowledge City at Vadodara in Gujarat is the hub of several key business of the Group. The Power business operates out of the facility, as does Mid & Downstream Hydrocarbon and L&T's Technology Services & the engineering JV L&T Sargent & Lundy. The campus offers single point design engineering and development solutions for core sector industries. The Knowledge City campus takes a lead in green initiatives and is widely recognized for its sustainability & community centric efforts. The water conservation effort alone sees recycling up to 25,000 liters of water per day and zero waste discharge, and sets other benchmarks illustrating L&T's commitment to sustainability.

### **2.6.2 Linde Engg India Pvt. Ltd., Vadodara**

On 21 June 1879, Professor Doctor Carl von Linde founded the Gesellschaft für Linde's Eismaschinen Aktiengesellschaft to develop further his work in developing mechanical refrigeration systems for brewing and food industries. Following success in this market, he moved on to developing lower temperature systems resulting in 1895 in a patent covering the liquefaction of air. Out of this work his company developed equipment for the separation of air and other gases. One of the first large-scale air separation plants was installed in Höllriegelskreuth, near Munich in 1903.

The Linde Group, registered as Linde AG (FWB: LIN), is a multinational industrial gases and engineering company founded in Germany in 1879. It is the world's largest industrial gas company by market share as well as revenue. Linde shares are traded on all the German stock exchanges and also in Zürich, and the Linde share price is included in the DAX 30 index. The group is headquartered in Munich, Bavaria, Germany. The Linde Group has over 600 affiliated companies in more than 100 countries, with customers in the industrial, retail, trade, science, research and public sectors.

In September 2006 the company acquired its UK based competitor The BOC Group, and subsequently disposed of its non-gas interests. Linde's former materials handling business was rebranded as KION Group in September 2006 and sold in November 2006 to KKR and Goldman Sachs for €4bn. In March 2007 the BOC Edwards semiconductor equipment business was sold to CCMP Capital for €685m. Linde's revenue in 2015 was €17.9 billion, with 64,500 employees.[4]

Linde Engineering India Pvt. Ltd. (LEI) is a subsidiary of The Linde Group offering engineering, procurement and construction services of chemical, gas, adsorption, air separation and solar plants, furnaces and heaters as well as process and utility facilities.

Linde Engineering India Pvt. Ltd. (LEI) established in 1987 with its business office at Vadodara, is a 100% subsidiary of 'The Linde Group' employing more than 1000 people. LEI have access to the 1000 process engineering patents & know-how of 'The Linde Group'. Over 130 years of Linde's Engineering excellence substantiates LEI's capabilities in delivering engineering, procurement and construction services for major market segments such as Petrochemical Plants, LNG and Natural Gas Processing Plants, Ammonia Plants, Synthesis Gas Plants, Hydrogen & HyCO Plants, Gas Processing Plants, Adsorption Plants, Air Separation Plants, Cryogenic Plants, Furnaces for Petrochemical Plants & Refineries, Gas Treatment Plants in the downstream of Heavy Oil & Coal Gasification including Acid Gas Removal.

## CHAPTER – 3

# LITERATURE REVIEW

### 3.1 Introduction

The literature review is a written overview of major writings and other sources on a selected topic. Sources covered in the review may include scholarly journal articles, books, government reports, Web sites, etc. The literature review provides a description, summary and evaluation of each source. It is usually presented as a distinct section of a graduate thesis or dissertation.

A number of research studies have been conducted on various aspects of on ERP implementation in select industries; some worthwhile studies relating to the present topic are being viewed here.

### 3.2 ERP Implementation

**C.P. Holland et al. (1999)** established that Enterprise Resource Planning implementations nearly always need business method reengineering, owing to the necessity to adapt the business processes to match the capabilities of the software system. This implies there's the necessity to travel on the far side ancient project management principles.

**José Esteves-Sousa et al. (2000)** discovered that despite the advantages which will be achieved from a successfully completed Enterprise Resource Planning system implementation, there's already proof of high failure risks in Enterprise Resource Planning implementation. Too often, project managers focus in the main on the technical and money aspects of the project implementation, whereas neglecting or stroke less effort on the untechnical problems. Therefore, one among the foremost analysis problems in Enterprise Resource Planning systems nowadays is that the study of Enterprise Resource Planning implementation success. The researchers have collected all the analysis material. This study provides the results of the open

committal to writing method from our application of the grounded theory methodology. Once the committal to writing step, it tends to get associate degree initial unified model of the important success factors in Enterprise Resource Planning implementations.

**Gupta (2000)** claimed that Enterprise Resource Planning permits firms to integrate varied division information's. It's evolved from HR application to Information Technology management. For several users, Enterprise Resource Planning performs everything from sales order entry to customer service. It tries to integrate the customers and suppliers and the production surroundings of the firm. For instance, a procurement entered within the order module passes the order to a producing application that successively sends a materials request to the supply-chain module that gets the required components from suppliers and uses a supply module to urge them to the manufacturing plant. In the standard application systems, firms treat every dealing one by one. They're designed round the sturdy boundaries of specific functions that a selected application is supposed to cater for. Enterprise Resource Planning stops these transactions one by one as separate activities and considers them to be a neighborhood processes that conjure the business.

**Davenport (2000)** established that Enterprise Resource Planning provides twin advantages that not exist in non-integrated division systems: 1) a complete picture of business that comprises of all departments functions; and 2) an enterprise wide information which consists of all transactions of business.

**Themistocleous et al. (2001)** analyzed that almost all staff react negatively to the changes elicited by Enterprise Resource Planning implementation within the organisation. Users are usually not willing to use Enterprise Resource Planning systems, and this could inhibit the realization of advantages offered by the Enterprise Resource Planning implementation.

**Oliver et al., (2002)** emphasized on various factors in the adoption of ERP. The researcher insist the important factor for the adoption of ERP is the high proportion of failure in data systems that caused a shift from individual development to standardized, pre-packaged software system solutions called ERP.

**Lee et al., (2002)** found that an Enterprise Resource Planning implementation in

material management is primarily based in four steps that are integration of application, external integration, internal integration, and automation. This study proves that time consuming activities concerned in the material management method are reduced and even in several cases these durations became removed after the implementation of ERP. They explicit that Enterprise Resource Planning system shortens procurance cycle by eighty percent. Enterprise Resource Planning systems in the materials management space have advantages in different areas of material management module.

**Keizer, J., J. Halman, et al. (2002)** claimed that ERP implementation has been one among the foremost vital challenges of the last decade; it comes with an amazingly high failure rate because of its high risk. The risks involved in Enterprise Resource Planning implementation are technical and social factors should be effectively managed.

**Nielsen (2002)** argued that firms ought to investigate the alignment between their desires and what an Enterprise Resource Planning system will do. Enterprise Resource Planning adoption and use stay a central concern of Information Technology management. In spite of spectacular advances in Enterprise Resource Planning capabilities and functions the disturbing issues of underutilized systems continue. Low utilization of Enterprise Resource Planning systems has been known as a significant challenge faced by firms. Thus, in conjunction with firms structure transition to Enterprise Resource Planning, staff ought to be trained, their jobs to be redefined, procedures to be redesigned around the core processes of Enterprise Resource Planning system. Enterprise Resource Planning implementations are found to be tough project to complete and success isn't guaranteed.

**Majed A. & Al-Mashari (2002)** in their research insists the utilization of a process change management perspective to explore the Enterprise Resource Planning development. A framework is adopted to spotlight the varied PCM constructs within the context of SAP implementation. Proof on how these constructs are practiced is drawn from an big collection of R/3 case studies representing varied organizational experiences. This study provides foundation and recommends many concepts for future analysis and investigation.

**Elisabeth J. Umble et al. (2003)** argued that implementation of ERP is tough and involves high cost that makes companies to put enormous time and resources. Several Enterprise Resource Planning implementations are classified as failures since they failed to reach planned company goals. This study identifies various success factors like software system choice steps and implementation procedures for a complete successful ERP implementation. A case study of a complete successful Enterprise Resource Planning implementation is given and mentioned in terms of those success factors.

**Voordijk et al. (2003)** discussed the factors that result in the success or failure of Enterprise Resource Planning in massive construction corporations. They proved from literature review, that abundant work has been carried in ERP implementation. However, lacking within the literature may be theory-linked study of unsuccessful Enterprise Resource Planning.

**Joseph Sarkis et al. (2003)** in their research, explained that several corporations are embarking on ERP implementations, despite the idea among CEOs that some of the systems are failures, many multi-stakeholder Enterprise Resource Planning system offers several lessons for future adopters. A vision providing visibility of the Enterprise Resource Planning system to external constituents through net linkages, and standardization of internal processes and necessary data technology systems to support market desires, were the base for the success of this implementation. This article tends to detail the management of this implementation from a process-oriented perspective. The teachings learned from this effort facilitate to support academic and practitioner literature particularly within the space of large-scale data systems management.

**Pnina Soffer et al., (2003)** aimed towards developing a model that captures the market alternatives at completely different application levels of ERP system. Such models are required once. Enterprise Resource Planning systems are aligned with the wants of the enterprise within which they're enforced. So as to support the Enterprise Resource Planning implementation method, the model ought to describe the whole scope of the Enterprise Resource Planning system's practicality and the various business processes it supports, the interdependencies among them. This article tends to analyse the specified properties a modeling language ought to satisfy to be applied



in constructing an Enterprise Resource Planning system model.

**Vincent A. Mabert et al. (2003)** accentuated that ERP systems has got an outstanding growth in the last five years and at this time they're pervasive within the USA producing sector. This article describes this development through a series of case studies and an in depth survey. Production companies in the size from million dollars to billion dollars in annual resources were selected for this study. The key finding from this study is that corporations of various sizes approach Enterprise Resource Planning implementations differently according to their needs. The benefits from this implementation also differ according to the company size. Larger companies report good improvements and on the other hand, smaller companies report better performance.

**Vincent A. Mabert et al. (2003)** presented in their analysis that thousands of corporations round the world have enforced ERP systems. Implementing Enterprise Resource Planning system is usually a challenge, as it takes from 1 to 5 years. Some companies have successful implementation while others struggle. This article analyses and identifies key variations in the approaches utilized by corporations implemented on-time and/or on/under-budget versus those that didn't victimized information collected through a survey from people producing corporations that have enforced ERP systems. Regressions are used to classify on-time and on/under-budget firm teams supported the survey responses and to spot the numerous variables that contribute to on-time and on/under-budget implementation performance. The findings indicate that a lot of various factors starting from pre-implementation to system configuration performance, that manager ought to be sensitive concerning once implementing major systems like Enterprise Resource Planning.

**HsiuJu Rebecca Yen et al. (2004)** explained that corporations worldwide have invested a substantial amount in installing ERP systems. But implementing Enterprise Resource Planning system is difficult and also the final benefits are unsure. Researchers suggest that the failures are the results of business issues rather than technical difficulties. Enterprise Resource Planning systems have an effect on a firm's strategy, organization, and culture. Older analysis stress the necessity for planning an Enterprise Resource Planning implementation at the base level but it doesn't offer any guidelines. Victimization the case study methodology that involves direct observation

and systematic interviews at 3 US production companies, this study investigates the link between Enterprise Resource Planning implementation practices and a firm's competitive strategy. The results make sure that Enterprise Resource Planning implementation ought to be aligned with competitive strategy. Specific directions are steered for creating the alignment. Additionally, the researchers tend to know 2 alternative variables, national culture and government/corporate policies, as being important to Enterprise Resource Planning implementation in multi-national settings.

**Huigang Liang et al. (2004)** in their research analyze from an Enterprise Resource Planning vendor's perspective, as to what is done to handle discourse problems associated with Enterprise Resource Planning implementation. The case of a Chinese Enterprise Resource Planning merchant reveals 3 ways that might be helpful for achieving work between Enterprise Resource Planning systems and adopting organizations. First, Enterprise Resource Planning systems have to be compelled to be nativeized to mirror the local management options. Second, Enterprise Resource Planning systems ought to be customizable at a range of levels. Finally, Enterprise Resource Planning ought to be administered in associate progressive manner. A big competition is that's analyzers and practitioners ought to contemplate companies' stages of growth as a discourse issue once conducting Enterprise Resource Planning research or implementing Enterprise Resource Planning systems.

**Sammon et al. (2005)** noted that prime rates of failure existing in Enterprise Resource Planning project implementation is because of combined result of inadequate analysis at the start of the project, the complexities of Enterprise Resource Planning market and complicated implementation.

**Jones (2005)** explored that ERP is meant to enable corporations to manage their data by integration of processes in business and to own better management of information in the organization. To implement ERP which aimed towards the sharing of information and knowledge within the corporations should have the potential of effective data sharing.

**Zhe Zhang et al. (2005)** in their study explain that ERP system is widely accepted system for production corporations. But the successful implementation rate is low and lots of companies didn't achieve the supposed goals in China. This study creates

Enterprise Resource Planning implementation success framework by adapting different Information systems research model to spot each important success factors and success measures. Discussion is formed finally and steered Enterprise Resource Planning systems implementation methodology is given at the end.

**Séverine Le Loarne (2005)**, this study analyzes the results of an 18-month research study examining the implementation of an Enterprise Resource Planning system in an international firm which extracts and transforms the raw materials. The analysis targets on the social effects software have on operating procedures and power-sharing structures in a company. The 3 principle results show that implementing associate Enterprise Resource Planning system isn't a neutral method. Indeed, the Enterprise Resource Planning triggers elementary changes within the means managers and assistants organize themselves and it tightens the management of their work. However, it conjointly presents an inexplicable characteristic; managers transgress procedures so as reach their targeted goals.

**Jaideep Motwani et al. (2005)** suggest in their study that lot of organizations change its from functional to process based IT infrastructure, Enterprise Resource Planning systems are getting one among today's most widespread IT solutions. However, not all companies are successful in their Enterprise Resource Planning implementations. Employing a case study methodology grounded in business method modification theory, this analysis tries to know the factors that cause the success or failure of Enterprise Resource Planning implementation. The results from our comparative case study of four companies that enforced Enterprise Resource Planning system counsel that a cautious, bureaucratic, evolutionary implementation method backed with careful change management, network relationships, and cultural readiness have a positive impact on many Enterprise Resource Planning implementations. Understanding such effects can make managers to be change in proactive and better ready for Enterprise Resource Planning implementation.

**Yahaya Yusuf et al. (2006)** in their research they explore that Enterprise Resource Planning implementation could be a 'Triple Play' that mixes people, technology, and processes. It employs a difficult implementation method, particularly in developing countries like China, usually taking many years, huge quantity of fund and involving a significant business method reengineering. This article, analyses the Chinese-

specific difficulties within the implementation method and supply solutions to implement Enterprise Resource Planning system with form survey, interviews, and secondary information. From the study of form results, some common difficulties are explored by authors, like support of top management, costly and time consuming, cultural variations, technical quality, lack of skilled personnel, and inner resistance. The difficulties are mainly due to enterprise's possession and size. Some solutions are suggested to beat these difficulties in Enterprise Resource Planning software system implementation. They are package choice, Enterprise Resource Planning implementation team, Business Process Reengineering, Training, and Outsourcing-Application Service supplier.

**Pall Rikhardsson et al. (2006)** in their research, reports the results of six massive Danish corporations relating to the impact of enterprise system (ES) implementation and use. The data collection is made as interviews and management case writing. The results show that the impact of implementation and use are predictable by management. The ES is seen as an organizational actor in its own right; it can influence values, culture, behavior, processes and procedures of alternative actors within the organization. Given the quality, size and structure embeddedness, the ES becomes a significant variable in the future direction of an organization.

**Jyh-Bin rule et al. (2007)** in their research explains that the first functions of ERP are to integrate the inter-departmental operation procedures and Management information system (MIS) modules, and to allocate the resources of an organization. This analysis is a case study on the choice of system suppliers and contract negotiation throughout the ERP implementation of a construction company. After reviewing the common key success factors mentioned within the literature, this study mentioned seven issues: coding, operating method reengineering, priority of Enterprise Resource Planning practicality implementation, customization, participant roles, adviser role and performance level of contractor that conjointly affected the implementation. Lessons learned from the case study are valuable for a construction company decide to implement an Enterprise Resource Planning system. This analysis suggests that extra case studies are necessary for the successful implementation of Enterprise Resource Planning systems within the industry.

**Fergal Carton et al. (2008)** the success rate of implementation of ERP isn't high in

spite of the sums endowed by organizations in these applications. The aim of this study is to present a case study of a successful complete Enterprise Resource Planning implementation. The researchers had taken the case study of Enterprise Resource Planning application of a MNC in UK, to analyze the validity of project management frameworks, the body of knowledge on Enterprise Resource Planning. It's found that the body of knowledge on Enterprise Resource Planning is really a broad framework, will shed lightweight on most of the key aspects of Enterprise Resource Planning project. This study will help ERP implementation Managers in all stages of implementation and helps to anticipate the areas where problem arises and understand the areas in which special attention requires.

**Qing Xu et al. (2008)** in their study examined the determinants of Enterprise Resource Planning information transfer from implementation consultants to key users, and key users to implementation consultants. An integrated model was developed, positing that information transfer was influenced by the knowledge, source, recipient, and transfer context-related aspects. Information to check this model was collected from eighty five Enterprise Resource Planning-implementation projects of companies that were principally placed in China. The results of the analysis say that all four aspects had a big influence on ERP information transfer. Moreover, the results disclosed the mediator role of the transfer activities and arduous relationship between implementation consultants and key users. The influence on information transfer from the source's temperament to transfer and the recipient's temperament to simply accept information was absolutely mediate by transfer activities, whereas the influence on information transfer from the recipient's ability to grasp information was solely partly mediate by transfer activities. The influence on information transfer from the communication capability including coding and secret writing competence was absolutely mediate by arduous relationship.

**Saad Ghaleb Yaseen (2009)** studied in Jordan that Knowledge-based pharmaceutical trade has adopted Enterprise Resource Planning system to sustain the competition of the trade within the native and international market. This analysis examines the essential factors for the success of Enterprise Resource Planning implementation. It uses a case study methodology to research these factors in terms of a firm's structure.

**Ahed Abugabah et al. (2009)** their study helps the users to measure the advantages

of the Enterprise Resource Planning, and users will choose whether or not Enterprise Resource Planning give good outcomes for the firms. This premise relies that the user creates the advantages through the completion of tasks resulting in the accomplishment of goals. The study includes previous literature review on the impacts of Enterprise Resource Planning on user performance and show how Enterprise Resource Planning analysis utilizes Information System theory.

**S.C.L. Koh et al. (2009)** in their study they analyze the demand for the extent of investment in coaching and practice necessary to successfully implement and operate little and medium sized enterprises (SME)-specific ERP systems. The literature on Enterprise Resource Planning suggests that so as to implement and operate Enterprise Resource Planning systems effectively, a coaching model including a long training period sometimes utilizing external consultants, could be a necessary condition. An in-depth case study has been conducted during this analysis on UK-based SME-specific Enterprise Resource Planning systems merchant, that maintain that their SME-specific Enterprise Resource Planning systems is enforced and operated effectively with solely 5 days of formal coaching and no extra practice. This analysis evaluates the validity of this claim, and investigates the idea for the coaching model utilized by the case company is sufficient for users to successfully implement and operate SME-specific Enterprise Resource Planning systems.

**Ch. Seetha Ram (2010)** the researcher has selected 3 organizations for the study about Enterprise Resource Planning implementation which includes BPCL, TI InfoTech, and ITTI. Questionnaires were sent to 600 users of ERP in the 3 firms and 202 completed questionnaires taken for analysis. The results have shown that the primary factor associated with the success of ERP is standard quality dimensions.

**Poonam Garg (2010)** claimed that retailers are making an attempt to reap the advantages of the Enterprise Resource Planning. In Retail trade, Enterprise Resource Planning systems have replaced nonintegrated systems with integrated and rectifiable software system. Retail Enterprise Resource Planning integrates supply and demand effectively to assist and improve bottom line of business. The implementation of Enterprise Resource Planning systems in such corporations may be a tough task. Enterprise Resource Planning implementations have yielded a lot of failures than successes, only a few implementation failures are recorded within the literature as a

result of few firms would like to publicize their implementation failure. The study explores and validates the prevailing literature to seek out the important success factors that result in the success of Enterprise Resource Planning in context to retail trade. The findings give good insights for the researchers who are interested in implementing ERP.

**Sevenpri Candra (2012)** in her study insists that ERP implementation success is a must. In today's business, Enterprise Resource Planning is one of the main tools to achieve competitiveness in business. Enterprise Resource Planning is a method to form and maintain business to boost front-office and back-office potency and effectiveness. This study is critical to bring new thinking which determines the key antecedents to successful Enterprise Resource Planning implementation supported with knowledge capability perspectives and it helps to know the key success factor about Enterprise Resource Planning with implementation. Research was made by using on-line survey among 150 respondents working in top management level who are using Enterprise Resource Planning system. 46 respondents gave feedback to this online survey. This result shows that knowledge capability that company have can influence the success of Enterprise Resource Planning implementation.

**Rajesri Govindaraju (2012)** in her study analyses that several corporations have spent massive investments on ERP implementations, but only a restricted range of them are successful with the implementation. Realizing the potential advantages offered by ERP implementations and therefore the high failure rate found in practice, the study here aims at developing a framework that may facilitate to produce a much better understanding of how the process can be managed to bring the advantages for the implementing organizations.

**Abiot Sinamo Boltena et al. (2012)** in their research analyzed that the implementation of ERP systems is more troublesome than the development of a computer application. In this article, the researcher presents a case study in Ethiopia about Enterprise Resource Planning system implementation by a medium company. MIE Pvt. Ltd. is a large incomparable metal construction and mechanical device engineering, and has recently adopted and enforced an Enterprise Resource Planning system. The article examines key dimensions of implementation of Enterprise Resource Planning system among MIE and takes an in-depth look at the problems

behind the method of Enterprise Resource Planning implementation by focusing on business and technical also as cultural issues at the guts of the MIE implementation. The case study conjointly appearance at the implementation risks and reports how MIE coped with the standard challenges that almost all medium organizations face once implementing an Enterprise Resource Planning system.

**Augusto A. Pacheco-Comer et al. (2012)** presented that ERP system is necessary for business optimization. The rate of failure of Enterprise Resource Planning implementations is becoming high. Selection factor is an important success issue. The article presents the primary results from empirical study where they tend to found that there's a relation between size of the corporate and quantity of investment. Other enterprise systems that may be seen as necessary to incorporate on the Enterprise Resource Planning are Business Intelligence and client Relationship Management. Evolutionary process Computation, Multi Agent Systems and Petri Nets are often used as procedure intelligence techniques to model the Enterprise Resource Planning solution method.

**Jiantao Zhao et al. (2012)** focused on Enterprise Resource Planning implementation performance. Enterprise Resource Planning plays a very important role in company production and engineering management. With the wide application of Enterprise Resource Planning, the analysis of its application performance is especially necessary in order to perpetually improve its implementation result. Enterprise Resource Planning project performance analysis is a holistic thought, that involves multiple aspects and needs to mix the qualitative and quantitative analysis. To assess the Enterprise Resource Planning implementation performance of Power Company, this article first of all established a comprehensive analysis index system. Secondly, the engineering analysis model of Enterprise Resource Planning implementation performance was based on grey triangle whitens function. Then, this article describes the Enterprise Resource Planning project implementation performance analysis method. Finally, through the empirical analysis, the utility and effectiveness of the projected methodology was verified.

**Dr. Manas Kumar Sanyal & Sajal Kanti Bhadra Sudhangsu Das (2012)**, ERP systems are the accepted methods for Indian companies for rising their supply chain and business performance to face the sturdy international challenges. Enterprise



Resource Planning provides benefits in business and strengthens the various wings of a company with fast response and low dealing price. However the implementations of Enterprise Resource Planning involve intercalary complexness and someday it ends with total failure and loss of big investment. This study explored and determines important problems in Enterprise Resource Planning implementation in Indian industries. Ishikawa analysis has been applied to spot the important problems for Indian industries as they full-fledged throughout implementation of Enterprise Resource Planning. A sampling methodology has been used for collecting primary information from Indian firms. The findings show that improper system implementation ways, lack of defined procedures, improper designing and large customization designated for implementation etc, have vital influences on the Enterprise Resource Planning implementations.

**Shahin Dezdar (2012)** in their article intends to analyze the factors that make Enterprise Resource Planning users' satisfaction and to find whether or not Enterprise Resource Planning users' satisfaction varies among totally different users' profiles. The study was conducted in an organization in Iran, by way of employing a survey form that was distributed to the users of Enterprise Resource Planning. 384 responses were collected and analyzed. The findings reveal that young Enterprise Resource Planning users tend to be a lot of glad with Enterprise Resource Planning systems. Enterprise Resource Planning users with a lot of experiences in Information Technology and additionally a lot of educated users have a lot of satisfaction with Enterprise Resource Planning software. The study also found that no satisfaction variations between men and women users.

**Rana Basu et al. (2012)**, the aim of this study is to provide the findings that relies on the results of a comprehensive compilation of literature and future analysis of Enterprise Resource Planning implementation success problems in relation to SME's. This study was supported by the literature review, problems in successful complete Enterprise Resource Planning implementation and to spot key problems using Pareto Analysis. Nearly twenty five problems are identified and Pareto analysis has been applied to find the key problems prioritized by applying Technique for Order of Preference by Similarity to Ideal Solution methodology.

**Young Hoon Kwak et al. (2012)** in their study aimed at providing an alternate view

of user's acceptance on ERP. This study incorporates the most efficient practices of Enterprise Resource Planning system implementation which are consultant support, internal support and practicality choice, into the extended TAM that has belief constructs and socio environmental construct. The empirical analyses show that socio environmental issue are significantly associated with the first TAM variables in the context of Enterprise Resource Planning system. The findings is that the negative result of advisor support on perceived utility, however positive result on the perceived simple use, suggesting a helpful reference for future analysis. This study would additionally benefits project-based sectors by providing valuable social control insights that change them to understand and improve end-users' Enterprise Resource Planning system acceptance.

**Nazli Sadat Safavi et al. (2013)** in their article discussed the implementation of ERP in medium size enterprises. It's essential for businesses to successfully implement Enterprise Resource Planning system to take care of their risks. Enterprise Resource Planning implementation is risky and costly for medium enterprises. The researchers hypothesized a relationship between 2 parts of firm's risk factors, business processes re-engineering and adequate system. The study additionally investigates the link between cost involved in Enterprise Resource Planning implementation and success of Enterprise Resource Planning project so as to improve Enterprise Resource Planning project with reference to SMEs.

**Huseyin Ince et al. (2013)** suggested that ERP system is a very important tool for business processes planning, info flowing, execution and controlling, relating to the sources of the companies' deployed premises in several places. Supply Chain Management practices are extroverted doors of the businesses in order to make sure mutual benefits in their own processes. Successfully implemented and integrated Enterprise Resource Planning system and Supply Chain Management practices offer benefits in planning, decision-making, execution and will increase the performance of corporations. This study examines the scale of Supply Chain Management practices and Enterprise Resource Planning systems and tests the connection between competitive advantage and firm performance. The analysis was applied for 138 Turkish Companies' executives. Path analysis was accustomed check the analysis hypotheses. Supply Chain Management and Enterprise Resource Planning system

implementations had discovered that the Supply Chain Management practices and Enterprise Resource Planning system have positive effects on firm performance and competitive benefits.

**Ravi Seethamraju et al. (2013)** explored that past analysis on the result of Enterprise Resource Planning systems on agility is contradictory, and analysis on the post implementation effects of Enterprise Resource Planning systems on lightness is restricted. Using a cross sectional field study, this study analyses how key shaping options of enterprise systems environment—integration, method improvement, and best practices—affect agility. Standardization of processes has mixed result on agility and depends on the extent of standardization enforced and whether or not it enclosed previous simplification. Instead of the Enterprise Resource Planning-system enabled setting, the inadequacies in implementation and poor method improvement before Enterprise Resource Planning implementation are restricting agility.

**S. Rouhani et al. (2013)** described that ERP has been known as a replacement info systems paradigm. However, achieving a correct level of Enterprise Resource Planning success depends on a spread of things that are associated with a corporation or project setting. In this article, the concept of predicting Enterprise Resource Planning post-implementation success supported structure profiles has been mentioned. The necessity to form the expectations of organizations of Enterprise Resource Planning, an expert system was developed by exploiting the Artificial Neural Network methodology to articulate the relationships between some structure factors and Enterprise Resource Planning success. The knowledgeable system role is in preparation to get knowledge from the new enterprises that would like to implement Enterprise Resource Planning, and to predict the probable system success level. to the end, factors of structure profiles are recognized and an ANN model is developed. Totally 171 surveyed data obtained from enterprises that practiced Enterprise Resource Planning. The trained knowledgeable system predicts, with a median coefficient of correlation of 0.744 that is high, and supports the idea of dependency of Enterprise Resource Planning success on structure profiles. Besides, a complete correct classification rate of 0.685 indicates smart prediction power, which may facilitate corporations predict Enterprise Resource Planning success before system implementation.

**Samira Sadrzadehrafiei et al. (2013)** focused on finding the benefits of Enterprise Resource Planning system implementation. The company competitive setting is being liberalized and globalized, so the organizations, particularly dry food packaging business, want bigger interaction between their stakeholders. One of the issues organizations face to is the segregation of the business functions in a corporation. Thus, the business practiced to implement Enterprise Resource Planning systems for finding this drawback. In distinction, the Enterprise Resource Planning systems haven't been effective enough and therefore are unable to realize all the results envisaged. Therefore, a full understanding concerning the advantages of Enterprise Resource Planning implementation is required to make the successful system implementation. This study seeks to work out and classify the advantages of Enterprise Resource Planning system implementation in dry food packaging business. The methodology of this analysis comprised of 3 phases: outline the advantages of Enterprise Resource Planning system implementation from the present literatures, divide them into strategic, tactical and operational advantages in every business functions in a corporation. These Enterprise Resource Planning advantages are summarized in this article as a finding to help the managers in implementing Enterprise Resource Planning system with success.

**Samwel Matende & Apostle Ogao (2013)** analyzed the involvement of users during Enterprise Resource Planning implementation. The introduction of a data system such as Enterprise Resource coming up with system in a corporation brings with it changes on how users work. An Enterprise Resource Planning system cuts across the various useful units of a corporation and so if not properly managed throughout its implementation could result in resistance from the users. The various streams of analysis on Enterprise Resource Planning systems have principally been on Enterprise Resource Planning adoption, success measurement, and critical success factors. There's a paucity studies on user participation and the contribution of users towards the successful implementation of Enterprise Resource Planning systems. This article reviews literature on Enterprise Resource Planning implementation with an aim of building a case for involving users during this implementation.

**Rastislav Rajnoha et al. (2013)** identified implementation procedure critical for Enterprise Resource Planning implementation. Enterprise Resource Planning systems

are extremely advanced business info systems. An empirical and analysis study of an Enterprise Resource Planning implementation method is conferred and mentioned in terms of the key factors. The main aim of this study is to extend the effectiveness of the Enterprise Resource Planning systems implementation in industrial corporations and to cut back the risks related to a failure of the Enterprise Resource Planning system implementation. To form an acceptable methodology of Enterprise Resource Planning systems implementation among industrial corporations was analyzed. Based on the theoretical analyses and practical research which is accomplished by form survey, the researcher identified the deficiencies. In their opinion, these deficiencies ought to be eliminated by the projected methodology for Enterprise Resource Planning systems implementation in industrial company. Our attention is concentrated on the foremost important areas of Enterprise Resource Planning systems implementation.

**Sheida Soltani et al. (2013)** in their study targeted on 3 critical success factors, namely: advisor participation, user coaching, and IT employees' skills. The authors developed a model together with the relationships between the critical success factors variables and Enterprise Resource Planning implementation success variable, specifically Enterprise Resource Planning implementation satisfaction. The aim of this analysis was to explore the direct impact of advisor participation on Enterprise Resource Planning implementation satisfaction and investigates the indirect impact of user coaching, and IT employees' skills. The model was assessed employing a sample of 249 Enterprise Resource Planning users in a firm at Iran. Partial method of least squares technique was used for statistical analysis. The Partial method of least squares results confirmed six hypotheses. The results, found that advisor participation absolutely influenced Enterprise Resource Planning implementation satisfaction either directly or indirectly through user coaching and IT employees skills.

**Achmad Nizar Hidayanto et al. (2013)** emphasized that ERP may be a product that permits firms in achieving their competitive advantage. This study was conducted to find out the firms readiness for implementation of Open Source ERP, based on 3 classes namely, firm structure, change management and project management. The study conducts discussion with Technical Head, Project Manager and Chief Strategy Officer. The results proved that the firms are not ready to accept and implement Open

Source ERP though the firms have enough human resources; they're weak in different aspects, in order that they have some ways to boost their level of readiness before implementing open Source Enterprise Resource Planning.

**Lucian Pitic et al. (2014)** in their research analyzed the implementation of Enterprise Resource Planning in SME. The primary steps for introducing an Enterprise Resource Planning solution to a low or medium sized company are essential for implementation success. In this article a structured approach to Enterprise Resource Planning analysis and selection is projected. The developed roadmap for Enterprise Resource Planning solution combines quality management specific approaches and selection and implementation of business connected software. This system is based on the “keep it simple” principle addressing multiple relevant dimensions and criteria within the selection method. It's principally practice oriented focusing on the ease of adoption and use of SME's, its main target being company representatives responsible for leading the choice method.

**Mahmood Ali et al. (2014)** argued that Enterprise Resource Planning system implementation may be a difficult method in SMEs and they face hefty challenges in implementing Enterprise Resource Planning system because of their restricted Information Technology resources and infrastructure. Still, because of their advantages, Enterprise Resource Planning systems have become integral part of SMEs. The key informants representing numerous backgrounds are interviewed to collect information. The findings shows that Key participants supported the thought of incorporating simulation model throughout the implementation method since a simulation model build a lot of sense, since it'll enable the implementation players to look at the implementation method and therefore the role contest by factors that are important for the success of the implementation. Simulation model also can be helpful in developing and analyzing totally different implementation ways, predict the resources required for Enterprise Resource Planning implementation that successively will facilitate in adopting an Enterprise Resource Planning system.

**Noor Aini Ismail et al. (2014)** insisted that Enterprise Resource Planning system is unambiguously positioned to give business solutions with the aim of providing higher generation of revenue, where industrial sectors like telecommunication industries, strictly ought to keep rival with their competition. This study provides finding from

updated version of Data mining Information System model. The proposed framework is developed with 5 success dimensions i.e. Quality of information, Quality of system, Quality of service, satisfaction of user and web advantages. Survey method is used to analyze the construct. An analysis is so performed to look at whether or not individual things or sets of items produce the results. The results from the analysis proved that all the 5 dimensions are found worthy.

**Ahmed A. Fares et al. (2014)** analyzed aims to investigate the motives and therefore the expected impacts of Enterprise Resource Planning implementation in a Health care entity in Egypt. A case study research methodology was used. The study investigated motives in line with six teams of motives tagged managerial-strategic, clinical-strategic, managerial-operational, technological, clinical-operational and money motives. Five different classes for the impacts of Enterprise Resource Planning implementation were projected; they are process, technology, patient, people and money. The results indicate that operations – managerial and operations- clinical are necessary teams of motives.

**Firdous Bano (2014)** in his study, dispensed to know key problems for successful complete implementation of ERP in Indian firms. Few organizations have enforced Enterprise Resource Planning and plenty of a lot of are trying to adopt with a watch and see methodology owing to worry of success of such advanced and expensive project. But, considering the advantages of successful complete implementation of ERP project worldwide, it is timely effort to know problems in Enterprise Resource Planning implementation. ERP implementation could also be of low caliber if downside faced throughout and after implementation aren't properly addressed and leads to less overall advantages from Enterprise Resource Planning. It's so necessary for the management to anticipate such problems and address them quickly. During this study, case studies of Enterprise Resource Planning implementation in 2 Indian firms are developed. The case is developed by assembling information from published sources. The findings suggest that amendment in management, coaching of internal folks and integration of Enterprise Resource Planning with different systems are few key problems that necessitates management attention for implementation of Enterprise Resource Planning.

**Mustafa (2015)**, this study is conducted on 220 staff concerned in ERP

implementation in an international consumer commodity company to analyze the Critical Success Factors and their result on Enterprise Resource Planning implementation success from users' perspective. Findings indicate that variations in Critical Success Factors are perceived important and really have an impact on Enterprise Resource Planning implementation. The study indicates that the success of ERP implementation depends on the ERP Software selection, analysis of ERP Software, testing and implementation of ERP Software and finally the support from the vendor.

**M. K. Gandhi et al. (2015)** highlighted that ERP applications are enforced in varied organization to change the processes of the organization. The Organizations encounter varied problems throughout implementation within the organization in terms of resistance, non-cooperation, conflict, activities against the interest of the organization etc., because of varied reasons. Several of those problems are caused by internal staff that might be averted. These problems are sensitive, difficult and it's going to result in delay the Enterprise Resource Planning implementation or typically results in failure. This study identifies the foremost problems and provides answer to the issues.

**Sanjay Mohapatra et al. (2015)** discusses the use of Technology Acceptance Model for implementing Enterprise Resource Planning in public sector endeavor in India. Technology Acceptance Model is employed to seek out determinants that require to be thought of for Information System implementation at individual level. The analysis used primary data survey to seek out various factors that wedged Enterprise Resource Planning implementation at organization level and so mapped to determinants in Technology Acceptance Model. The framework developed from this analysis may be tried in different organizations by tuning the framework.

### **3.3 Literature Review on TAM**

**Kwasi Amoako-Gyampah et al. (2003)** in their article presents associate degree extension to the TAM in ERP implementation surroundings. The study evaluated the impact of shared beliefs within the benefits of a technology and known technology implementation success factors like communication and training on the perceived utility and perceived simple use throughout technology implementation. Shared beliefs are the beliefs that firm's participants share with their peers and superiors on



the benefits of the Enterprise Resource Planning system. Using knowledge gathered from the implementation of Enterprise Resource Planning system, we tend to show that each coaching and project communication influences the shared beliefs that users believe concerning the benefits of the technology which the shared beliefs influences the perceived utility and simple use of the technology. Thus, we tend to provide empirical and theoretical support for the utilization of social control interventions, like coaching and communication, to influence the acceptance of technology, since perceived utility and simple use contribute to behavioral intention to use the technology.

**Rajesri Govindaraju et al. (2008)** in their analysis aimed at finding out how Enterprise Resource Planning systems among the systems' users may be improved by analyzing the influence of variety of factors. A model is developed supported by TAM. Behavioural intention is employed as dependent variable to find the acceptance of Enterprise Resource Planning system among the users. Different factors are analyzed here like intrinsic involvement, situational involvement, argument for amendment, previous usage, coaching and project communication. User's belief about Enterprise Resource Planning systems and perceived utility are used as intervening variables. Data was collected to test the model in a Telecommunication Company. Information was collected through the distribution of questionnaires. Correlation analysis is employed using SEM methodology. This analysis shows that perceived utility absolutely influences behavioural intention to use Enterprise Resource Planning, and shared belief about Enterprise Resource Planning systems absolutely influences behavioral intention to use Enterprise Resource Planning systems, indirectly through perceived utility. This study additionally shows that intrinsic and situational involvement, project champions, shared belief and argument for amendment, coaching and project communication additionally indirectly influence the behavioural intention to use Enterprise Resource Planning systems.

**Salvador Bueno et al. (2008)** in their study assume that ERP systems are complicated tools. Owing to this quality, Enterprise Resource Planning turns out negative impacts on the users' acceptance. This article's aim is to focus on factors influencing the Enterprise Resource Planning users' acceptance and use. Specifically, the authors have developed a search model based on TAM for testing the influence of the

important Success Factors on Enterprise Resource Planning implementation. The important Success Factors used are: (1) prime management support, (2) communication, (3) cooperation, (4) coaching and (5) technological complexity. This analysis model has offered some proof concerning main acceptance factors on Enterprise Resource Planning that facilitate to sets the users' behavior toward Enterprise Resource Planning.

**DonHee Lee et al. (2009)**, a model is projected that describes the consequences of firms support, each formal and informal, on factors of Technology Acceptance Model. A survey form is developed to check the projected model. Totally 700 of questionnaires are distributed to users in little and medium enterprises that have enforced Enterprise Resource Planning systems and 209 responses are used for analyses. SEM is used to check the hypotheses. The results indicate that the firms support is a crucial issue for perceived utility and perceived simple use. They appear to guide to the next level of interest within the Enterprise Resource Planning system.

**BooYoung Chung et al. (2009)** proposed the method of developing an Enterprise Resource Planning model to guide complete Enterprise Resource Planning implementation project and to spot factors for successful Enterprise Resource Planning systems implementation. This study identifies factors related to the success and failure of Enterprise Resource Planning, and develops successful model to research the relationships between the important factors for the success of ERP systems. The projected Enterprise Resource Planning model adapts the TAM, DeLone and McLean's model and integrates with project management principles. The goal of the Enterprise Resource Planning model is to plan and implement Enterprise Resource Planning and facilitate senior managers to build higher choices during Enterprise Resource Planning systems in their firms.

**Didem Pasaoglu (2011)** in his study constructs a research model supported Technology Acceptance Model. The model is measured by multivariate analysis. The factors employed in model are: data concerning Enterprise Resource Planning, demographics, firm's culture, perceived use and actual use Enterprise Resource Planning system. The study indicated that Enterprise Resource Planning isn't solely a technical system however additionally a scheme requiring cluster work. The findings unconcealed that a majority of the enterprises not victimization ERP is aware of ERP

and needs to use it.

**Erasmus et al., C. (2015)**, no study was conducted earlier using TAM in South Africa. In total 23- items about Technology Acceptance Model was included in this survey which used cross sectional style. The results confirmed vital methods from perceived utility of the data system to attitudes towards and behavioral intentions to use it. ERP Practitioners ought to build user confidence by guaranteeing the convenience of use of a brand new system, coaching, providing relevant education and steerage. This study contributes to scientific data relating to the influence of individuals' perceptions of ERP system usage on their behavioral intentions and actual use of ERP system.

**TABLE 3.1** Other ERP Literature Review regarding TAM

<b>Reference</b>	<b>Focus</b>	<b>Lifecycle phase</b>
Nah et al. (2004)	The impact of four cognitive constructors (PU, PEOU, perceived compatibility, and perceived fit) on attitudes toward using ERP systems and symbolic adoption	Post-implementation (stabilization stage)
Amoako-Gyampah and Salam (2004)	The impact of one belief construct (shared beliefs in the benefits of a technology) and two technology success factors (training and communications) on PU and PEOU in one global organization	Implementation
Shivers-Blackwell and Charles (2006)	Student readiness for change (through gender, computer self-efficacy, and perceived benefits of ERP) on behavioural intention regarding the ERP implementation	Implementation

Bradley and Lee (2007)	The relationship between training satisfaction and PEOU, PU, effectiveness and efficiency in implementing an ERP system at a mid-sized university	Implementation
Hsieh and Wang (2007)	The impact of PU and PEOU on extended use	Post-implementation (routine stage)
Kwahk and Lee (2008)	Readiness for change (enhanced by two factors: organizational commitment and perceived personal competence) and its effect on the perceived technological value of an ERP system leading to its use	Post-implementation (stabilization stage)
Bueno and Salmeron (2008)	A research model based on TAM for testing the influence of selected CSF (top management support, communication, cooperation, training, and technological complexity) on ERP implementation	Implementation
Uzoka et al. (2008)	The application of TAM to the selection and use of ERP systems in organizations using: impact of system quality, information quality, service quality and support quality as key determinants of cognitive response	Selection
Sun et al. (2009)	Impacts on IT usage such as the role of ERP's perceived work compatibility with user intention,	Post-implementation (routine stage)

	usage and performance in work settings	
Shih and Huang (2009)	Behavioural intention and actual use as impacted by top management support, computer self-efficacy and computer anxiety	Post-implementation (routine stage)
Calisir et al. (2009)	Factors (subjective norms, compatibility, gender, experience, and education level) that affect behavioural intention to use an ERP system based on potential ERP users at one manufacturing organization	Implementation
Youngberg et al. (2009)	The impact of PEOU, results demonstrability, and subjective norms on PU and their impact on usage behaviour	Post-implementation (stabilization stage)
Lee et al. (2010)	Factor organizational support (formal and informal) on original TAM factors	Post-Implementation

### 3.4 Research Gap

Most literature on ERP solutions is focused on either evaluating the appropriateness of the ERP system vis-a-vis software, vendors, or consultants, or identifying critical successful factors (CSFs) affecting ERP selection and implementation (Yu, 2005), but less effort is given to identifying potential post-implementation impact (Gattiker and Goodhue, 2005). Several CSFs have been identified in the selection and implementation phases, including: top management support and involvement; clear goals, objectives, scope and planning; project team competence and organization; user training and education; business process reengineering; change management; effective communication; project management; user involvement; data analysis and conversion; consultants; project sponsor; architecture choice; and minimal customization (Welti,

1999; Al-Sehali, 2000; Parr and Shanks, 2000; Skok and Legge, 2002; Zhang *et al.*, 2002; Zhang *et al.*, 2002; Akkermans and Helden, 2002; Stratman, 2002; Gattiker and CFPIM, 2002; Umble *et al.*, 2002; Mabert *et al.*, 2003; Al-Mashari *et al.*, 2003; Bradford and Florin, 2003; Somers and Nelson, 2003; Gargeya and Brady, 2005; Ngai *et al.*, 2007; Finney and Corbett, 2007; Wang *et al.*, 2007; Bobek and Sternad, 2010). CSFs are not equally important in all phases of the ERP lifecycle, however (Bobek and Sternad, 2010); some influence operational effectiveness as well as implementation (Gattiker and Goodhue, 2005).

Much of the success of ERP implementation resides in the operational phase (Bradford, 2008; Motiwalla and Thompson, 2009). In the stabilization stage, ERP systems go through a post-implementation breaking-in period in which performance may not be typical of the long-term effects an organization might experience (Gattiker and Goodhue, 2005). In the routine stage, ERP systems might be implemented successfully from a technical perspective, but success depends on ERP users' attitudes toward and actual use of the system (Boudreau, 2002; Kwahk and Lee, 2008). ERP systems benefit organizations only to the extent that users accept and utilize them frequently and extensively. To improve the efficiency and effectiveness of ERP systems in the operation phase, organizations need to research the factors that impact user satisfaction.

In this area, the technological acceptance model (TAM) is widely used for explaining behavioural intent and usage; it can enhance understanding influences that increase the efficiency and effectiveness of ERP system use (Shih and Huang, 2009). Several researchers have applied TAM to examine ERP system use (Calisir *et al.*, 2009; Shih and Huang, 2009; Sun *et al.*, 2009; Youngberg *et al.*, 2009; Lee *et al.*, 2010), but few scholars have examined multiple external factors that influence intent to use an ERP system or ERP system usage in the stabilization stage. Although a small number of external factors fail to illuminate user opinions about specific systems (Agarwal and Prasad, 1999; Lu *et al.*, 2003; Sun *et al.*, 2009), most studies address only a small number of external factors.

The main objective of this research is to explore a large number of external factors which potentially influence attitudes and behaviour regarding ERP use in the operational phase of the ERP lifecycle. Because of the large sample size required to

apply TAM to multiple individual variables, we combine external factors into three groups: Personal Characteristics and Information Literacy (PCIL); System and Technological Characteristics (STC), and; Organizational Process Characteristics (OPC).

### 3.5 Presentation of the Study

This thesis has been divided into 6 chapters namely:

- **Chapter 1 - Introduction** provides an introduction to the study, evolution & definition of ERP, its advantages & disadvantages, ERP implementation life-cycle, ERP market in India, sectors studied i.e. Chemical, Pharma, Tyre, Bearing & Engineering, Technology Acceptance Model (TAM) and Business Process Reengineering (BPR).
- **Chapter 2 – Literature Review** focuses on reviews of past literature on ERP implementation and TAM. Based on the literature studied, research gap was identified.
- **Chapter 3 – Research Methodology** describes problem statement, significance of the study, definition of problem, objectives of the study, scope of work, research hypothesis, research design, data collection tool, statistical tools and Pilot study.
- **Chapter 4 – Data Analysis** is segregated into two sections. First section includes data analysis using Descriptive Statistics and second section deals with data analysis using Inferential Statistics. To carry out data analysis, SPSS package is used & based on the research objectives as well as hypothesis suitable statistical tools are selected.
- **Chapter 5 – Findings**, here the researcher has reported major findings of the research.
- **Chapter 6 – Conclusion, Major Contributions & Scope for further research** provides the summary of the overall study and conclusion, major contributions of this research and scope of further research.

## CHAPTER – 4

# RESEARCH METHODOLOGY

### 4.1 Introduction

The Technology Acceptance Model [TAM] proposed by Davis has been the most widely-used model for researching user acceptance and usage of information technology/information systems. Despite the existence of several additions to TAM connected with ERP use, the researcher aims to make further contribution in the area of external factors. Within this context the present research is focused on the mature use of ERP system (more than one year of ERP use in an organization).

A limited number of external factors mentioned in already published papers connected with TAM regarding ERP use have also been extended. The researcher has researched the effect of external factors through the second-order factors on the original TAM. The model has been empirically tested using the data collected from a survey of 508 ERP users from 5 Industries, which has been using an ERP system since 2010. The model has been analyzed using PLS approach

### 4.2 Problem Statement

“A study of ERP implementation in select industries”

### 4.3 Significance of the Study

Most literature on ERP solutions is focused on either evaluating the appropriateness of the ERP system vis-à-vis software, vendors, or consultants, or identifying Critical Success Factors (CSFs) affecting ERP selection and implementation (Yu, 2005), but less effort is given to identifying potential post-implementation impact (Gattiker and Goodhue, 2005). CSFs are not equally important in all phases of the ERP lifecycle, however (Bobek and Sternad, 2010); some influence operational effectiveness as well as implementation (Gattiker and Goodhue, 2005).

Much of the success of ERP implementation resides in the operational phase



(Bradford, 2008; Motiwalla and Thompson, 2009). In the stabilization stage, ERP systems go through a post-implementation breaking-in period in which performance may not be typical of the long-term effects an organization might experience (Gattiker and Goodhue, 2005). In the routine stage, ERP systems might be implemented successfully from a technical perspective, but success depends on ERP users' attitudes toward and actual use of the system (Boudreau, 2002; Kwahk and Lee, 2008). To improve the efficiency and effectiveness of ERP systems in the operation phase, organizations need to research the factors that impact user satisfaction. In this area, the Technology Acceptance Model (TAM) is widely used for explaining behavioral intent and usage; it can enhance the understanding of influences that increase the efficiency and effectiveness of ERP system in use (Shih and Huang, 2009). The study shows that extended external factors observed through the second-order factors have important influence on ERP usefulness and ERP ease of use; they also have a strong influence on the attitude toward using ERP system by ERP users in the routine (maturity) stage.

#### **4.4 Definition of Problem**

- ERP solutions go through three phases of lifecycle: selection, implementation and operation phase; the operation phase consists of the stabilization stage and the routine stage. To improve the efficiency and effectiveness of ERP system use in the operation phase, organizations need to research the factors that have impact on users' satisfaction. The literature shows that few published studies have examined users' adoption of ERP systems through a technological acceptance model (TAM) or examined external factors having influence on the intention to use an ERP system, or ERP use in the stabilization stage.
- The purpose of this research is to expose and research external factors which have influence on ERP users in the operation phase of ERP lifecycle and to investigate the impact of those factors on ERP system use.

#### **4.5 Objectives of the Study**

- 1) To study the profile of industries using ERP systems.
- 2) To study the effect of demographic profile on ERP usage.
- 3) To study the effect of type of industry on ERP systems.
- 4) To compare the ERP use in different sectors.
- 5) To study the linkages between ERP ease of use and ERP usefulness.
- 6) To study the linkages between ERP ease of use and attitude toward the ERP system.
- 7) To study the linkages between ERP usefulness and attitude toward the ERP system.
- 8) To study the linkages between Personal Characteristics & Information Literacy (PCIL) and ERP ease of use.
- 9) To study the linkages between System & Technological Characteristics (STC) and ERP ease of use.
- 10) To study the linkages between Organizational Process Characteristics (OPC) and ERP ease of use.

#### **4.6 Scope of Work**

- 1) Research has been confined to Gujarat state only.
- 2) Five industries have been identified for the purpose of this research study, i.e., Chemicals, Tyre, Pharmaceuticals, Design and Engineering.
- 3) The data were collected from only 2 companies for each Sector.

## 4.7 Research Hypotheses

**H1:** There is significant effect of **Demographic profile** of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H2:** There is significant effect of **Working Place** of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H3:** There is significant effect of **Company Experience** of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H4:** There is significant effect of **Current Job Experience** of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H5:** There is significant effect of **ERP Experience** of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H6:** There is significant effect of **Company** of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H7:** There is significant effect of **Sector** of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H8:** There is a positive and direct effect of ERP ease of use on ERP usefulness.

**H9:** There is a positive and direct effect of ERP ease of use on attitude toward the ERP system.

**H10:** There is a positive and direct effect of ERP usefulness on attitude toward the ERP system.

**H11:** There is a significant effect of Personal Characteristics & Information Literacy (PCIL) on ERP ease of use.

**H12:** There is a significant effect of System & Technological Characteristics (STC) on ERP ease of use.

**H13:** There is a significant effect of Organizational Process Characteristics (OPC) on ERP ease of use.

## **4.8 Research Design**

The research design for my study is primarily exploratory and descriptive in nature. It is exploratory because at the first stage it involved the provision of insights into the research topic and comprehension of the problem situation. This has led me to formulate the research problem, develop the objectives of the study, isolate the key parameters of the study and plan the future course of action. The descriptive research attempts to describe systematically a situation, problem, phenomenon, service or programme; it also describes the characteristics of the respondents and the degree of association or relationship between the variables being studied. It helps to make specific predictions. These two research designs were apt for the present study.

### **4.8.1 Universe**

All employees using ERP since last 1 year.

### **4.8.2 Sample Size**

For the purpose of this study, as the researcher was not having Sampling Frame, so Non-probabilistic Convenient Sampling was employed. The total responses collected by the researcher were 537, but as some of the questionnaires were not properly filled, the sample size reduced to 508. It is not possible to have large sample size because of the nature of the study. The researcher has used his own judgment keeping in mind

the statistical requirement for Data Analysis.

**TABLE 4.1** List of Companies & Responses received

Sr. No.	Name of Company	No. of responses
1.	Linde Engg. India Pvt. Ltd, Vadodara	51
2.	L&T Engg, Vadodara	51
3.	GSFC Ltd, Vadodara	60
4.	GNFC Ltd., Bharuch	33
5.	FAG Bearing, Vadodara	48
6.	ABC Bearing, Bharuch	51
7.	Aventis Sanofi, Ankleshwar	51
8.	Zydus Cadila, Ahmedabad	51
9.	CEAT Tyres, Kalol	61
10.	Apollo Tyres, Vadodara	51
<b>Total</b>		<b>508</b>

### 4.8.3 Sampling Technique

Sampling technique or sampling design can be broadly grouped in two distinct categories: Probability and Non-Probability. In Probability sampling, all the elements in the population have a known chance or probability of being included in the sample. In non-probability sampling, the elements do not have a known or pre-determined chance of being selected as subject. Probability samples are used in studies where the researcher is looking for high degree of representativeness so that generalizations about the sample results can be made. However, when other factors like cost, time, and convenience become important rather than generalizability, then non-probability sampling is used.

In this research, non-probability sampling technique is selected for the study. The reason behind going for non-probability sampling is that, according to Malhotra & Das (2005), in this technique researcher can decide what elements to include in the sample. This technique also gives good estimation of the population characteristics.

Further, the most common type of non-probability sampling done without any

restrictions is Convenience sampling. In this the researcher has the freedom of choosing any respondent based on his convenience. Respondents become a part of the sample because they happen to be at the right place in at the right time. Convenience sampling is an economical method and is generally used in exploratory phase of a research project. In this research, Convenience sampling is used as a part of Non-Probability Sampling as the respondents are selected based on the convenience of the researcher. The survey was conducted during January 2015 to November 2015.

#### 4.8.4 Sources of Data

There are two types of data sources which are as follows: -

- **Primary Data:** Primary data, also called as first hand data contains information that has been collected specifically for the purpose of investigation at hand. It is collected by the researcher himself for the purpose of a specific inquiry or study. There are various methods for primary data collection such as observation, experimentation, questionnaire, interviews and case study.
- **Secondary Data:** Secondary data is the information that has been gathered not for the immediate study but for some other purposes. It is collected by people or agencies in response to some other problem rather than the problem at hand. This data is primary data for the agency that collects it and becomes secondary for someone else who uses this data for own purpose. Various methods for secondary data collection are publications of central, state and foreign government, journals, books, magazines, newspaper, and reports.

In this research, Primary data for the study was carried out with the help of questionnaire wherein ERP users of 10 companies were the respondents. The ERP users were from all levels of management. Secondary data was collected from the previous research work conducted, journals, books, magazines, newspapers, Company reports including annual reports. Various online journals have been referred such as Emerald, Ebsco, Springer, Jstor etc.

#### 4.9 Data Collection Tool

The components of the proposed model are ERP usefulness, ERP ease of use, and attitude toward ERP use, each influenced by various external factors. The external

factors are distributed among three second-order constructs which are: information literacy and personal characteristics (ILPC), STC and OPC. Second-order factors are composed by specifying a latent variable which represents all the manifest variables of the underlying lower-order factors. ILPC includes: computer experience, computer self-efficiency, technological innovativeness and computer anxiety. STC is composed of: ERP data quality, ERP system functionality, ERP system performance and user manual helpfulness. OPC includes: social influence, fit with business processes, ERP training and education, ERP support and ERP communication. A structured Questionnaire was prepared which included all the items of 16 first-order factors and 3 second-order factors. All factor items were measured on a seven-point Likert scale, ranging from “strongly disagree” to “strongly agree”, taken from relevant prior research and adapted to ERP usage. Demographic information was collected as well.

**TABLE 4.2** External Factors mentioned by Authors and its relevant question numbers in Questionnaire

<b>Factors</b>	<b>Authors</b>	<b>Description</b>	<b>Question Nos.</b>
<b>Personal Characteristics &amp; Information Literacy (PCIL)</b>			
Computer self-efficiency	Venkateshand Davis (2000), Venkatesh <i>et al.</i> (2003), Thompson <i>et al.</i> (2006), Shivers - Blackwell and Charles (2006), Venkatesh and Bala (2008), Shih and Huang(2009)	The degree to which an individual believes that he/she has the ability to perform a specific task/job using the computer (Venkatesh and Bala, 2008; Shih and Huang, 2009)	1, 2, 3, 4
Technological innovativeness	Agarwal and Prasad (1999), Rogers (2003), Yi <i>et al.</i> (2006), Thompson <i>et al.</i> (2006)	Represents the degree to which an individual is willing to try out a new IT (Agarwal and Prasad, 1999)	5, 6, 7
Computer anxiety	Venkatesh <i>et al.</i> (2003), Liu and Ma (2006), Venkatesh and Bala (2008), Shih and Huang (2009)	Represents the degree of an individual's apprehension, or even fear, when	8, 9, 10

		she/he is faced with the possibility of using computers (Venkatesh <i>et al.</i> ,2003)	
Computer experience	Davis <i>et al.</i> (1989), Venkatesh <i>et al.</i> (2003), Thompson <i>et al.</i> (2006), Venkatesh and Bala (2008), Calisiret <i>al.</i> (2009)	Experience with computer has been found to be an important factor for the acceptance of a technology (Calisir <i>et al.</i> , 2009)	11
<b>System &amp; Technological Characteristics (STC)</b>			
ERP Data Quality	Venkatesh (1998), Venkatesh and Davis (2000), Gattiker and Goodhue (2005), Kositanurit et al. (2006), Insiti (2007)	Without accurate and relevant data, an organization is severely constrained in the coordination and task efficiency benefits it can achieve from its ERP system (Gattiker and Goodhue, 2005)	12, 13, 14, 15, 16
ERP System Functionality	Musaji (2002), Somers et al. (2003), Lu et al. (2003), Kositanurit et al. (2006), Insiti (2007)	System functions are used to measure the rapid response, stability, easy usage and flexibility of the system (Lu et al., 2003)	17, 18, 19
ERP System Performance	Boudreau (2002), Musaji (2002), Venkatesh et al. (2003), Somers et al. (2003), Kositanurit et al. (2006), Liu and Ma (2006), Insiti (2007)	Refers to the degree to which person believes that a system is reliable and responsive during a normal course of operations (Liu and Ma, 2006)	20, 21, 22, 23, 24, 25, 26, 27, 28, 29
User Manual	Kelley (2001),	The degree to	30, 31, 32,



Helpfulness	Boudreau (2002), Musaji (2002), Kositanurit et al. (2006), Bradford (2008)	which an individual views inadequate user manuals as the reason for unsuccessful ERP performance (Kelley, 2001)	33
<b>Organizational Process Characteristics (OPC)</b>			
Social Influence	Venkatesh (1998), Venkatesh et al. (2003), Thompson et al. (2006), Bradford (2008), Calisir et al. (2009)	Social influence joins two factors: subjective norms and social factors. Subjective norms are defined “as a person’s perception that most people who are important to him/her think that he/she should or should not perform the behaviour in question” (Venkatesh, 1998). Social factors are “an individual’s internalization of the reference group’s subjective culture, and specific interpersonal agreements that the individual has made with others in specific social situations” (Venkatesh et al., 2003)	34, 35, 36, 37
Business Process Fit	Amoako-Gyampah and Salam (2004), Nah et al. (2004), Bradley and Lee	Fit with business processes from an end-user’s	38, 39, 40, 41, 42

	(2007), Bradford (2008), Bobek and Sternad (2010)	perspective is the degree to which the ERP system perceived by a user meets his/her organization's needs (Nah et al., 2004)	
ERP Training & Education	Amonko-Gyampah and Salam (2004), Bradley and Lee (2007), Bueno and Salmeron (2008), Bobek and Sternad (2010)	ERP training and education is defined as the degree to which a user thinks that he/she has had enough formal and informal training after ERP implementation( Bradley and Lee, 2007)	43, 44, 45, 46
ERP Support	Boudreau (2002), Lee et al. (2010)	Defined as the degree to which an individual views adequate ERP support as the reason for one's successful ERP usage (Boudreau, 2002)	47, 48, 49, 50
ERP Communication	Kelley (2001), Musaji (2002), Boudreau (2002), Amoako-Gyampah and Salam (2004), Bueno and Salmeron (2008), Bobek and Sternad (2010)	ERP communication problems refer to the lack of communication regarding the ERP applications and their modifications (Kelley, 2001)	51, 52, 53

#### 4.10 Statistical Tools

The process of converting raw data into information starts with data processing and continues to data analysis. The analysis involves using statistical techniques to order data with the objective of obtaining answers to research questions. Analysis of data is done using a careful plan, developed by an open-minded and flexible analyst. The

researcher used following statistical techniques for data analysis:-

- **Frequency Distribution:** In a frequency distribution, one variable is considered at a time. The objective is to obtain a count of the number of responses associated with different values of the variable. In current research, frequency distribution was used for Gender, Age, Education, Company, Sector, Company experience, Current job experience, ERP experience, Working place and Computer experience.
- **Cross Tabulations:** Although answers to questions related to a single variable are interesting, they often raise additional questions about how to link that variable to other variable. Cross tabulation is a tool that allows us to compare the relationship between two variables. It is the merging of the frequency distribution of two or more variables in a single table. In this research, Cross tabulations were done between Company & Gender, Company & Age, Company & Education, Company & Company Experience, Company & Current Job Experience and Company & ERP experience.
- **Cronbach Alpha test:** Also known as Coefficient Alpha, is the average of all possible split-half coefficients resulting from different ways of splitting the scale items. This coefficient varies from 0 to 1, and a value of 0.6 or less generally indicates unsatisfactory internal consistency reliability. In this research, it was conducted to check the reliability of questionnaire.
- **Confidence Interval test:** The purpose of confidence interval test is check how confident respondents are in giving answers. In this research, it was conducted to check the validity of research tool pertaining to attitude towards ERP use.
- **Mann-Whitney U Test:** The Mann-Whitney U test is used to compare differences between two independent groups when the dependent variable is either ordinal or continuous, but not normally distributed. Here, we have applied this test to study the effect of Gender on factors that affect the utilization and better use of ERP solutions.
- **Kruskal-Wallis Test:** The Kruskal-Wallis H test (sometimes also called the "one-way ANOVA on ranks") is a rank-based nonparametric test that can be used to

determine if there are statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable. It is considered the nonparametric alternative to the one-way ANOVA, and an extension of the Mann-Whitney U test to allow the comparison of more than two independent groups. Here, we have applied this test to study the effect of Age, Education, Working Place, Total no. of years worked, No. of years worked in current job, No. of years worked with ERP system and Company, on factors that affect the utilization and better use of ERP solutions.

- **Confirmatory Factor Analysis (CFA):** CFA is used to represent all the constructs in the scale along with their items/variables in the measurement model and to analyze the construct validity of the scale. It is usually applied when the structure of the scale is already developed.
- **Structural Equation Modeling (SEM):** SEM is a statistical method for analyzing cause and effect relationships (dependence relationships) among a set of constructs represented by multiple measurable variables/items in a single model. SEM uses the concept of both regression analysis and exploratory factor analysis. In this research, SEM is used to examine the path significance and magnitude of each of our hypothesized effects and the overall explanatory power of the proposed model.

#### **4.11 Statistical Package**

Above data analysis was carried out with the help of Statistical Package for Social Science (SPSS Version 21).

#### **4.12 Pilot Study**

A Pilot study is a mini-version of a full-scale study or a trial run done in preparation of the complete study. The latter is also called a 'feasibility' study. It can also be a specific pre-testing of research instruments, including questionnaires or interview schedules. The appropriateness of the questions of the questionnaire was tested including question content, wording, sequence, form and layout. The questionnaire was pilot tested with a group of 30 ERP users in Linde Engg. India Pvt. Ltd., Vadodara. Based on the results of the pilot testing, revisions and additions were made

to the questionnaire. Pilot participants were included in the main data gathering effort since they were part of the population of interest. With the use of Cronbach Alpha and confidence interval test, reliability of the questionnaire was checked.

**4.12.1 Reliability and Validity Test of an Instrument**

Reliability refers to a measure’s ability to capture an individual’s true score, i.e. to distinguish accurately one person from another. While a reliable measure will be consistent, consistency can actually be seen as a by-product of reliability, and in a case where we had perfect consistency (everyone scores the same and gets the same score repeatedly), reliability coefficients could not be calculated.

Validity refers to the question of whether our measurements are actually hitting on the construct we think they are, while we can obtain specific statistics for reliability (even different types), validity is more of a global assessment based on the evidence available There are three types of validity.

- 1) Content validity
- 2) Criterion validity
- 3) Construct-related validity

**4.12.2 Validity Testing of a Research Instrument**

For carrying out this test, first of all factor analysis is to be done on questions which have Likert Scale. From the factors extracted, take the factor loadings of the respective factors, square it and then divide by the total number of statements. If this figure turns out to be more than 0.5, then research instrument has construct validity.

**TABLE 4.3 ERP Statements & Factor Loading**

Statements	1
Using ERP solution in my job enables me to accomplish tasks more quickly.	.681
I find ERP solution useful in my job.	.675
My supervisor is very supportive of the use of the ERP system for my job.	.663
I am satisfied with the speed of interacting with the system.	.643
Using ERP solution improves my job performance.	.643
The ERP system provides the precise information I need.	.642

The ERP solution fits well with the business needs of me.	.641
The organization has supported the use of the ERP system.	.608
I would rate the intensity of my job-related system use to be:	.603
Using ERP solution enhances my effectiveness on the job.	.598
The system maintenance and the way it is provided meet my need adequately.	.594
The information contents provided by the ERP system meet my needs.	.580
The ERP solution fits well with the business need of my department.	.573
The ERP system provides reports that seem to be exactly what I need.	.572
It is fast to search data in the ERP system.	.572
The content and index of the user manuals are useful.	.560
if there was no one around to tell me what to do as I go.	.556
Using ERP solution makes it easier to do my job.	.554
I like to experiment with new IT.	.536
Using ERP system is compatible with all aspects of my work.	.526
Using the ERP system is a good idea.	.513
If I hear about a new IT, I would look for ways to experiment with it.	.507
People who influence my behaviour think that I should use the ERP system.	.503

In our case, take square of above nos.,  $(0.681)^2 + (0.675)^2 + \dots + (0.503)^2$  and divide it by total number of statements which is 23, so we get 0.349 which is less than 0.5 so the construct validity of a research instrument is reasonable.

### 4.12.3 Reliability Testing of a Research Instrument

**TABLE 4.4 Reliability Statistics**

Cronbach's Alpha	N of Items
.902	70

**TABLE 4.5 Item-Total Statistics**

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
If there was no one around to tell me what to do as I go.	330.8917	1247.714	.456	.899
If I had only the software manuals or/and the build-in help for assistance.	330.7224	1254.248	.400	.900

If I could call someone for help if I got stuck.	330.5374	1256.474	.399	.900
If I had a lot of time to complete the job for which the software was provided.	330.8327	1273.599	.211	.901
If I hear about a new IT, I would look for ways to experiment with it.	330.9370	1242.714	.462	.899
Among my peers I am usually the first to try out new IT.	330.9862	1253.958	.415	.899
I like to experiment with new IT.	330.9114	1241.296	.492	.899
Working with a computer makes me nervous.	332.8622	1310.352	-.127	.905
I get a sinking feeling when I think of trying to use a computer.	332.8130	1318.776	-.198	.906
I feel comfortable working with a computer.	330.3386	1270.903	.236	.901
The ERP system provides the precise information I need.	330.2559	1237.031	.554	.898
The information contents provided by the ERP system meet my needs.	330.1772	1248.024	.514	.899
The ERP system provides reports that seem to be exactly what I need.	330.1102	1251.550	.523	.899
The ERP system provides sufficient information to my needs.	330.1240	1262.184	.417	.900

The ERP system provides complete features I need.	330.3386	1259.940	.370	.900
I am satisfied with the speed of interacting with the system.	330.3150	1236.910	.571	.898
It is easy to detect and correct possible errors in the ERP system.	330.2913	1256.830	.430	.899
It is easy to change the output format.	330.4016	1256.702	.380	.900
It is fast to search data in the ERP system.	330.2185	1247.362	.526	.899
The ERP system loads quickly.	330.3366	1254.476	.437	.899
The system reliably handles my queries.	330.1791	1252.325	.459	.899
I was able to retrieve data quickly.	330.0413	1259.641	.442	.899
It is fast to create a new record (vendor, customer etc.) in this system.	330.1220	1257.740	.414	.900
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	332.2953	1298.638	-.029	.904
The ERP system is subject to frequent system problems and crashes.	332.5709	1313.709	-.160	.905
The description of the functions /commands displayed on screen is clear to me.	330.3622	1266.184	.349	.900



The function / commands names of the ERP system are easy to remember.	330.5039	1266.665	.319	.900
The exact definition of data fields relating to my tasks is easy to find out.	330.3130	1266.176	.333	.900
The content and index of the user manuals are useful.	330.2677	1249.624	.523	.899
The user manuals are current (up to date).	330.1909	1262.952	.411	.900
The user manuals are complete.	330.1929	1259.410	.414	.900
The user manuals are easy to understand and follow.	330.1929	1265.055	.332	.900
My supervisor is very supportive of the use of the ERP system for my job.	330.2717	1227.196	.624	.897
The organization has supported the use of the ERP system.	330.1555	1243.070	.562	.898
People who influence my behaviour think that I should use the ERP system.	330.1890	1250.658	.480	.899
People who are important to me think that I should use the ERP system.	330.1004	1254.438	.448	.899
The ERP solution fits well with the business needs of me.	330.1831	1241.112	.572	.898

The ERP solution fits well with the business need of my department.	330.1969	1244.967	.538	.898
The ERP system is satisfactory in meeting my needs.	330.2264	1254.207	.434	.899
I believe there are some important problems with the way the ERP system is managed	330.9055	1254.054	.350	.900
The system maintenance and the way it is provided meet my need adequately.	330.2776	1244.868	.552	.898
There is not enough training for me on how to find, understand, access or use the ERP system.	331.4882	1268.329	.215	.902
I have received additional formal training for ERP since the conclusion of the above training.	330.8602	1282.298	.116	.902
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	330.7874	1271.679	.208	.902
I feel that I need additional ERP training to complete my current job tasks.	330.4961	1285.876	.087	.903
I do not know who to phone for support for this application.	332.6752	1301.289	-.051	.904

The support people talk in terms that I do not understand.	332.5433	1311.752	-.141	.905
I ask other users for help with this application rather than the support staff.	331.7953	1311.358	-.124	.906
The support for this application is inadequate.	332.1358	1304.832	-.078	.905
The ERP team does not provide feedback regarding users' requests to modify this application.	332.3150	1291.660	.027	.904
The ERP team did not inform me about the current situation of this application.	332.2146	1311.912	-.131	.906
The ERP team did not explain how application modifications would impact my job.	332.0945	1303.494	-.067	.905
Using ERP solution in my job enables me to accomplish tasks more quickly.	330.2677	1228.488	.630	.897
Using ERP solution improves my job performance.	330.1713	1243.420	.589	.898
Using ERP solution enhances my effectiveness on the job.	330.1260	1248.308	.545	.899
Using ERP solution makes it easier to do my job.	330.0354	1253.537	.510	.899

I find ERP solution useful in my job.	330.2854	1229.897	.605	.898
My interaction with ERP solution is clear and understandable.	330.1909	1257.906	.434	.899
Interacting with ERP solution does not require a lot of my mental effort.	330.4567	1254.150	.432	.899
I find ERP solution is easy to use.	330.0945	1265.545	.386	.900
I find it easy to get ERP solution to do what I want it to do.	330.2323	1261.315	.380	.900
Using ERP system is compatible with all aspects of my work.	330.2835	1253.639	.475	.899
Using ERP system fits well with the way I like to work.	330.2953	1254.157	.469	.899
Using ERP system fits into my work style.	330.1949	1255.238	.470	.899
Using the ERP system is a good idea.	330.1102	1252.793	.479	.899
I like the idea of using the ERP system to perform my job.	330.0276	1264.402	.424	.900
I would rate the intensity of my job-related system use to be:	330.7835	1245.243	.497	.899
Using most of the features of the ERP solution?	331.0236	1271.838	.230	.901
Using more features than the other users of the ERP solution?	331.0039	1255.878	.389	.900

**TABLE 4.4 Reliability Statistics**

Cronbach's Alpha	N of Items			
Using more obscure aspects of the ERP solution?	331.1870	1254.582	.379	.900

**TABLE 4.6 Scale Statistics**

Mean	Variance	Std. Deviation	N of Items
335.5118	1298.002	36.02779	70

As Cronbach Alpha for the instrument is 0.902 which is more than 0.7 so the reliability of the questionnaire is very high. Further no items are to be deleted as all have the Cronbach Alpha Score more than 0.7. So the questionnaire has reliability and validity both.

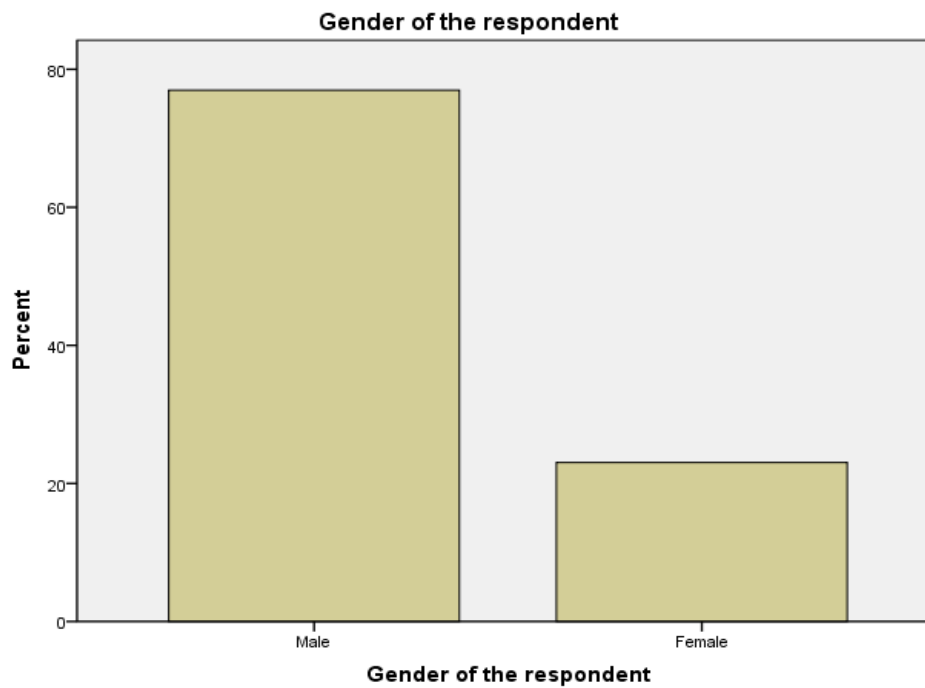
# CHAPTER – 5

## DATA ANALYSIS

### 5.1 Descriptive Statistics

**TABLE 5.1 Gender of the respondent**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	391	77.0	77.0	77.0
	Female	117	23.0	23.0	100.0
	Total	508	100.0	100.0	



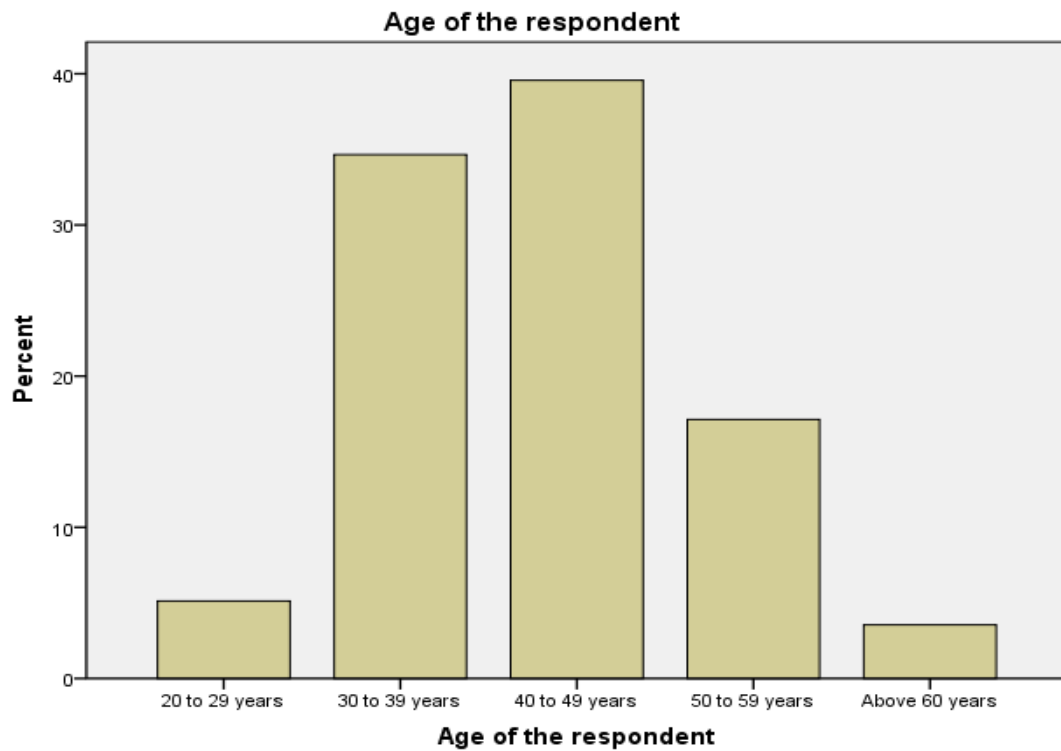
**GRAPH 5.1 Gender of the Respondent**

**Interpretation:-**

Out of 508 respondents, 77% are male and 23% are female.

**Age of the respondent****TABLE 5.2 Age of the respondent**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 20 to 29 years	26	5.1	5.1	5.1
30 to 39 years	176	34.6	34.6	39.8
40 to 49 years	201	39.6	39.6	79.3
50 to 59 years	87	17.1	17.1	96.5
Above 60 years	18	3.5	3.5	100.0
Total	508	100.0	100.0	

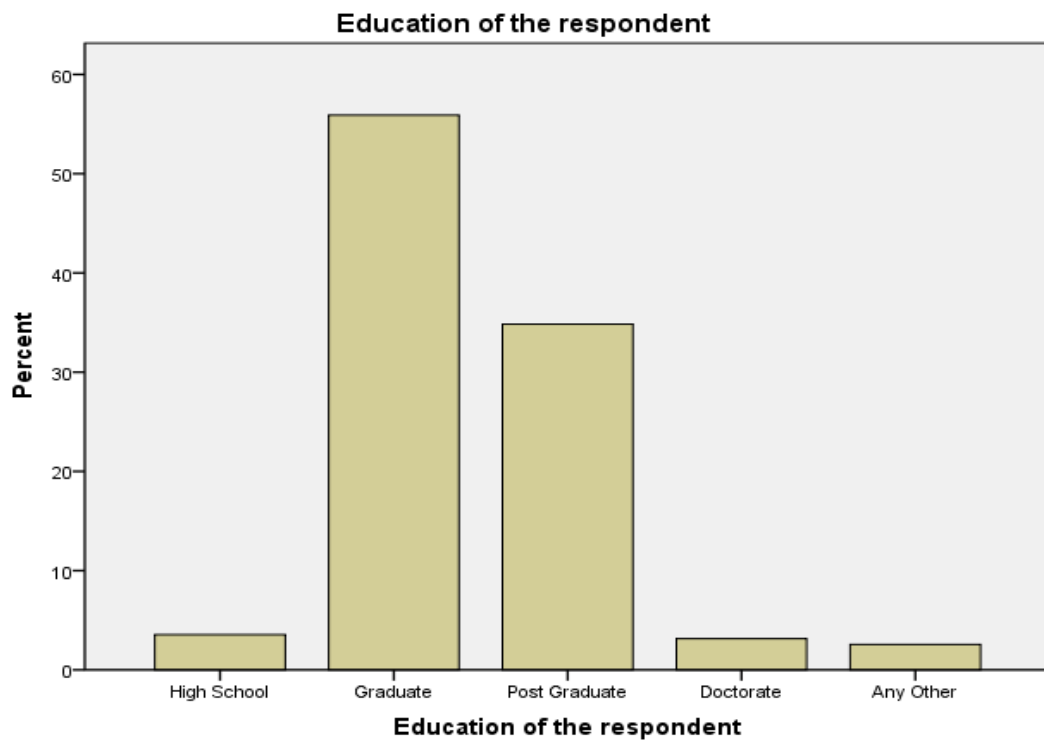
**GRAPH 5.2 Age of the Respondent****Interpretation:-**

Out of 508 respondents, 5.1% belong to 20-29 years, 34.6% belong to 30-39 years, 39.6% belong to 40-49 years, 17.1% belong to 50-59 years and 3.5% belong to above 60 years.

## Education of the respondent

**TABLE 5.3 Education of the respondent**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid High School	18	3.5	3.5	3.5
Graduate	284	55.9	55.9	59.4
Post Graduate	177	34.8	34.8	94.3
Doctorate	16	3.1	3.1	97.4
Any Other	13	2.6	2.6	100.0
Total	508	100.0	100.0	



**GRAPH 5.3 Education of the Respondent**

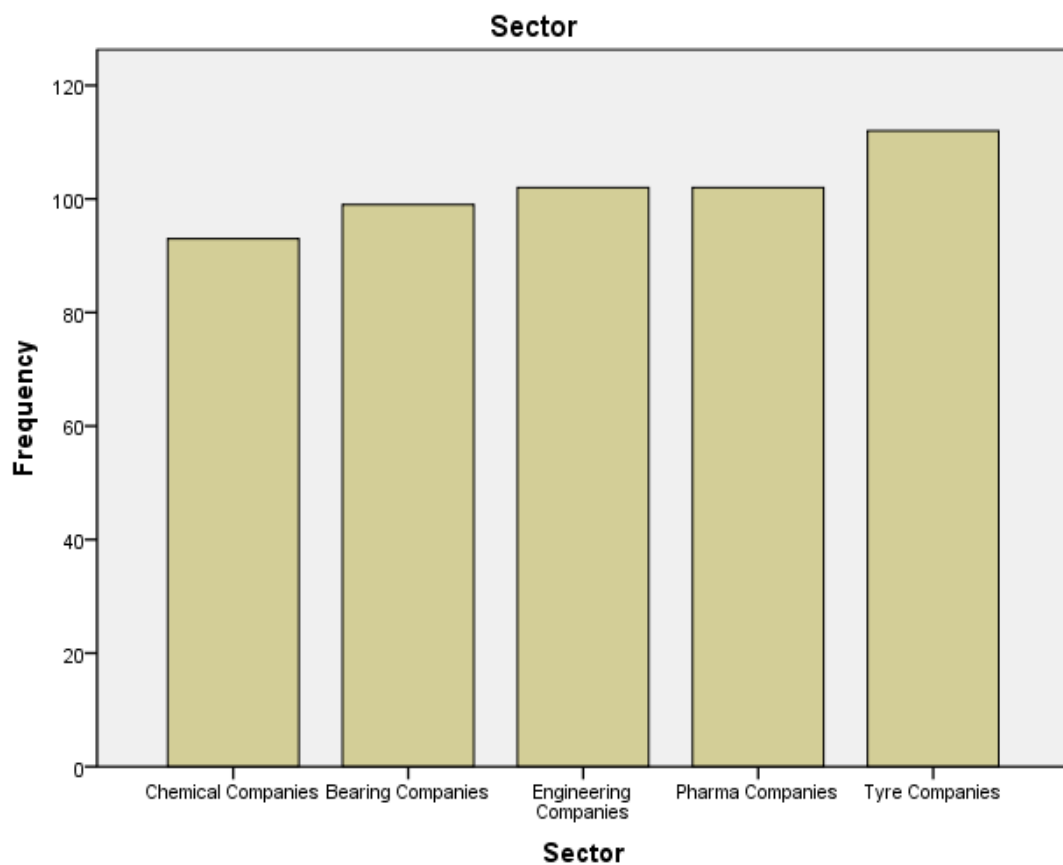
### **Interpretation:-**

Out of 508 respondents, 3.5% did High School, 55.9% were Graduates, 34.8% were Post-Graduates, 3.1% were Doctorates and 2.6% were others.



**Sector****TABLE 5.4 Sector**

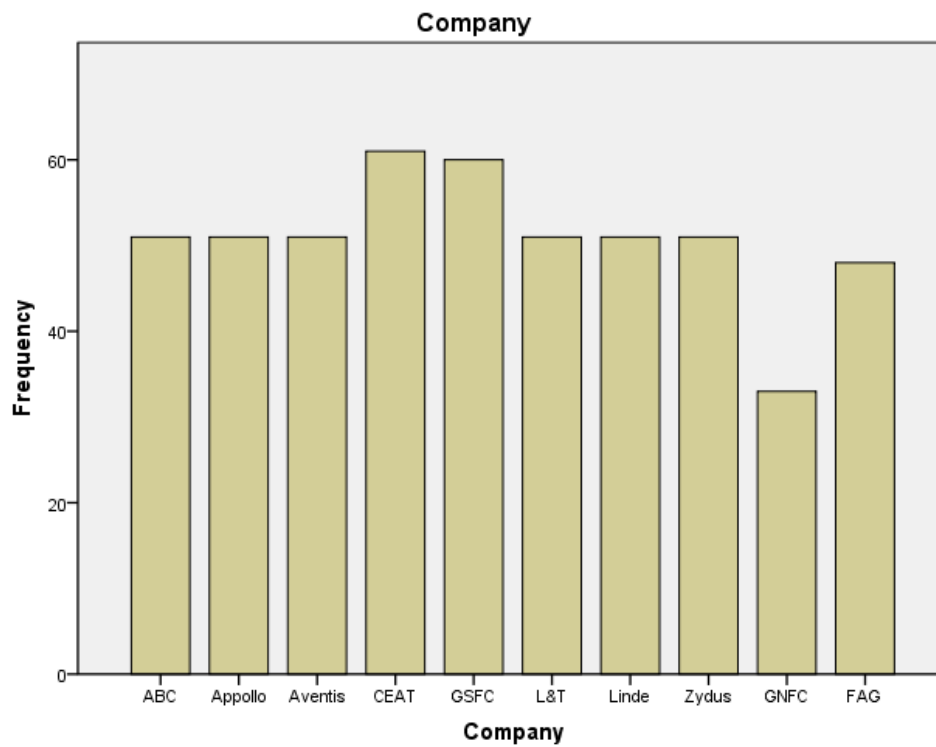
	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Chemical Companies	93	18.3	18.3	18.3
Bearing Companies	99	19.5	19.5	37.8
Engineering Companies	102	20.1	20.1	57.9
Pharma Companies	102	20.1	20.1	78.0
Tyre Companies	112	22.0	22.0	100.0
Total	508	100.0	100.0	

**GRAPH 5.4 Sector of the Respondent****Interpretation:-**

Out of 508 respondents, 18.3% belong to Chemical companies, 19.5% belong to Bearing companies, 20.1% belong to Engineering companies, 20.1% belong to Pharma companies & 22% belong to Tyre companies.

**Company****TABLE 5.5 Company**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid ABC	51	10.0	10.0	10.0
Apollo	51	10.0	10.0	20.1
Aventis	51	10.0	10.0	30.1
CEAT	61	12.0	12.0	42.1
GSFC	60	11.8	11.8	53.9
L&T	51	10.0	10.0	64.0
Linde	51	10.0	10.0	74.0
Zydus	51	10.0	10.0	84.1
GNFC	33	6.5	6.5	90.6
FAG	48	9.4	9.4	100.0
Total	508	100.0	100.0	

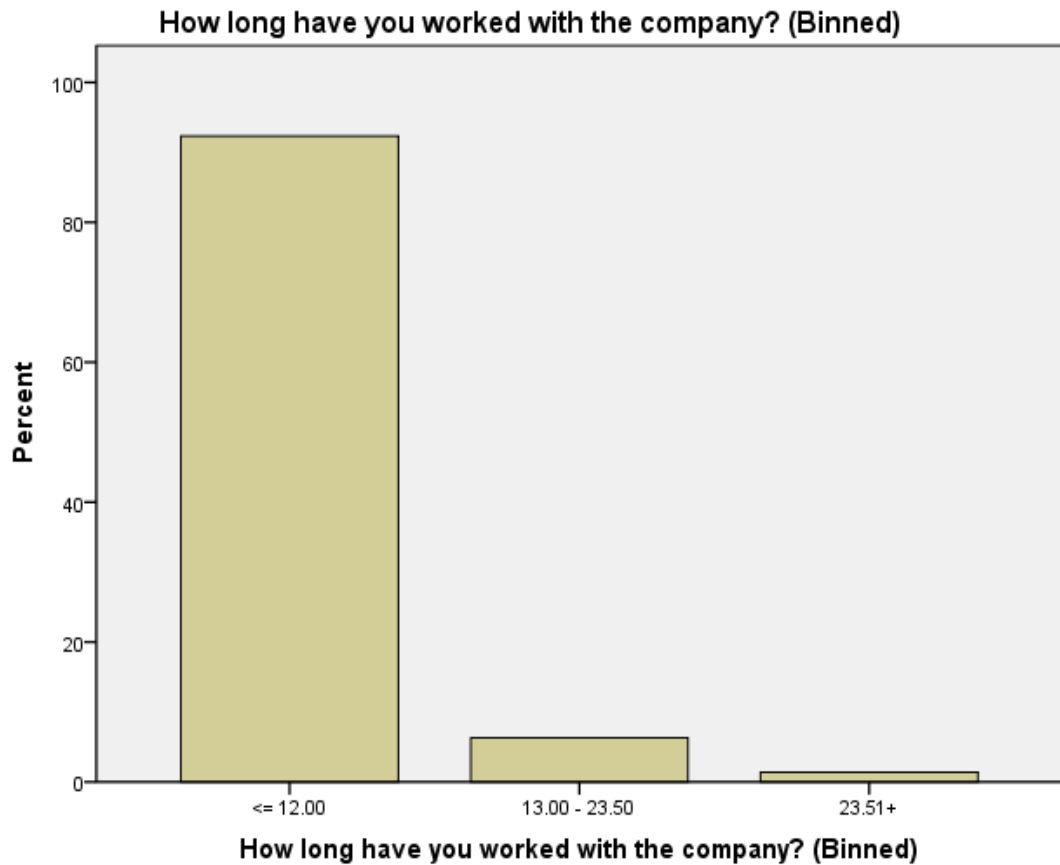
**GRAPH 5.5 Company of the Respondent****Interpretation:-**

Out of 508 respondents, 10% each belong to ABC Bearing, Apollo Tyres, Aventis Pharma, L&T, Linde Engg and Zydus Pharma. 12% belong to CEAT Tyres, 11.8% belong to GSFC Ltd, 6.5% belong to GNFC Ltd. & 9.4% belong to FAG Bearings.

**How long have you worked with the company? (Binned)**

**TABLE 5.6 Company Experience (Binned)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid <= 12.00	469	92.3	92.3	92.3
13.00 - 23.50	32	6.3	6.3	98.6
23.51+	7	1.4	1.4	100.0
Total	508	100.0	100.0	



**GRAPH 5.6 Company Experience of the Respondent**

**Interpretation:-**

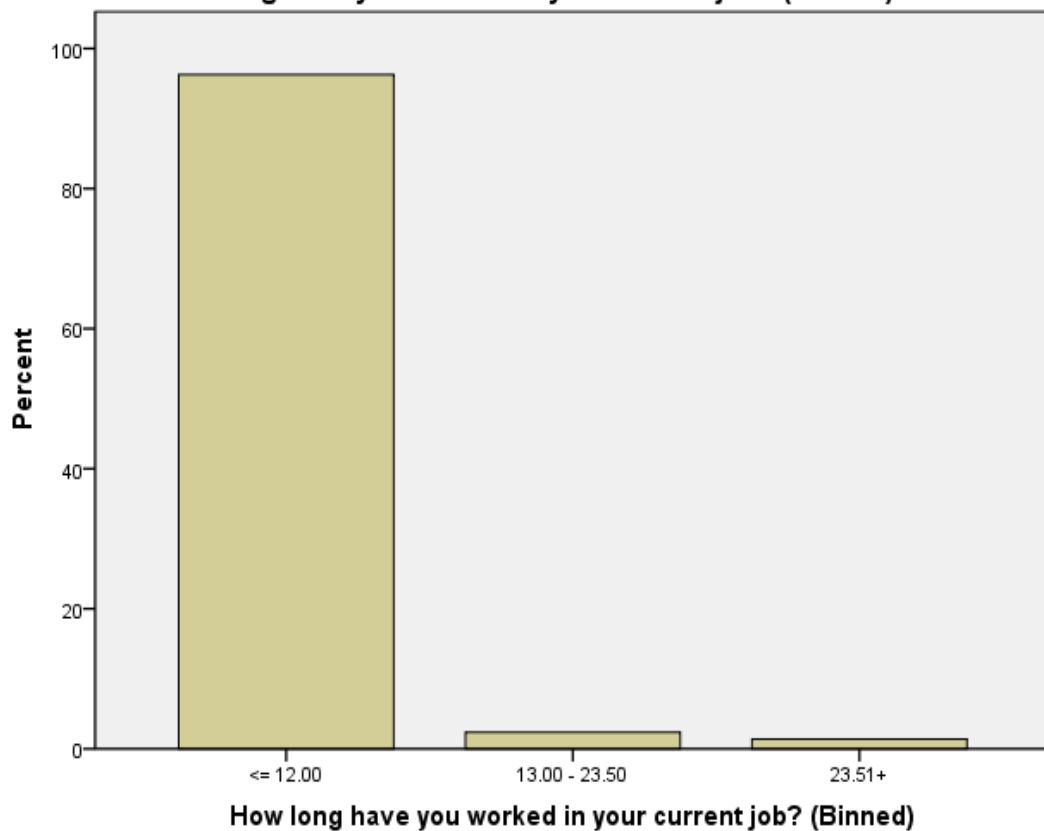
Out of 508 respondents, 92.3% has less than 12 years experience, 6.3% has experience between 13 to 24 years and 1.4% has more than 24 years experience in the company.

**How long have you worked in your current job? (Binned)**

**TABLE 5.7 Current Job Experience (Binned)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid <= 12.00	489	96.3	96.3	96.3
13.00 - 23.50	12	2.4	2.4	98.6
23.51+	7	1.4	1.4	100.0
Total	508	100.0	100.0	

**How long have you worked in your current job? (Binned)**



**GRAPH 5.7 Current Job Experience of the Respondent**

**Interpretation:-**

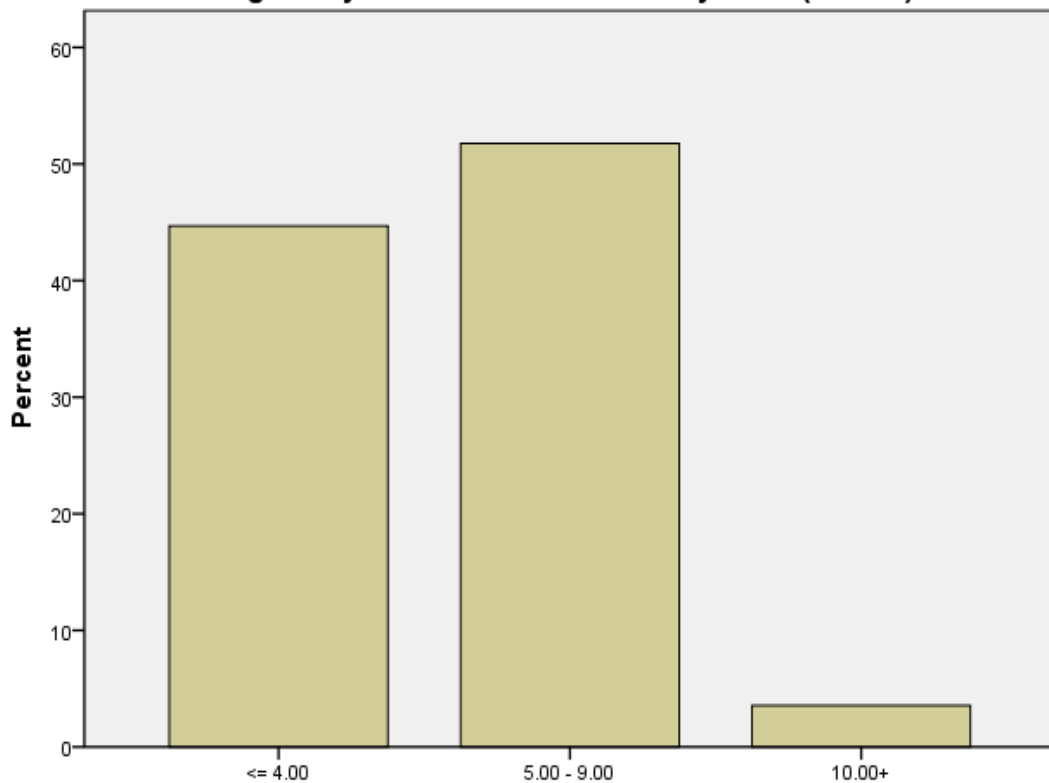
Out of 508 respondents, 96.3% has less than 12 years experience, 2.4% has experience between 13 to 24 years and 1.4% has more than 24 years experience in their current job.

**How long have you worked with the ERP system? (Binned)**

**TABLE 5.8 ERP Experience (Binned)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<= 4.00	227	44.7	44.7	44.7
	5.00 - 9.00	263	51.8	51.8	96.5
	10.00+	18	3.5	3.5	100.0
	Total	508	100.0	100.0	

**How long have you worked with the ERP system? (Binned)**



**How long have you worked with the ERP system? (Binned)**

**GRAPH 5.8 ERP Experience of the Respondent**

**Interpretation:-**

Out of 508 respondents, 44.7% has less than or equal to 4 years experience, 51.8% has experience between 5 to 9 years and 3.5% has more than 10 years experience in the ERP system.

## Working place

**TABLE 5.9 Working place**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Worker	183	36.0	36.0	36.0
	Lower Management	206	40.6	40.6	76.6
	Middle Management	104	20.5	20.5	97.0
	Top Management	15	3.0	3.0	100.0
	Total	508	100.0	100.0	



**GRAPH 5.9 Working Place of the Respondent**

### **Interpretation:-**

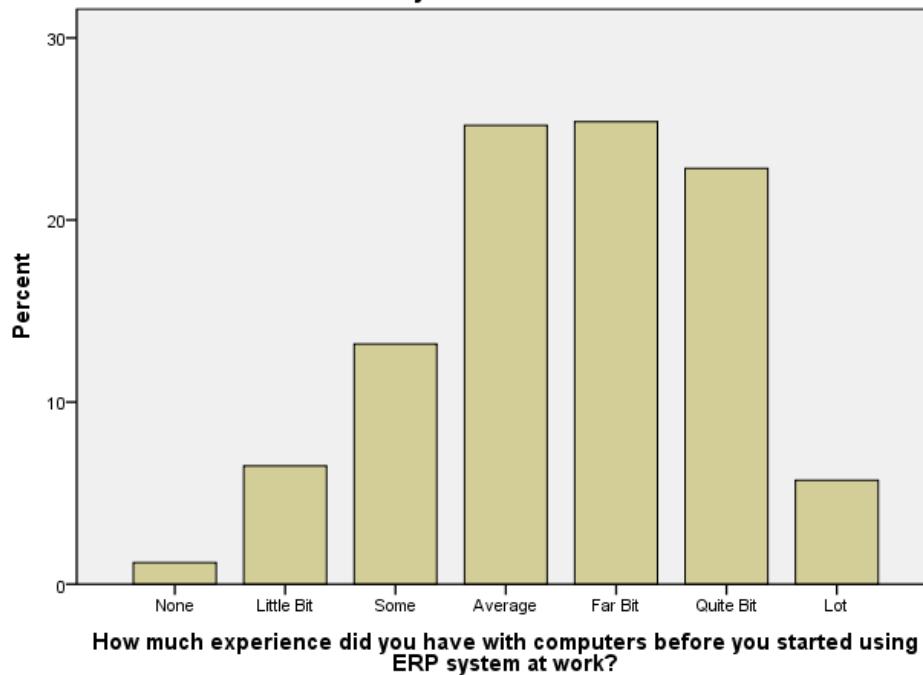
Out of 508 respondents, 36% belong to Worker category, 40.6% belong to Lower management, 20.5% belong to Middle management and 3% belong to Top management in their respective companies.

## How much experience did you have with computers before you started using ERP system at work?

**TABLE 5.10 Computer Experience before starting using ERP system at work**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	6	1.2	1.2	1.2
	Little Bit	33	6.5	6.5	7.7
	Some	67	13.2	13.2	20.9
	Average	128	25.2	25.2	46.1
	Far Bit	129	25.4	25.4	71.5
	Quite Bit	116	22.8	22.8	94.3
	Lot	29	5.7	5.7	100.0
	Total	508	100.0	100.0	

## How much experience did you have with computers before you started using ERP system at work?



**GRAPH 5.10 Computer Experience before starting using ERP system at work**

### **Interpretation:-**

Out of 508 respondents, 25.2% had average experience, 25.4% had far a bit experience, 22.8% had quite a bit experience and 13.2% had some experience in using computers before they started using ERP system at work.

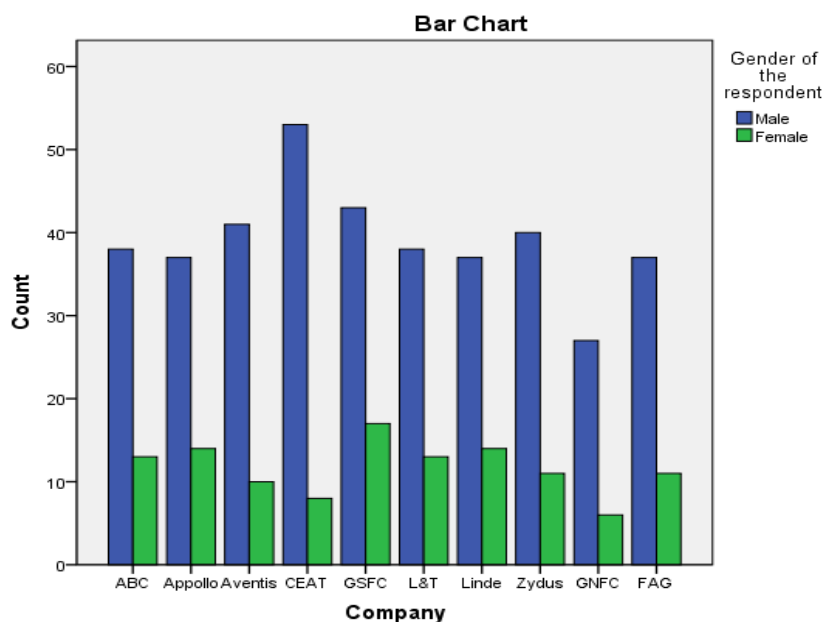
## 5.2 Cross Tabulations

**TABLE 5.11 Cross Tabulation: Company v/s Gender of the respondent**

			Gender of the respondent		Total
			Male	Female	
Company ABC	Count		38	13	51
	% within Company		74.5%	25.5%	100.0%
	% within Gender of the respondent		9.7%	11.1%	10.0%
	% of Total		7.5%	2.6%	10.0%
Apollo	Count		37	14	51
	% within Company		72.5%	27.5%	100.0%
	% within Gender of the respondent		9.5%	12.0%	10.0%
	% of Total		7.3%	2.8%	10.0%
Aventis	Count		41	10	51
	% within Company		80.4%	19.6%	100.0%
	% within Gender of the respondent		10.5%	8.5%	10.0%
	% of Total		8.1%	2.0%	10.0%
CEAT	Count		53	8	61
	% within Company		86.9%	13.1%	100.0%
	% within Gender of the respondent		13.6%	6.8%	12.0%
	% of Total		10.4%	1.6%	12.0%
GSFC	Count		43	17	60
	% within Company		71.7%	28.3%	100.0%
	% within Gender of the respondent		11.0%	14.5%	11.8%
	% of Total		8.5%	3.3%	11.8%
L&T	Count		38	13	51
	% within Company		74.5%	25.5%	100.0%
	% within Gender of the respondent		9.7%	11.1%	10.0%
	% of Total		7.5%	2.6%	10.0%
Linde	Count		37	14	51
	% within Company		72.5%	27.5%	100.0%
	% within Gender of the respondent		9.5%	12.0%	10.0%
	% of Total		7.3%	2.8%	10.0%



Zydus	Count	40	11	51
	% within Company	78.4%	21.6%	100.0%
	% within Gender of the respondent	10.2%	9.4%	10.0%
	% of Total	7.9%	2.2%	10.0%
GNFC	Count	27	6	33
	% within Company	81.8%	18.2%	100.0%
	% within Gender of the respondent	6.9%	5.1%	6.5%
	% of Total	5.3%	1.2%	6.5%
FAG	Count	37	11	48
	% within Company	77.1%	22.9%	100.0%
	% within Gender of the respondent	9.5%	9.4%	9.4%
	% of Total	7.3%	2.2%	9.4%
Total	Count	391	117	508
	% within Company	77.0%	23.0%	100.0%
	% within Gender of the respondent	100.0%	100.0%	100.0%
	% of Total	77.0%	23.0%	100.0%



**GRAPH 5.11 Cross Tabulation: Company v/s Gender of the respondent**

**Interpretation:-**

Out of 508 respondents, 10.4% are male in CEAT Tyres & 8.5% were male in GSFC Ltd. 17% are female in GSFC Ltd. & 6% are female in GNFC Ltd.

**TABLE 5.12 Cross Tabulation: Company v/s Age of the respondent**

			Age of the respondent			
			20 to 29 years	30 to 39 years	40 to 49 years	50 to 59 years
Company ABC	Count	0	21	18	12	
	% within Company	.0%	41.2%	35.3%	23.5%	
	% within Age of the respondent	.0%	11.9%	9.0%	13.8%	
	% of Total	.0%	4.1%	3.5%	2.4%	
Apollo	Count	0	19	20	9	
	% within Company	.0%	37.3%	39.2%	17.6%	
	% within Age of the respondent	.0%	10.8%	10.0%	10.3%	
	% of Total	.0%	3.7%	3.9%	1.8%	
Aventis	Count	0	16	29	6	
	% within Company	.0%	31.4%	56.9%	11.8%	
	% within Age of the respondent	.0%	9.1%	14.4%	6.9%	
	% of Total	.0%	3.1%	5.7%	1.2%	
GEAT	Count	0	25	28	8	
	% within Company	.0%	41.0%	45.9%	13.1%	
	% within Age of the respondent	.0%	14.2%	13.9%	9.2%	
	% of Total	.0%	4.9%	5.5%	1.6%	
GSFC	Count	18	9	16	15	
	% within Company	30.0%	15.0%	26.7%	25.0%	
	% within Age of the respondent	69.2%	5.1%	8.0%	17.2%	
	% of Total	3.5%	1.8%	3.1%	3.0%	
L&T	Count	3	14	15	15	
	% within Company	5.9%	27.5%	29.4%	29.4%	
	% within Age of the respondent	11.5%	8.0%	7.5%	17.2%	
	% of Total	.6%	2.8%	3.0%	3.0%	
Linde	Count	4	15	16	11	
	% within Company	7.8%	29.4%	31.4%	21.6%	
	% within Age of the respondent	15.4%	8.5%	8.0%	12.6%	
	% of Total	.8%	3.0%	3.1%	2.2%	

Data Analysis

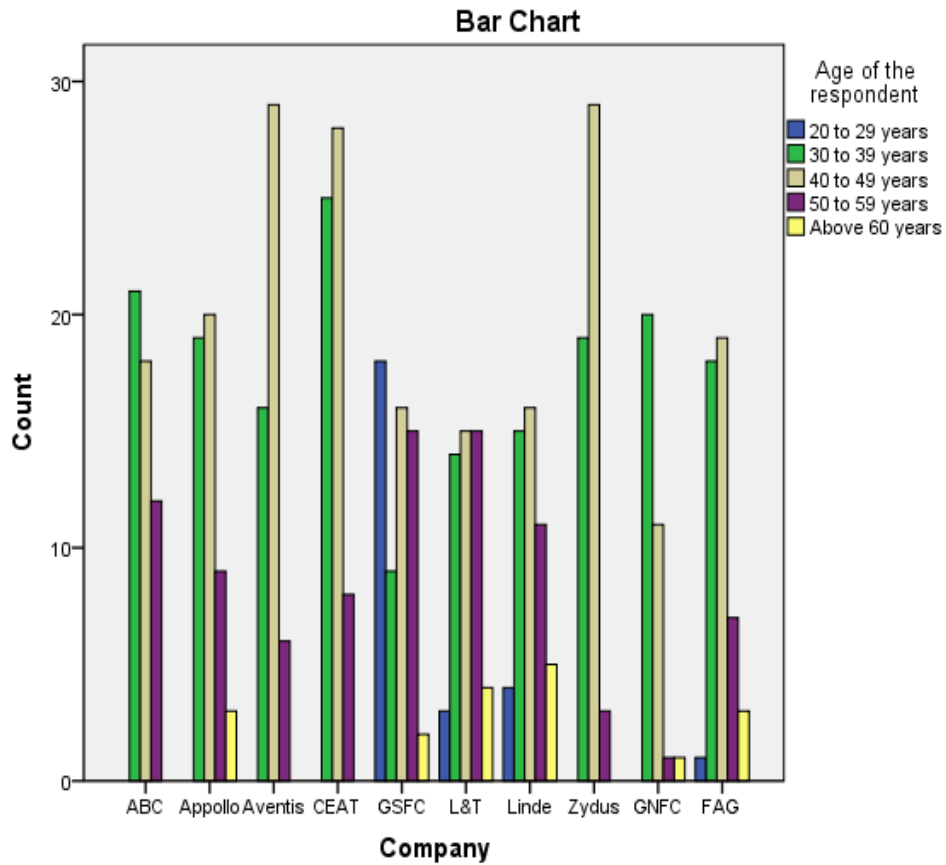
Zydus	Count	0	19	29	3
	% within Company	.0%	37.3%	56.9%	5.9%
	% within Age of the respondent	.0%	10.8%	14.4%	3.4%
	% of Total	.0%	3.7%	5.7%	.6%
GNFC	Count	0	20	11	1
	% within Company	.0%	60.6%	33.3%	3.0%
	% within Age of the respondent	.0%	11.4%	5.5%	1.1%
	% of Total	.0%	3.9%	2.2%	.2%
FAG	Count	1	18	19	7
	% within Company	2.1%	37.5%	39.6%	14.6%
	% within Age of the respondent	3.8%	10.2%	9.5%	8.0%
	% of Total	.2%	3.5%	3.7%	1.4%
Total	Count	26	176	201	87
	% within Company	5.1%	34.6%	39.6%	17.1%
	% within Age of the respondent	100.0%	100.0%	100.0%	100.0%
	% of Total	5.1%	34.6%	39.6%	17.1%

**Cross Tabulation: Company v/s Age of the respondent**

			Age of the respondent	
			Above 60 years	Total
Company	ABC	Count	0	51
		% within Company	.0%	100.0%
		% within Age of the respondent	.0%	10.0%
		% of Total	.0%	10.0%
Apollo		Count	3	51
		% within Company	5.9%	100.0%
		% within Age of the respondent	16.7%	10.0%
		% of Total	.6%	10.0%
Aventis		Count	0	51
		% within Company	.0%	100.0%
		% within Age of the respondent	.0%	10.0%
		% of Total	.0%	10.0%

GEAT	Count	0	61
	% within Company	.0%	100.0%
	% within Age of the respondent	.0%	12.0%
	% of Total	.0%	12.0%
GSFC	Count	2	60
	% within Company	3.3%	100.0%
	% within Age of the respondent	11.1%	11.8%
	% of Total	.4%	11.8%
L&T	Count	4	51
	% within Company	7.8%	100.0%
	% within Age of the respondent	22.2%	10.0%
	% of Total	.8%	10.0%
Linde	Count	5	51
	% within Company	9.8%	100.0%
	% within Age of the respondent	27.8%	10.0%
	% of Total	1.0%	10.0%
Zydus	Count	0	51
	% within Company	.0%	100.0%
	% within Age of the respondent	.0%	10.0%
	% of Total	.0%	10.0%
GNFC	Count	1	33
	% within Company	3.0%	100.0%
	% within Age of the respondent	5.6%	6.5%
	% of Total	.2%	6.5%
FAG	Count	3	48
	% within Company	6.3%	100.0%
	% within Age of the respondent	16.7%	9.4%
	% of Total	.6%	9.4%
Total	Count	18	508
	% within Company	3.5%	100.0%
	% within Age of the respondent	100.0%	100.0%

% of Total	3.5%	100.0%
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**GRAPH 5.12 Cross Tabulation: Company v/s Age of the respondent**

**Interpretation:-**

- 1) Out of 508 respondents, 5.7% in Zydus Pharma, 14.4% in Aventis and 13.9% in CEAT Tyres are in age group of 40-49 years.
- 2) Out of 508 respondents, 0.2% in GNFC Ltd., 0.4% in GSFC Ltd. and 0.6% in FAG Bearing are above 60 years of age.

**TABLE 5.13 Cross Tabulation: Company v/s Education of the respondent**

			Education of the respondent			
			High School	Graduate	Post Graduate	Doctorate
Company ABC	Count	0	0	31	20	
	% within Company	.0%	.0%	60.8%	39.2%	
	% within Education of the respondent	.0%	.0%	13.7%	8.2%	
	% of Total	.0%	.0%	6.1%	3.9%	
Apollo	Count	0	1	30	20	
	% within Company	.0%	2.0%	58.8%	39.2%	
	% within Education of the respondent	.0%	4.3%	13.2%	8.2%	
	% of Total	.0%	.2%	5.9%	3.9%	
Aventis	Count	0	0	14	37	
	% within Company	.0%	.0%	27.5%	72.5%	
	% within Education of the respondent	.0%	.0%	6.2%	15.2%	
	% of Total	.0%	.0%	2.8%	7.3%	
CEAT	Count	0	1	29	31	
	% within Company	.0%	1.6%	47.5%	50.8%	
	% within Education of the respondent	.0%	4.3%	12.8%	12.8%	
	% of Total	.0%	.2%	5.7%	6.1%	
GSFC	Count	0	12	23	22	
	% within Company	.0%	20.0%	38.3%	36.7%	
	% within Education of the respondent	.0%	52.2%	10.1%	9.1%	
	% of Total	.0%	2.4%	4.5%	4.3%	
L&T	Count	0	1	15	31	
	% within Company	.0%	2.0%	29.4%	60.8%	
	% within Education of the respondent	.0%	4.3%	6.6%	12.8%	
	% of Total	.0%	.2%	3.0%	6.1%	
Linde	Count	1	5	17	24	
	% within Company	2.0%	9.8%	33.3%	47.1%	
	% within Education of the respondent	50.0%	21.7%	7.5%	9.9%	
	% of Total	.2%	1.0%	3.3%	4.7%	

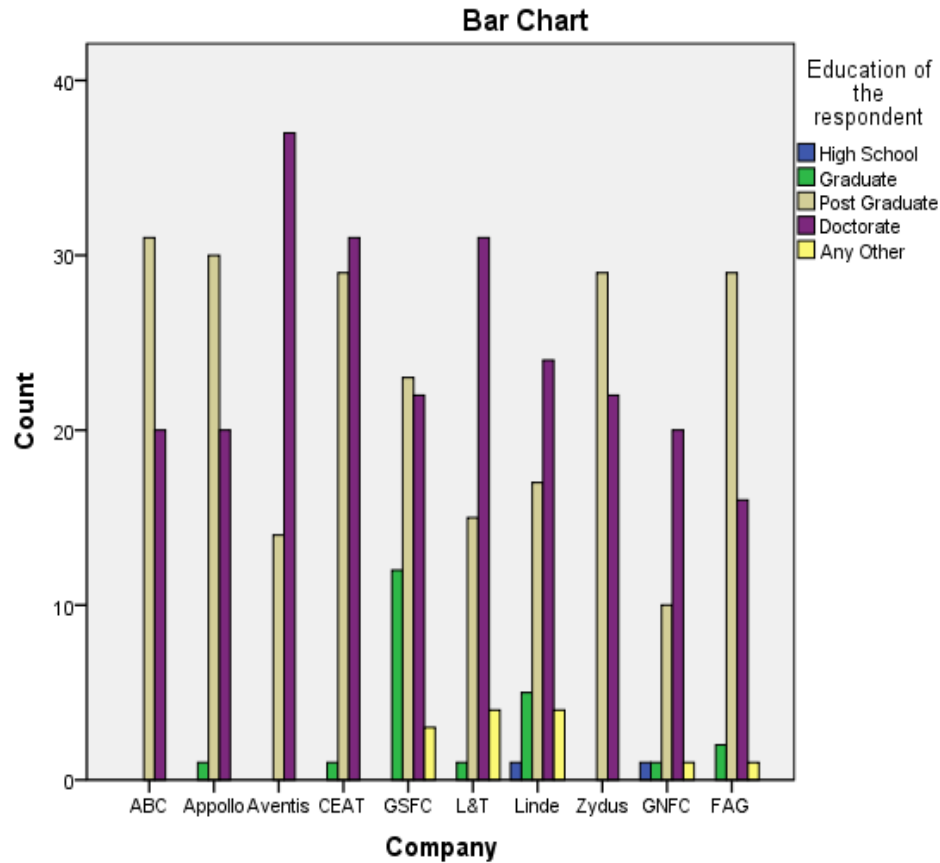
Zydus	Count	0	0	29	22
	% within Company	.0%	.0%	56.9%	43.1%
	% within Education of the respondent	.0%	.0%	12.8%	9.1%
	% of Total	.0%	.0%	5.7%	4.3%
GNFC	Count	1	1	10	20
	% within Company	3.0%	3.0%	30.3%	60.6%
	% within Education of the respondent	50.0%	4.3%	4.4%	8.2%
	% of Total	.2%	.2%	2.0%	3.9%
FAG	Count	0	2	29	16
	% within Company	.0%	4.2%	60.4%	33.3%
	% within Education of the respondent	.0%	8.7%	12.8%	6.6%
	% of Total	.0%	.4%	5.7%	3.1%
Total	Count	2	23	227	243
	% within Company	.4%	4.5%	44.7%	47.8%
	% within Education of the respondent	100.0%	100.0%	100.0%	100.0%
	% of Total	.4%	4.5%	44.7%	47.8%

**Cross Tabulation: Company v/s Education of the respondent**

			Education of the respondent	Total
			Any Other	
Company	ABC	Count	0	51
		% within Company	.0%	100.0%
		% within Education of the respondent	.0%	10.0%
		% of Total	.0%	10.0%
	Apollo	Count	0	51
		% within Company	.0%	100.0%
		% within Education of the respondent	.0%	10.0%
		% of Total	.0%	10.0%
	Aventis	Count	0	51
		% within Company	.0%	100.0%
		% within Education of the respondent	.0%	10.0%
		% of Total	.0%	10.0%

CEAT	Count	0	61
	% within Company	.0%	100.0%
	% within Education of the respondent	.0%	12.0%
	% of Total	.0%	12.0%
GSFC	Count	3	60
	% within Company	5.0%	100.0%
	% within Education of the respondent	23.1%	11.8%
	% of Total	.6%	11.8%
L&T	Count	4	51
	% within Company	7.8%	100.0%
	% within Education of the respondent	30.8%	10.0%
	% of Total	.8%	10.0%
Linde	Count	4	51
	% within Company	7.8%	100.0%
	% within Education of the respondent	30.8%	10.0%
	% of Total	.8%	10.0%
Zydus	Count	0	51
	% within Company	.0%	100.0%
	% within Education of the respondent	.0%	10.0%
	% of Total	.0%	10.0%
GNFC	Count	1	33
	% within Company	3.0%	100.0%
	% within Education of the respondent	7.7%	6.5%
	% of Total	.2%	6.5%
FAG	Count	1	48
	% within Company	2.1%	100.0%
	% within Education of the respondent	7.7%	9.4%
	% of Total	.2%	9.4%
Total	Count	13	508
	% within Company	2.6%	100.0%
	% within Education of the respondent	100.0%	100.0%
	% of Total	2.6%	100.0%





**GRAPH 5.13 Cross Tabulation: Company v/s Education of the respondent**

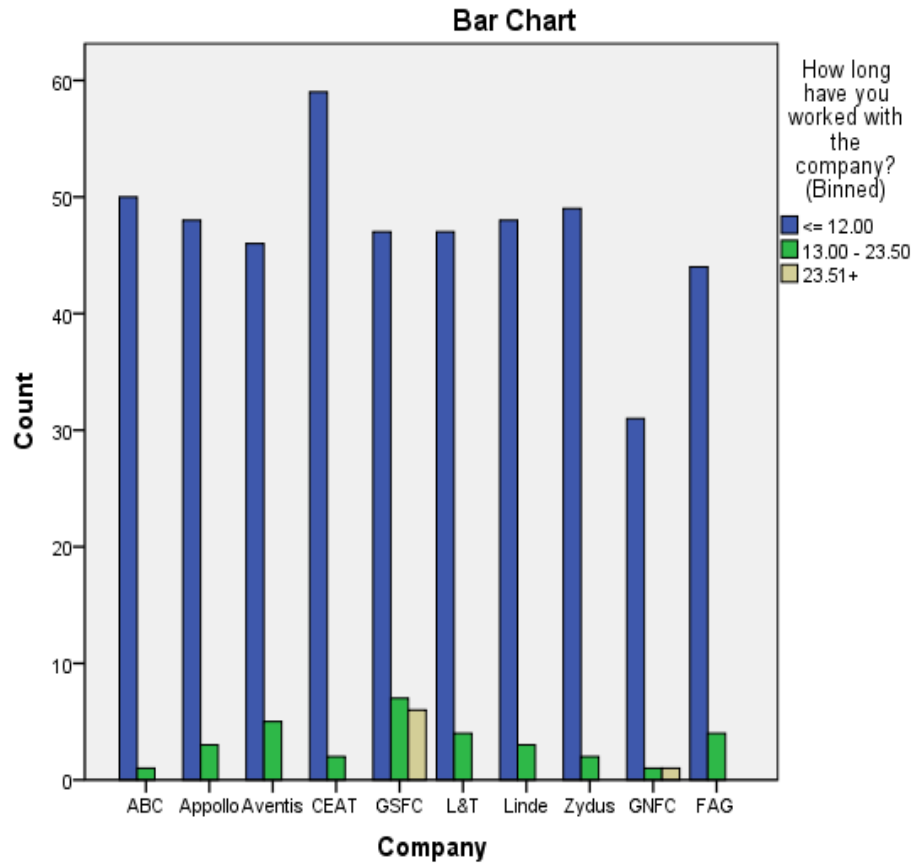
**Interpretation:-**

- 1) Out of 508 respondents, 7.3% in Aventis, 6.1% each in CEAT Tyres and Aventis are Doctorates.
- 2) Out of 508 respondents, 6.1% in ABC Bearing, 5.9% in Apollo Tyres, 5.7% each in CEAT Tyres, Zydus Pharma & FAG Bearings are Post-Graduates.
- 3) Out of 508 respondents, 0.2% each in Apollo Tyres, CEAT Tyres, L&T & GNFC Ltd. are Graduates.

**TABLE 5.14 Cross Tabulation: Company v/s Working Experience of the respondent**

			How long have you worked with the company? (Binned)			Total
			<= 12.00	13.00 - 23.50	23.51+	
Company ABC	Count		50	1	0	51
	% within Company		98.0%	2.0%	.0%	100.0%
	% within How long have you worked with the company? (Binned)		10.7%	3.1%	.0%	10.0%
	% of Total		9.8%	.2%	.0%	10.0%
Apollo	Count		48	3	0	51
	% within Company		94.1%	5.9%	.0%	100.0%
	% within How long have you worked with the company? (Binned)		10.2%	9.4%	.0%	10.0%
	% of Total		9.4%	.6%	.0%	10.0%
Aventis	Count		46	5	0	51
	% within Company		90.2%	9.8%	.0%	100.0%
	% within How long have you worked with the company? (Binned)		9.8%	15.6%	.0%	10.0%
	% of Total		9.1%	1.0%	.0%	10.0%
CEAT	Count		59	2	0	61
	% within Company		96.7%	3.3%	.0%	100.0%
	% within How long have you worked with the company? (Binned)		12.6%	6.3%	.0%	12.0%
	% of Total		11.6%	.4%	.0%	12.0%
GSFC	Count		47	7	6	60
	% within Company		78.3%	11.7%	10.0%	100.0%
	% within How long have you worked with the company? (Binned)		10.0%	21.9%	85.7%	11.8%
	% of Total		9.3%	1.4%	1.2%	11.8%
L&T	Count		47	4	0	51
	% within Company		92.2%	7.8%	.0%	100.0%

	% within How long have you worked with the company? (Binned)	10.0%	12.5%	.0%	10.0%
	% of Total	9.3%	.8%	.0%	10.0%
Linde	Count	48	3	0	51
	% within Company	94.1%	5.9%	.0%	100.0%
	% within How long have you worked with the company? (Binned)	10.2%	9.4%	.0%	10.0%
	% of Total	9.4%	.6%	.0%	10.0%
Zydus	Count	49	2	0	51
	% within Company	96.1%	3.9%	.0%	100.0%
	% within How long have you worked with the company? (Binned)	10.4%	6.3%	.0%	10.0%
	% of Total	9.6%	.4%	.0%	10.0%
GNFC	Count	31	1	1	33
	% within Company	93.9%	3.0%	3.0%	100.0%
	% within How long have you worked with the company? (Binned)	6.6%	3.1%	14.3%	6.5%
	% of Total	6.1%	.2%	.2%	6.5%
FAG	Count	44	4	0	48
	% within Company	91.7%	8.3%	.0%	100.0%
	% within How long have you worked with the company? (Binned)	9.4%	12.5%	.0%	9.4%
	% of Total	8.7%	.8%	.0%	9.4%
Total	Count	469	32	7	508
	% within Company	92.3%	6.3%	1.4%	100.0%
	% within How long have you worked with the company? (Binned)	100.0%	100.0%	100.0%	100.0%
	% of Total	92.3%	6.3%	1.4%	100.0%



**GRAPH 5.14 Cross Tabulation: Company v/s Working Experience of the respondent**

**Interpretation:-**

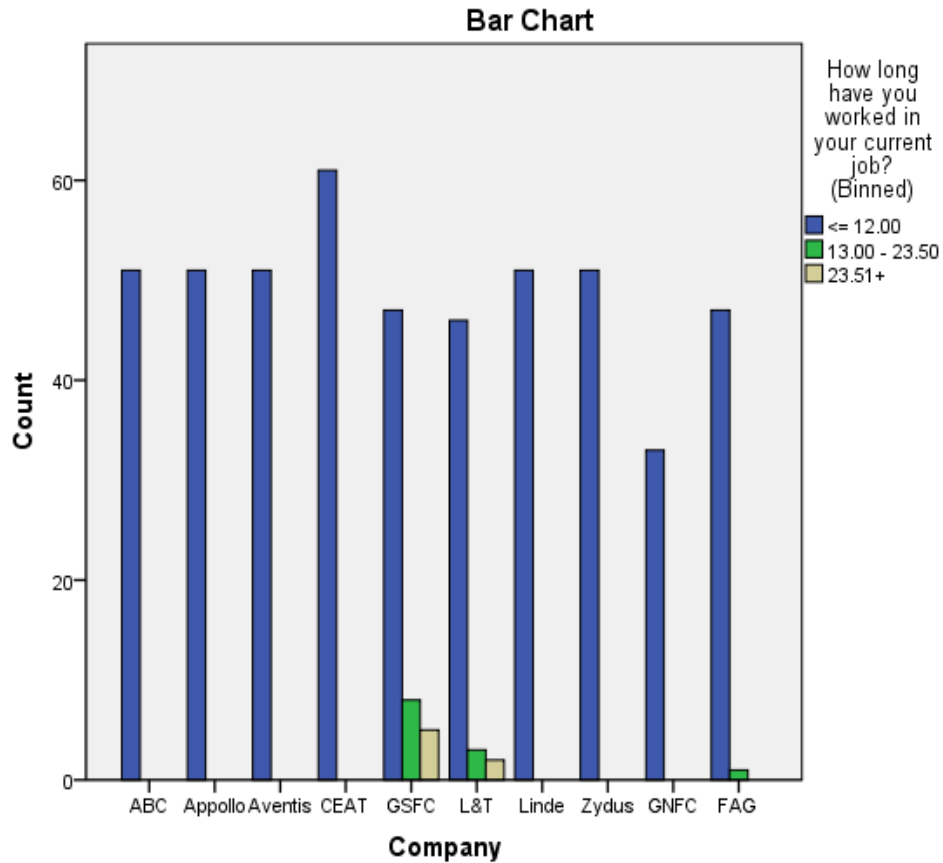
- 1) Out of 508 respondents, 11.6% in CEAT Tyres, 9.8% in ABC Bearing, 9.6% in Zydus Pharma, 9.4% each in Apollo Tyres & Linde Engg has worked with the company with less than or equal to 12 years.
- 2) Out of 508 respondents, 0.2% each in ABC Bearing & GNFC Ltd, 0.4% each in CEAT Tyres & Zydus Pharma has worked with the company for more than 12 years & less than 24 years.
- 3) Out of 508 respondents, 1.2% in GSFC Ltd. and 0.2% in GNFC Ltd. has worked with the company more than 24 years.

**TABLE 5.15 Cross Tabulation: Company v/s Current Job Experience of the respondent**

			How long have you worked in your current job? (Binned)			Total
			<= 12.00	13.00 - 23.50	23.51+	
Company ABC	Count	51	0	0	51	
	% within Company	100.0%	.0%	.0%	100.0%	
	% within How long have you worked in your current job? (Binned)	10.4%	.0%	.0%	10.0%	
	% of Total	10.0%	.0%	.0%	10.0%	
Apollo	Count	51	0	0	51	
	% within Company	100.0%	.0%	.0%	100.0%	
	% within How long have you worked in your current job? (Binned)	10.4%	.0%	.0%	10.0%	
	% of Total	10.0%	.0%	.0%	10.0%	
Aventis	Count	51	0	0	51	
	% within Company	100.0%	.0%	.0%	100.0%	
	% within How long have you worked in your current job? (Binned)	10.4%	.0%	.0%	10.0%	
	% of Total	10.0%	.0%	.0%	10.0%	
CEAT	Count	61	0	0	61	
	% within Company	100.0%	.0%	.0%	100.0%	
	% within How long have you worked in your current job? (Binned)	12.5%	.0%	.0%	12.0%	
	% of Total	12.0%	.0%	.0%	12.0%	
GSFC	Count	47	8	5	60	
	% within Company	78.3%	13.3%	8.3%	100.0%	
	% within How long have you worked in your current job? (Binned)	9.6%	66.7%	71.4%	11.8%	
	% of Total	9.3%	1.6%	1.0%	11.8%	
L&T	Count	46	3	2	51	
	% within Company	90.2%	5.9%	3.9%	100.0%	

Data Analysis

	% within How long have you worked in your current job? (Binned)	9.4%	25.0%	28.6%	10.0%
	% of Total	9.1%	.6%	.4%	10.0%
Linde	Count	51	0	0	51
	% within Company	100.0%	.0%	.0%	100.0%
	% within How long have you worked in your current job? (Binned)	10.4%	.0%	.0%	10.0%
	% of Total	10.0%	.0%	.0%	10.0%
Zydus	Count	51	0	0	51
	% within Company	100.0%	.0%	.0%	100.0%
	% within How long have you worked in your current job? (Binned)	10.4%	.0%	.0%	10.0%
	% of Total	10.0%	.0%	.0%	10.0%
GNFC	Count	33	0	0	33
	% within Company	100.0%	.0%	.0%	100.0%
	% within How long have you worked in your current job? (Binned)	6.7%	.0%	.0%	6.5%
	% of Total	6.5%	.0%	.0%	6.5%
FAG	Count	47	1	0	48
	% within Company	97.9%	2.1%	.0%	100.0%
	% within How long have you worked in your current job? (Binned)	9.6%	8.3%	.0%	9.4%
	% of Total	9.3%	.2%	.0%	9.4%
Total	Count	489	12	7	508
	% within Company	96.3%	2.4%	1.4%	100.0%
	% within How long have you worked in your current job? (Binned)	100.0%	100.0%	100.0%	100.0%
	% of Total	96.3%	2.4%	1.4%	100.0%



**GRAPH 5.15 Cross Tabulation: Company v/s Current Job Experience of the respondent**

**Interpretation:-**

- 1) Out of 508 respondents, 12% in CEAT Tyres, 10% each in ABC Bearing, Apollo Tyres, Aventis, Linde Engg & Zydus Pharma has worked in their current job less than or equal to 12 years.
- 2) Out of 508 respondents, 1.6% in GSFC Ltd., 0.6% in L&T and 0.2% in FAG Bearing has worked in their current job for more than 12 years & less than 24 years.
- 3) Out of 508 respondents, 1% in GSFC Ltd. and 0.4% in L&T has worked in their current job for more than 24 years.

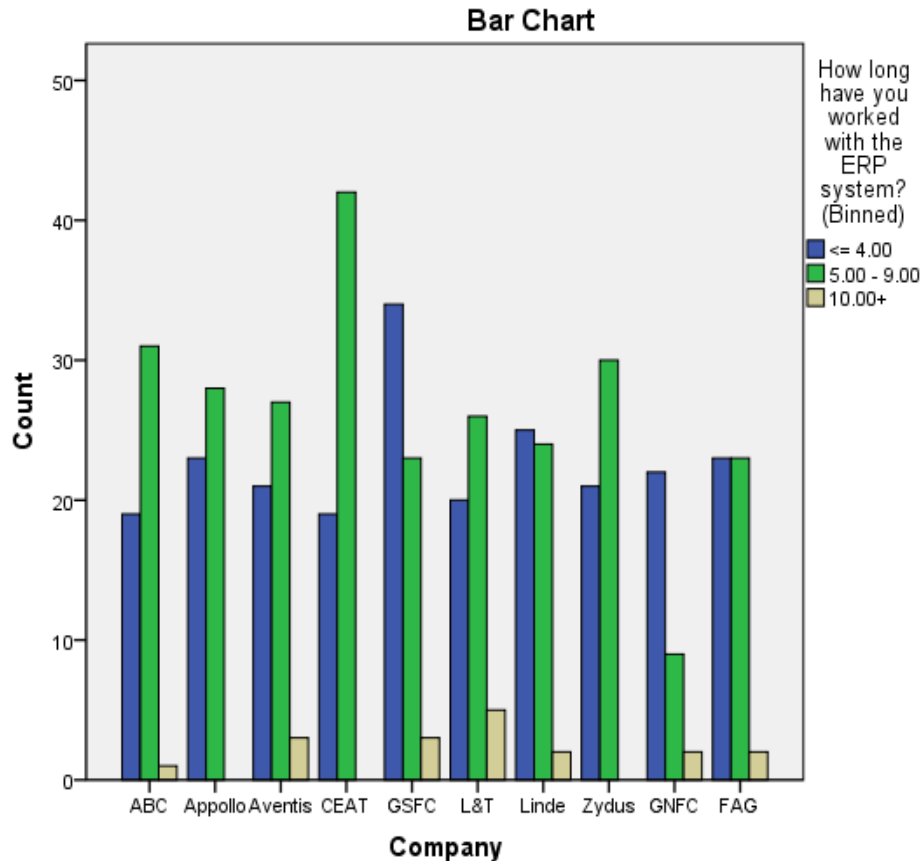
**TABLE 5.16 Cross Tabulation: Company v/s ERP Experience of the respondent**

			How long have you worked with the ERP system? (Binned)			Total
			<= 4.00	5.00 - 9.00	10.00+	
Company ABC	Count	19	31	1	51	
	% within Company	37.3%	60.8%	2.0%	100.0%	
	% within How long have you worked with the ERP system? (Binned)	8.4%	11.8%	5.6%	10.0%	
	% of Total	3.7%	6.1%	.2%	10.0%	
Apollo	Count	23	28	0	51	
	% within Company	45.1%	54.9%	.0%	100.0%	
	% within How long have you worked with the ERP system? (Binned)	10.1%	10.6%	.0%	10.0%	
	% of Total	4.5%	5.5%	.0%	10.0%	
Aventis	Count	21	27	3	51	
	% within Company	41.2%	52.9%	5.9%	100.0%	
	% within How long have you worked with the ERP system? (Binned)	9.3%	10.3%	16.7%	10.0%	
	% of Total	4.1%	5.3%	.6%	10.0%	
CEAT	Count	19	42	0	61	
	% within Company	31.1%	68.9%	.0%	100.0%	
	% within How long have you worked with the ERP system? (Binned)	8.4%	16.0%	.0%	12.0%	
	% of Total	3.7%	8.3%	.0%	12.0%	
GSFC	Count	34	23	3	60	
	% within Company	56.7%	38.3%	5.0%	100.0%	
	% within How long have you worked with the ERP system? (Binned)	15.0%	8.7%	16.7%	11.8%	
	% of Total	6.7%	4.5%	.6%	11.8%	
L&T	Count	20	26	5	51	
	% within Company	39.2%	51.0%	9.8%	100.0%	
	% within How long have you worked with the ERP system? (Binned)	8.8%	9.9%	27.8%	10.0%	
	% of Total	3.9%	5.1%	1.0%	10.0%	



Data Analysis

Linde	Count	25	24	2	51
	% within Company	49.0%	47.1%	3.9%	100.0%
	% within How long have you worked with the ERP system? (Binned)	11.0%	9.1%	11.1%	10.0%
	% of Total	4.9%	4.7%	.4%	10.0%
Zydus	Count	21	30	0	51
	% within Company	41.2%	58.8%	.0%	100.0%
	% within How long have you worked with the ERP system? (Binned)	9.3%	11.4%	.0%	10.0%
	% of Total	4.1%	5.9%	.0%	10.0%
GNFC	Count	22	9	2	33
	% within Company	66.7%	27.3%	6.1%	100.0%
	% within How long have you worked with the ERP system? (Binned)	9.7%	3.4%	11.1%	6.5%
	% of Total	4.3%	1.8%	.4%	6.5%
FAG	Count	23	23	2	48
	% within Company	47.9%	47.9%	4.2%	100.0%
	% within How long have you worked with the ERP system? (Binned)	10.1%	8.7%	11.1%	9.4%
	% of Total	4.5%	4.5%	.4%	9.4%
Total	Count	227	263	18	508
	% within Company	44.7%	51.8%	3.5%	100.0%
	% within How long have you worked with the ERP system? (Binned)	100.0%	100.0%	100.0%	100.0%
	% of Total	44.7%	51.8%	3.5%	100.0%



**GRAPH 5.16 Cross Tabulation: Company v/s ERP Experience of the respondent**

**Interpretation:-**

- 1) Out of 508 respondents, 6.7% in GSFC Ltd., 4.9% in Linde Engg, 4.5% in Apollo Tyres and 4.3% in GNFC Ltd. has worked with the ERP system less than or equal to 4 years.
- 2) Out of 508 respondents, 8.3% in CEAT Tyres, 6.1% in ABC Bearing, 5.9% in Zydus Pharma and 5.5% in Apollo Tyres has worked with the ERP system between 5 to 9 years.
- 3) Out of 508 respondents, 1% in L&T, 0.6% each in Aventis & GSFC Ltd., 0.4% each in Linde Engg, GNFC Ltd. & FAG Bearing has worked with the ERP system for more than 10 years.

### 5.3 Inferential Statistics

#### 5.3.1 Non-Parametric Test (Mann-Whitney U Test)

##### Hypothesis:

**H<sub>0</sub>:** There is no significant effect of **Gender of respondent** on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of Gender of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**TABLE 5.17 Mean Ranks: ERP Use and Gender of the respondent**

	Gender of the respondent	N	Mean Rank	Sum of Ranks
If there was no one around to tell me what to do as I go.	Male	391	260.33	101790.00
	Female	117	235.01	27496.00
	Total	508		
If I had only the software manuals or/and the build-in help for assistance.	Male	391	252.65	98785.50
	Female	117	260.69	30500.50
	Total	508		
If I could call someone for help if I got stuck.	Male	391	250.23	97841.50
	Female	117	268.76	31444.50
	Total	508		
If I had a lot of time to complete the job for which the software was provided.	Male	391	260.92	102018.50
	Female	117	233.06	27267.50
	Total	508		
If I hear about a new IT, I would look for ways to experiment with it.	Male	391	260.35	101796.50
	Female	117	234.95	27489.50
	Total	508		
Among my peers I am usually the first to try out new IT.	Male	391	256.83	100421.50
	Female	117	246.71	28864.50
	Total	508		
I like to experiment with new IT.	Male	391	256.40	100253.50
	Female	117	248.14	29032.50
	Total	508		
Working with a computer makes me nervous.	Male	391	254.62	99555.00
	Female	117	254.11	29731.00
	Total	508		

Data Analysis

I get a sinking feeling when I think of trying to use a computer.	Male	391	257.34	100618.50
	Female	117	245.02	28667.50
	Total	508		
I feel comfortable working with a computer.	Male	391	262.71	102720.00
	Female	117	227.06	26566.00
	Total	508		
The ERP system provides the precise information I need.	Male	391	256.61	100336.00
	Female	117	247.44	28950.00
	Total	508		
The information contents provided by the ERP system meet my needs.	Male	391	258.89	101227.50
	Female	117	239.82	28058.50
	Total	508		
The ERP system provides reports that seem to be exactly what I need.	Male	391	261.44	102222.00
	Female	117	231.32	27064.00
	Total	508		
The ERP system provides sufficient information to my needs.	Male	391	256.46	100276.00
	Female	117	247.95	29010.00
	Total	508		
The ERP system provides complete features I need.	Male	391	260.00	101661.50
	Female	117	236.11	27624.50
	Total	508		
I am satisfied with the speed of interacting with the system.	Male	391	259.11	101311.50
	Female	117	239.10	27974.50
	Total	508		
It is easy to detect and correct possible errors in the ERP system.	Male	391	255.85	100035.50
	Female	117	250.00	29250.50
	Total	508		
It is easy to change the output format.	Male	391	252.42	98694.50
	Female	117	261.47	30591.50
	Total	508		
It is fast to search data in the ERP system.	Male	391	255.52	99906.50
	Female	117	251.11	29379.50
	Total	508		
The ERP system loads quickly.	Male	391	253.41	99085.00
	Female	117	258.13	30201.00
	Total	508		
The system reliably handles my queries.	Male	391	253.87	99263.00
	Female	117	256.61	30023.00
	Total	508		
I was able to retrieve data	Male	391	257.97	100864.50

Data Analysis

quickly.	Female	117	242.92	28421.50
	Total	508		
It is fast to create a new record (vendor, customer etc.) in this system.	Male	391	259.15	101327.50
	Female	117	238.96	27958.50
	Total	508		
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	Male	391	251.35	98277.00
	Female	117	265.03	31009.00
	Total	508		
The ERP system is subject to frequent system problems and crashes.	Male	391	255.77	100007.50
	Female	117	250.24	29278.50
	Total	508		
The description of the functions /commands displayed on screen is clear to me.	Male	391	256.31	100217.00
	Female	117	248.45	29069.00
	Total	508		
The function / commands names of the ERP system are easy to remember.	Male	391	253.77	99224.50
	Female	117	256.94	30061.50
	Total	508		
The exact definition of data fields relating to my tasks is easy to find out.	Male	391	258.82	101197.00
	Female	117	240.08	28089.00
	Total	508		
The content and index of the user manuals are useful.	Male	391	259.48	101457.50
	Female	117	237.85	27828.50
	Total	508		
The user manuals are current (up to date).	Male	391	257.12	100534.00
	Female	117	245.74	28752.00
	Total	508		
The user manuals are complete.	Male	391	256.47	100279.00
	Female	117	247.92	29007.00
	Total	508		
The user manuals are easy to understand and follow.	Male	391	259.59	101499.50
	Female	117	237.49	27786.50
	Total	508		
My supervisor is very supportive of the use of the ERP system for my job.	Male	391	254.08	99343.50
	Female	117	255.92	29942.50
	Total	508		
The organization has supported the use of the ERP system.	Male	391	253.91	99279.50
	Female	117	256.47	30006.50
	Total	508		

## Data Analysis

People who influence my behaviour think that I should use the ERP system.	Male	391	248.02	96976.50
	Female	117	276.15	32309.50
	Total	508		
People who are important to me think that I should use the ERP system.	Male	391	254.33	99443.00
	Female	117	255.07	29843.00
	Total	508		
The ERP solution fits well with the business needs of me.	Male	391	255.85	100035.50
	Female	117	250.00	29250.50
	Total	508		
The ERP solution fits well with the business need of my department.	Male	391	252.14	98585.00
	Female	117	262.40	30701.00
	Total	508		
The ERP system is satisfactory in meeting my needs.	Male	391	253.31	99044.50
	Female	117	258.47	30241.50
	Total	508		
I believe there are some important problems with the way the ERP system is managed	Male	391	253.23	99014.50
	Female	117	258.73	30271.50
	Total	508		
The system maintenance and the way it is provided meet my need adequately.	Male	391	254.15	99372.00
	Female	117	255.68	29914.00
	Total	508		
There is not enough training for me on how to find, understand, access or use the ERP system.	Male	391	253.29	99037.00
	Female	117	258.54	30249.00
	Total	508		
I have received additional formal training for ERP since the conclusion of the above training.	Male	391	252.13	98581.50
	Female	117	262.43	30704.50
	Total	508		
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	Male	391	249.22	97444.00
	Female	117	272.15	31842.00
	Total	508		
I feel that I need additional ERP training to complete my current job tasks.	Male	391	253.42	99087.00
	Female	117	258.11	30199.00
	Total	508		
I do not know who to phone for support for this application.	Male	391	252.70	98804.00
	Female	117	260.53	30482.00
	Total	508		
The support people talk in	Male	391	253.37	99066.00

Data Analysis

terms that I do not understand.	Female	117	258.29	30220.00
	Total	508		
I ask other users for help with this application rather than the support staff.	Male	391	253.20	99000.00
	Female	117	258.85	30286.00
	Total	508		
The support for this application is inadequate.	Male	391	253.50	99120.00
	Female	117	257.83	30166.00
	Total	508		
The ERP team does not provide feedback regarding users' requests to modify this application.	Male	391	251.28	98250.00
	Female	117	265.26	31036.00
	Total	508		
The ERP team did not inform me about the current situation of this application.	Male	391	256.08	100127.50
	Female	117	249.22	29158.50
	Total	508		
The ERP team did not explain how application modifications would impact my job.	Male	391	248.98	97349.50
	Female	117	272.96	31936.50
	Total	508		
Using ERP solution in my job enables me to accomplish tasks more quickly.	Male	391	254.02	99321.00
	Female	117	256.11	29965.00
	Total	508		
Using ERP solution improves my job performance.	Male	391	251.84	98471.00
	Female	117	263.38	30815.00
	Total	508		
Using ERP solution enhances my effectiveness on the job.	Male	391	252.61	98770.50
	Female	117	260.82	30515.50
	Total	508		
Using ERP solution makes it easier to do my job.	Male	391	254.92	99672.00
	Female	117	253.11	29614.00
	Total	508		
I find ERP solution useful in my job.	Male	391	260.31	101780.50
	Female	117	235.09	27505.50
	Total	508		
My interaction with ERP solution is clear and understandable.	Male	391	259.99	101657.50
	Female	117	236.14	27628.50
	Total	508		
Interacting with ERP solution does not require a lot of my mental effort.	Male	391	262.66	102700.00
	Female	117	227.23	26586.00
	Total	508		

I find ERP solution is easy to use.	Male	391	257.18	100559.00
	Female	117	245.53	28727.00
	Total	508		
I find it easy to get ERP solution to do what I want it to do.	Male	391	253.83	99248.50
	Female	117	256.73	30037.50
	Total	508		
Using ERP system is compatible with all aspects of my work.	Male	391	259.38	101416.50
	Female	117	238.20	27869.50
	Total	508		
Using ERP system fits well with the way I like to work.	Male	391	259.00	101270.00
	Female	117	239.45	28016.00
	Total	508		
Using ERP system fits into my work style.	Male	391	253.14	98976.50
	Female	117	259.06	30309.50
	Total	508		
Using the ERP system is a good idea.	Male	391	258.35	101016.00
	Female	117	241.62	28270.00
	Total	508		
I like the idea of using the ERP system to perform my job.	Male	391	259.27	101376.50
	Female	117	238.54	27909.50
	Total	508		

**TABLE 5.18 Non-Parametric Test: ERP Use and Gender**

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
If there was no one around to tell me what to do as I go.	20593.000	27496.000	-1.689	.091
If I had only the software manuals or/and the build-in help for assistance.	22149.500	98785.500	-.535	.593
If I could call someone for help if I got stuck.	21205.500	97841.500	-1.241	.215
If I had a lot of time to complete the job for which the software was provided.	20364.500	27267.500	-1.851	.064
If I hear about a new IT, I would look for ways to experiment with it.	20586.500	27489.500	-1.681	.093
Among my peers I am usually the first to try out new IT.	21961.500	28864.500	-.674	.501



Data Analysis

I like to experiment with new IT.	22129.500	29032.500	-.546	.585
Working with a computer makes me nervous.	22828.000	29731.000	-.034	.973
I get a sinking feeling when I think of trying to use a computer.	21764.500	28667.500	-.819	.413
I feel comfortable working with a computer.	19663.000	26566.000	-2.378	<b>.017</b>
The ERP system provides the precise information I need.	22047.000	28950.000	-.623	.533
The information contents provided by the ERP system meet my needs.	21155.500	28058.500	-1.293	.196
The ERP system provides reports that seem to be exactly what I need.	20161.000	27064.000	-2.041	<b>.041</b>
The ERP system provides sufficient information to my needs.	22107.000	29010.000	-.575	.565
The ERP system provides complete features I need.	20721.500	27624.500	-1.607	.108
I am satisfied with the speed of interacting with the system.	21071.500	27974.500	-1.343	.179
It is easy to detect and correct possible errors in the ERP system.	22347.500	29250.500	-.393	.694
It is easy to change the output format.	22058.500	98694.500	-.601	.548
It is fast to search data in the ERP system.	22476.500	29379.500	-.296	.767
The ERP system loads quickly.	22449.000	99085.000	-.318	.751
The system reliably handles my queries.	22627.000	99263.000	-.184	.854
I was able to retrieve data quickly.	21518.500	28421.500	-1.025	.305
It is fast to create a new record (vendor, customer etc.) in this system.	21055.500	27958.500	-1.357	.175

The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	21641.000	98277.000	-.901	.368
The ERP system is subject to frequent system problems and crashes.	22375.500	29278.500	-.366	.714
The description of the functions /commands displayed on screen is clear to me.	22166.000	29069.000	-.532	.595
The function / commands names of the ERP system are easy to remember.	22588.500	99224.500	-.213	.831
The exact definition of data fields relating to my tasks is easy to find out.	21186.000	28089.000	-1.255	.210
The content and index of the user manuals are useful.	20925.500	27828.500	-1.459	.145
The user manuals are current (up to date).	21849.000	28752.000	-.772	.440
The user manuals are complete.	22104.000	29007.000	-.577	.564
The user manuals are easy to understand and follow.	20883.500	27786.500	-1.487	.137
My supervisor is very supportive of the use of the ERP system for my job.	22707.500	99343.500	-.124	.901
The organization has supported the use of the ERP system.	22643.500	99279.500	-.174	.862
People who influence my behaviour think that I should use the ERP system.	20340.500	96976.500	-1.895	.058
People who are important to me think that I should use the ERP system.	22807.000	99443.000	-.050	.961
The ERP solution fits well with the business needs of me.	22347.500	29250.500	-.396	.692

The ERP solution fits well with the business need of my department.	21949.000	98585.000	-.692	.489
The ERP system is satisfactory in meeting my needs.	22408.500	99044.500	-.347	.728
I believe there are some important problems with the way the ERP system is managed	22378.500	99014.500	-.363	.717
The system maintenance and the way it is provided meet my need adequately.	22736.000	99372.000	-.102	.918
There is not enough training for me on how to find, understand, access or use the ERP system.	22401.000	99037.000	-.345	.730
I have received additional formal training for ERP since the conclusion of the above training.	21945.500	98581.500	-.681	.496
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	20808.000	97444.000	-1.515	.130
I feel that I need additional ERP training to complete my current job tasks.	22451.000	99087.000	-.312	.755
I do not know who to phone for support for this application.	22168.000	98804.000	-.522	.601
The support people talk in terms that I do not understand.	22430.000	99066.000	-.326	.744
I ask other users for help with this application rather than the support staff.	22364.000	99000.000	-.371	.711
The support for this application is inadequate.	22484.000	99120.000	-.285	.776
The ERP team does not provide feedback regarding users' requests to modify this application.	21614.000	98250.000	-.923	.356

The ERP team did not inform me about the current situation of this application.	22255.500	29158.500	-.452	.651
The ERP team did not explain how application modifications would impact my job.	20713.500	97349.500	-1.576	.115
Using ERP solution in my job enables me to accomplish tasks more quickly.	22685.000	99321.000	-.142	.887
Using ERP solution improves my job performance.	21835.000	98471.000	-.781	.435
Using ERP solution enhances my effectiveness on the job.	22134.500	98770.500	-.558	.577
Using ERP solution makes it easier to do my job.	22711.000	29614.000	-.123	.902
I find ERP solution useful in my job.	20602.500	27505.500	-1.710	.087
My interaction with ERP solution is clear and understandable.	20725.500	27628.500	-1.627	.104
Interacting with ERP solution does not require a lot of my mental effort.	19683.000	26586.000	-2.368	<b>.018</b>
I find ERP solution is easy to use.	21824.000	28727.000	-.793	.428
I find it easy to get ERP solution to do what I want it to do.	22612.500	99248.500	-.194	.846
Using ERP system is compatible with all aspects of my work.	20966.500	27869.500	-1.437	.151
Using ERP system fits well with the way I like to work.	21113.000	28016.000	-1.324	.185
Using ERP system fits into my work style.	22340.500	98976.500	-.400	.689
Using the ERP system is a good idea.	21367.000	28270.000	-1.137	.256

I like the idea of using the ERP system to perform my job.	21006.500	27909.500	-1.411	.158
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a. Grouping Variable: Gender of the respondent

**Interpretation:-**

- **As p-value of the statements “I feel comfortable working with a computer”, “The ERP system provides reports that seem to be exactly what I need” and “Interacting with ERP solution does not require a lot of my mental effort” is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of Gender on above statements.**
- As the mean rank of the statement “I feel comfortable working with a computer” in case of male is 262.71 and female is 227.06, we can interpret as males feel more comfortable working with a computer than females.
- As the mean rank of the statement “The ERP system provides reports that seem to be exactly what I need” in case of male is 261.44 and female is 231.32, we can interpret as males feel that the ERP system provides reports that seem to be exactly what they need than females.
- As the mean rank of the statement “Interacting with ERP solution does not require a lot of my mental effort” in case of male is 262.66 and female is 227.23, we can interpret as males feel that interacting with ERP solution does not require system provides reports that seem to be exactly what they need than females.

### 5.3.2 Non-Parametric Test (Kruskal-Wallis Test)

#### Hypothesis:

**H<sub>0</sub>:** There is no significant effect of **Age of respondent** on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of Age of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**TABLE 5.19 Mean Ranks: ERP Use and Age of the respondent**

	Age of the respondent	N	Mean Rank
If there was no one around to tell me what to do as I go.	20 to 29 years	26	278.52
	30 to 39 years	176	245.58
	40 to 49 years	201	261.28
	50 to 59 years	87	252.41
	Above 60 years	18	241.39
	Total	508	
If I had only the software manuals or/and the build-in help for assistance.	20 to 29 years	26	318.06
	30 to 39 years	176	235.00
	40 to 49 years	201	265.10
	50 to 59 years	87	261.67
	Above 60 years	18	200.31
	Total	508	
If I could call someone for help if I got stuck.	20 to 29 years	26	274.81
	30 to 39 years	176	237.81
	40 to 49 years	201	251.41
	50 to 59 years	87	290.01
	Above 60 years	18	251.19
	Total	508	
If I had a lot of time to complete the job for which the software was provided.	20 to 29 years	26	187.52
	30 to 39 years	176	258.22
	40 to 49 years	201	254.04
	50 to 59 years	87	276.47
	Above 60 years	18	213.75
	Total	508	
If I hear about a new IT, I would look for ways to	20 to 29 years	26	285.77
	30 to 39 years	176	240.26

experiment with it.	40 to 49 years	201	275.95
	50 to 59 years	87	232.72
	Above 60 years	18	214.28
	Total	508	
Among my peers I am usually the first to try out new IT.	20 to 29 years	26	240.10
	30 to 39 years	176	233.12
	40 to 49 years	201	271.24
	50 to 59 years	87	263.28
	Above 60 years	18	254.97
	Total	508	
I like to experiment with new IT.	20 to 29 years	26	240.04
	30 to 39 years	176	244.05
	40 to 49 years	201	265.16
	50 to 59 years	87	265.22
	Above 60 years	18	206.69
	Total	508	
Working with a computer makes me nervous.	20 to 29 years	26	263.15
	30 to 39 years	176	255.50
	40 to 49 years	201	245.73
	50 to 59 years	87	264.24
	Above 60 years	18	283.06
	Total	508	
I get a sinking feeling when I think of trying to use a computer.	20 to 29 years	26	234.60
	30 to 39 years	176	256.51
	40 to 49 years	201	250.39
	50 to 59 years	87	267.21
	Above 60 years	18	248.00
	Total	508	
I feel comfortable working with a computer.	20 to 29 years	26	384.69
	30 to 39 years	176	237.88
	40 to 49 years	201	241.25
	50 to 59 years	87	274.36
	Above 60 years	18	280.89
	Total	508	
The ERP system provides the precise information I need.	20 to 29 years	26	316.92
	30 to 39 years	176	262.28
	40 to 49 years	201	246.32
	50 to 59 years	87	243.80
	Above 60 years	18	231.31
	Total	508	

The information contents provided by the ERP system meet my needs.	20 to 29 years	26	322.75
	30 to 39 years	176	248.78
	40 to 49 years	201	249.01
	50 to 59 years	87	265.77
	Above 60 years	18	218.67
	Total	508	
The ERP system provides reports that seem to be exactly what I need.	20 to 29 years	26	326.02
	30 to 39 years	176	245.31
	40 to 49 years	201	249.35
	50 to 59 years	87	262.18
	Above 60 years	18	261.44
	Total	508	
The ERP system provides sufficient information to my needs.	20 to 29 years	26	304.94
	30 to 39 years	176	255.03
	40 to 49 years	201	250.37
	50 to 59 years	87	265.34
	Above 60 years	18	170.25
	Total	508	
The ERP system provides complete features I need.	20 to 29 years	26	296.46
	30 to 39 years	176	260.86
	40 to 49 years	201	260.67
	50 to 59 years	87	235.33
	Above 60 years	18	155.44
	Total	508	
I am satisfied with the speed of interacting with the system.	20 to 29 years	26	333.73
	30 to 39 years	176	258.70
	40 to 49 years	201	251.22
	50 to 59 years	87	237.71
	Above 60 years	18	216.75
	Total	508	
It is easy to detect and correct possible errors in the ERP system.	20 to 29 years	26	271.79
	30 to 39 years	176	239.69
	40 to 49 years	201	258.28
	50 to 59 years	87	264.25
	Above 60 years	18	284.97
	Total	508	
It is easy to change the output format.	20 to 29 years	26	169.12
	30 to 39 years	176	246.93
	40 to 49 years	201	256.68
	50 to 59 years	87	285.32



	Above 60 years	18	278.58
	Total	508	
It is fast to search data in the ERP system.	20 to 29 years	26	340.94
	30 to 39 years	176	246.80
	40 to 49 years	201	248.11
	50 to 59 years	87	256.54
	Above 60 years	18	266.44
	Total	508	
The ERP system loads quickly.	20 to 29 years	26	263.17
	30 to 39 years	176	254.48
	40 to 49 years	201	255.47
	50 to 59 years	87	251.12
	Above 60 years	18	247.67
	Total	508	
The system reliably handles my queries.	20 to 29 years	26	292.37
	30 to 39 years	176	245.93
	40 to 49 years	201	255.34
	50 to 59 years	87	252.64
	Above 60 years	18	283.22
	Total	508	
I was able to retrieve data quickly.	20 to 29 years	26	304.10
	30 to 39 years	176	237.77
	40 to 49 years	201	252.18
	50 to 59 years	87	266.87
	Above 60 years	18	312.50
	Total	508	
It is fast to create a new record (vendor, customer etc.) in this system.	20 to 29 years	26	282.58
	30 to 39 years	176	253.64
	40 to 49 years	201	243.59
	50 to 59 years	87	272.91
	Above 60 years	18	255.17
	Total	508	
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	20 to 29 years	26	367.33
	30 to 39 years	176	249.43
	40 to 49 years	201	234.94
	50 to 59 years	87	270.22
	Above 60 years	18	283.58
	Total	508	
The ERP system is subject to frequent system problems and	20 to 29 years	26	312.83
	30 to 39 years	176	250.13

crashes.	40 to 49 years	201	247.97
	50 to 59 years	87	255.76
	Above 60 years	18	279.81
	Total	508	
The description of the functions /commands displayed on screen is clear to me.	20 to 29 years	26	244.73
	30 to 39 years	176	260.82
	40 to 49 years	201	260.75
	50 to 59 years	87	235.26
	Above 60 years	18	230.03
Total	508		
The function / commands names of the ERP system are easy to remember.	20 to 29 years	26	224.40
	30 to 39 years	176	263.20
	40 to 49 years	201	257.91
	50 to 59 years	87	236.71
	Above 60 years	18	260.89
Total	508		
The exact definition of data fields relating to my tasks is easy to find out.	20 to 29 years	26	217.50
	30 to 39 years	176	269.73
	40 to 49 years	201	258.00
	50 to 59 years	87	238.18
	Above 60 years	18	198.81
Total	508		
The content and index of the user manuals are useful.	20 to 29 years	26	224.90
	30 to 39 years	176	259.62
	40 to 49 years	201	263.89
	50 to 59 years	87	232.10
	Above 60 years	18	250.58
Total	508		
The user manuals are current (up to date).	20 to 29 years	26	251.23
	30 to 39 years	176	244.54
	40 to 49 years	201	254.44
	50 to 59 years	87	277.10
	Above 60 years	18	248.03
Total	508		
The user manuals are complete.	20 to 29 years	26	186.73
	30 to 39 years	176	250.10
	40 to 49 years	201	265.91
	50 to 59 years	87	255.76
	Above 60 years	18	261.97
Total	508		

The user manuals are easy to understand and follow.	20 to 29 years	26	223.85
	30 to 39 years	176	262.26
	40 to 49 years	201	257.01
	50 to 59 years	87	252.87
	Above 60 years	18	202.75
	Total	508	
My supervisor is very supportive of the use of the ERP system for my job.	20 to 29 years	26	334.83
	30 to 39 years	176	259.44
	40 to 49 years	201	239.20
	50 to 59 years	87	259.68
	Above 60 years	18	235.97
	Total	508	
The organization has supported the use of the ERP system.	20 to 29 years	26	312.85
	30 to 39 years	176	245.97
	40 to 49 years	201	244.20
	50 to 59 years	87	273.80
	Above 60 years	18	275.31
	Total	508	
People who influence my behaviour think that I should use the ERP system.	20 to 29 years	26	302.37
	30 to 39 years	176	260.09
	40 to 49 years	201	237.75
	50 to 59 years	87	260.40
	Above 60 years	18	289.25
	Total	508	
People who are important to me think that I should use the ERP system.	20 to 29 years	26	243.67
	30 to 39 years	176	257.70
	40 to 49 years	201	255.71
	50 to 59 years	87	257.90
	Above 60 years	18	208.89
	Total	508	
The ERP solution fits well with the business needs of me.	20 to 29 years	26	326.40
	30 to 39 years	176	258.24
	40 to 49 years	201	238.42
	50 to 59 years	87	269.60
	Above 60 years	18	220.75
	Total	508	
The ERP solution fits well with the business need of my department.	20 to 29 years	26	325.15
	30 to 39 years	176	247.75
	40 to 49 years	201	244.13
	50 to 59 years	87	271.30

	Above 60 years	18	253.03
	Total	508	
The ERP system is satisfactory in meeting my needs.	20 to 29 years	26	322.87
	30 to 39 years	176	252.71
	40 to 49 years	201	249.03
	50 to 59 years	87	256.80
	Above 60 years	18	223.14
	Total	508	
I believe there are some important problems with the way the ERP system is managed	20 to 29 years	26	245.98
	30 to 39 years	176	263.32
	40 to 49 years	201	261.42
	50 to 59 years	87	239.57
	Above 60 years	18	175.42
	Total	508	
The system maintenance and the way it is provided meet my need adequately.	20 to 29 years	26	276.98
	30 to 39 years	176	239.94
	40 to 49 years	201	256.35
	50 to 59 years	87	275.13
	Above 60 years	18	244.00
	Total	508	
There is not enough training for me on how to find, understand, access or use the ERP system.	20 to 29 years	26	213.35
	30 to 39 years	176	262.58
	40 to 49 years	201	254.00
	50 to 59 years	87	258.26
	Above 60 years	18	222.39
	Total	508	
I have received additional formal training for ERP since the conclusion of the above training.	20 to 29 years	26	243.94
	30 to 39 years	176	266.42
	40 to 49 years	201	259.86
	50 to 59 years	87	241.33
	Above 60 years	18	157.00
	Total	508	
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	20 to 29 years	26	218.60
	30 to 39 years	176	261.53
	40 to 49 years	201	271.42
	50 to 59 years	87	224.25
	Above 60 years	18	194.86
	Total	508	
I feel that I need additional ERP training to complete my	20 to 29 years	26	277.56
	30 to 39 years	176	260.79

current job tasks.	40 to 49 years	201	228.38
	50 to 59 years	87	291.83
	Above 60 years	18	271.00
	Total	508	
I do not know who to phone for support for this application.	20 to 29 years	26	274.71
	30 to 39 years	176	252.84
	40 to 49 years	201	247.10
	50 to 59 years	87	265.15
	Above 60 years	18	272.75
	Total	508	
The support people talk in terms that I do not understand.	20 to 29 years	26	291.79
	30 to 39 years	176	247.47
	40 to 49 years	201	256.51
	50 to 59 years	87	254.64
	Above 60 years	18	246.14
	Total	508	
I ask other users for help with this application rather than the support staff.	20 to 29 years	26	286.73
	30 to 39 years	176	242.82
	40 to 49 years	201	236.53
	50 to 59 years	87	288.82
	Above 60 years	18	356.89
	Total	508	
The support for this application is inadequate.	20 to 29 years	26	308.90
	30 to 39 years	176	239.38
	40 to 49 years	201	252.82
	50 to 59 years	87	267.98
	Above 60 years	18	277.39
	Total	508	
The ERP team does not provide feedback regarding users' requests to modify this application.	20 to 29 years	26	256.77
	30 to 39 years	176	245.59
	40 to 49 years	201	256.37
	50 to 59 years	87	252.90
	Above 60 years	18	325.19
	Total	508	
The ERP team did not inform me about the current situation of this application.	20 to 29 years	26	268.06
	30 to 39 years	176	254.35
	40 to 49 years	201	248.43
	50 to 59 years	87	258.30
	Above 60 years	18	285.78
	Total	508	

The ERP team did not explain how application modifications would impact my job.	20 to 29 years	26	271.83
	30 to 39 years	176	260.61
	40 to 49 years	201	246.18
	50 to 59 years	87	254.44
	Above 60 years	18	262.83
	Total	508	
Using ERP solution in my job enables me to accomplish tasks more quickly.	20 to 29 years	26	358.98
	30 to 39 years	176	234.23
	40 to 49 years	201	247.08
	50 to 59 years	87	287.15
	Above 60 years	18	226.81
	Total	508	
Using ERP solution improves my job performance.	20 to 29 years	26	293.83
	30 to 39 years	176	233.40
	40 to 49 years	201	255.79
	50 to 59 years	87	294.89
	Above 60 years	18	194.42
	Total	508	
Using ERP solution enhances my effectiveness on the job.	20 to 29 years	26	333.48
	30 to 39 years	176	232.94
	40 to 49 years	201	257.64
	50 to 59 years	87	270.28
	Above 60 years	18	239.94
	Total	508	
Using ERP solution makes it easier to do my job.	20 to 29 years	26	313.60
	30 to 39 years	176	244.97
	40 to 49 years	201	253.27
	50 to 59 years	87	262.97
	Above 60 years	18	235.11
	Total	508	
I find ERP solution useful in my job.	20 to 29 years	26	363.37
	30 to 39 years	176	237.41
	40 to 49 years	201	249.43
	50 to 59 years	87	264.80
	Above 60 years	18	271.19
	Total	508	
My interaction with ERP solution is clear and understandable.	20 to 29 years	26	320.87
	30 to 39 years	176	257.00
	40 to 49 years	201	255.23
	50 to 59 years	87	236.40

	Above 60 years	18	213.56
	Total	508	
Interacting with ERP solution does not require a lot of my mental effort.	20 to 29 years	26	242.40
	30 to 39 years	176	258.64
	40 to 49 years	201	256.03
	50 to 59 years	87	256.71
	Above 60 years	18	203.72
	Total	508	
I find ERP solution is easy to use.	20 to 29 years	26	302.33
	30 to 39 years	176	248.25
	40 to 49 years	201	251.39
	50 to 59 years	87	264.36
	Above 60 years	18	233.61
	Total	508	
I find it easy to get ERP solution to do what I want it to do.	20 to 29 years	26	260.44
	30 to 39 years	176	238.29
	40 to 49 years	201	267.30
	50 to 59 years	87	265.56
	Above 60 years	18	208.06
	Total	508	
Using ERP system is compatible with all aspects of my work.	20 to 29 years	26	232.37
	30 to 39 years	176	253.30
	40 to 49 years	201	255.50
	50 to 59 years	87	272.84
	Above 60 years	18	198.39
	Total	508	
Using ERP system fits well with the way I like to work.	20 to 29 years	26	273.40
	30 to 39 years	176	248.03
	40 to 49 years	201	253.78
	50 to 59 years	87	271.20
	Above 60 years	18	217.86
	Total	508	
Using ERP system fits into my work style.	20 to 29 years	26	235.42
	30 to 39 years	176	248.55
	40 to 49 years	201	252.28
	50 to 59 years	87	286.06
	Above 60 years	18	212.42
	Total	508	
Using the ERP system is a good idea.	20 to 29 years	26	338.29
	30 to 39 years	176	238.28

	40 to 49 years	201	256.96
	50 to 59 years	87	264.30
	Above 60 years	18	217.22
	Total	508	
I like the idea of using the ERP system to perform my job.	20 to 29 years	26	327.85
	30 to 39 years	176	236.68
	40 to 49 years	201	248.92
	50 to 59 years	87	278.37
	Above 60 years	18	269.72
	Total	508	

**TABLE 5.20 Non-Parametric Test: ERP Use and Age**

	Chi-Square	df	Asymp. Sig.
If there was no one around to tell me what to do as I go.	2.063	4	.724
If I had only the software manuals or/and the build-in help for assistance.	12.395	4	<b>.015</b>
If I could call someone for help if I got stuck.	8.549	4	.073
If I had a lot of time to complete the job for which the software was provided.	9.359	4	.053
If I hear about a new IT, I would look for ways to experiment with it.	10.905	4	<b>.028</b>
Among my peers I am usually the first to try out new IT.	7.316	4	.120
I like to experiment with new IT.	4.780	4	.311
Working with a computer makes me nervous.	2.001	4	.736
I get a sinking feeling when I think of trying to use a computer.	1.436	4	.838
I feel comfortable working with a computer.	28.234	4	<b>.000</b>
The ERP system provides the precise information I need.	7.424	4	.115
The information contents provided by the ERP system meet my needs.	8.519	4	.074



The ERP system provides reports that seem to be exactly what I need.	8.119	4	.087
The ERP system provides sufficient information to my needs.	10.529	4	<b>.032</b>
The ERP system provides complete features I need.	13.518	4	<b>.009</b>
I am satisfied with the speed of interacting with the system.	10.938	4	<b>.027</b>
It is easy to detect and correct possible errors in the ERP system.	3.731	4	.444
It is easy to change the output format.	14.365	4	<b>.006</b>
It is fast to search data in the ERP system.	10.842	4	<b>.028</b>
The ERP system loads quickly.	.201	4	.995
The system reliably handles my queries.	3.299	4	.509
I was able to retrieve data quickly.	9.694	4	<b>.046</b>
It is fast to create a new record (vendor, customer etc.) in this system.	3.716	4	.446
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	21.613	4	<b>.000</b>
The ERP system is subject to frequent system problems and crashes.	5.445	4	.245
The description of the functions /commands displayed on screen is clear to me.	3.072	4	.546
The function / commands names of the ERP system are easy to remember.	3.390	4	.495
The exact definition of data fields relating to my tasks is easy to find out.	7.860	4	.097

The content and index of the user manuals are useful.	4.498	4	.343
The user manuals are current (up to date).	3.222	4	.521
The user manuals are complete.	7.603	4	.107
The user manuals are easy to understand and follow.	4.262	4	.372
My supervisor is very supportive of the use of the ERP system for my job.	11.477	4	<b>.022</b>
The organization has supported the use of the ERP system.	8.379	4	.079
People who influence my behaviour think that I should use the ERP system.	7.372	4	.117
People who are important to me think that I should use the ERP system.	2.177	4	.703
The ERP solution fits well with the business needs of me.	11.698	4	<b>.020</b>
The ERP solution fits well with the business need of my department.	9.271	4	.055
The ERP system is satisfactory in meeting my needs.	7.340	4	.119
I believe there are some important problems with the way the ERP system is managed	7.591	4	.108
The system maintenance and the way it is provided meet my need adequately.	4.503	4	.342
There is not enough training for me on how to find, understand, access or use the ERP system.	3.619	4	.460
I have received additional formal training for ERP since the conclusion of the above training.	10.675	4	<b>.030</b>

I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	11.787	4	<b>.019</b>
I feel that I need additional ERP training to complete my current job tasks.	13.965	4	<b>.007</b>
I do not know who to phone for support for this application.	1.876	4	.759
The support people talk in terms that I do not understand.	2.289	4	.683
I ask other users for help with this application rather than the support staff.	19.407	4	<b>.001</b>
The support for this application is inadequate.	6.888	4	.142
The ERP team does not provide feedback regarding users' requests to modify this application.	5.080	4	.279
The ERP team did not inform me about the current situation of this application.	1.495	4	.827
The ERP team did not explain how application modifications would impact my job.	1.416	4	.841
Using ERP solution in my job enables me to accomplish tasks more quickly.	24.089	4	<b>.000</b>
Using ERP solution improves my job performance.	16.593	4	<b>.002</b>
Using ERP solution enhances my effectiveness on the job.	13.930	4	<b>.008</b>
Using ERP solution makes it easier to do my job.	6.150	4	.188
I find ERP solution useful in my job.	19.344	4	<b>.001</b>
My interaction with ERP solution is clear and understandable.	9.012	4	.061

Interacting with ERP solution does not require a lot of my mental effort.	2.686	4	.612
I find ERP solution is easy to use.	4.346	4	.361
I find it easy to get ERP solution to do what I want it to do.	6.448	4	.168
Using ERP system is compatible with all aspects of my work.	5.070	4	.280
Using ERP system fits well with the way I like to work.	3.322	4	.505
Using ERP system fits into my work style.	6.862	4	.143
Using the ERP system is a good idea.	13.503	4	<b>.009</b>
I like the idea of using the ERP system to perform my job.	13.149	4	<b>.011</b>

a. Kruskal Wallis Test

b. Grouping Variable: Age of the respondent

### **Interpretation:-**

- **As p-value of the statements** “If I had only the software manuals or/and the build-in help for assistance”, “If I hear about a new IT, I would look for ways to experiment with it”, “I feel comfortable working with a computer”, “The ERP system provides sufficient information to my needs”, “The ERP system provides complete features I need”, “I am satisfied with the speed of interacting with the system”, “It is easy to change the output format”, “It is fast to search data in the ERP system”, “I was able to retrieve data quickly”, “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work”, “My supervisor is very supportive of the use of the ERP system for my job”, “The ERP solution fits well with the business needs of me”, “I have received additional formal training for ERP since the conclusion of the above training”, “I have received informal training for ERP”, “I feel that I need additional ERP training to complete my current job tasks”, “I ask other users for help with this application rather than the support staff”, “Using ERP solution in my job enables me to accomplish tasks more quickly”, “Using ERP solution improves my job

performance”, “Using ERP solution enhances my effectiveness on the job”, “I find ERP solution useful in my job”, “Using the ERP system is a good idea” and “I like the idea of using the ERP system to perform my job” **is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of Age on above statements.**

- As the mean rank of the statement “If I had only the software manuals or/and the build-in help for assistance” in case of age group 20-29 years is 318.06 and of age group above 60 years is 200.31, we can interpret that age group of 20-29 years requires more support of software manuals than age group above 60 years.
- As the mean rank of the statement “If I hear about a new IT, I would look for ways to experiment with it” in case of age group 20-29 years is 285.77 and of age group above 60 years is 214.28, we can interpret that age group of 20-29 years will look for ways to experiment with new IT than age group above 60 years.
- As the mean rank of the statement “I feel comfortable working with a computer” in case of age group 20-29 years is 384.69 and of age group 30-39 years is 237.88, we can interpret that age group of 20-29 years feels more comfortable working with a computer than age group of 30-39 years.
- As the mean rank of the statement “The ERP system provides sufficient information to my needs” in case of age group 20-29 years is 304.94 and of age group above 60 years is 170.25, we can interpret that age group of 20-29 years feels that ERP system provides sufficient information to their needs than age group above 60 years.
- As the mean rank of the statement “The ERP system provides complete features I need” in case of age group 20-29 years is 296.46 and of age group above 60 years is 155.44, we can interpret that age group of 20-29 years feels that ERP system provides complete features they need than age group above 60 years.
- As the mean rank of the statement “I am satisfied with the speed of interacting with the system” in case of age group 20-29 years is 333.73 and of age group above 60 years is 216.75, we can interpret that age group of 20-29 years is more satisfied with the speed of interacting with the system than age group above 60 years.

- As the mean rank of the statement “It is easy to change the output format” in case of age group 20-29 years is 169.12 and of age group 50-59 years is 285.32, we can interpret that age group of 50-59 years feels that it is easy to change the output format than age group of 20-29 years.
- As the mean rank of the statement “It is fast to search data in the ERP system” in case of age group 20-29 years is 340.94 and of age group 30-39 years is 246.80, we can interpret that age group of 20-29 years feels that it is fast to search data in the ERP system than age group above 60 years.
- As the mean rank of the statement “I was able to retrieve data quickly” in case of age group above 60 years is 312.50 and of age group 30-39 years is 237.77, we can interpret that age group above 60 years is able to retrieve data quickly than age group of 30-39 years.
- As the mean rank of the statement “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work” in case of age group 20-29 years is 367.33 and of age group 40-49 years is 234.94, we can interpret that age group of 20-29 years feels that ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than age group of 40-49 years.
- As the mean rank of the statement “My supervisor is very supportive of the use of the ERP system for my job” in case of age group 20-29 years is 334.83 and of age group above 60 years is 235.97, we can interpret that age group of 20-29 years feels that their supervisor are very supportive of the use of ERP system for their job than age group above 60 years.
- As the mean rank of the statement “The ERP solution fits well with the business needs of me” in case of age group 20-29 years is 326.40 and of age group above 60 years is 220.75, we can interpret that age group of 20-29 years say that the ERP solution fits well with the business needs of them than age group above 60 years.
- As the mean rank of the statement “I have received additional formal training for ERP since the conclusion of the above training” in case of age group 30-39 years is 266.42 and of age group above 60 years is 157.00, we can interpret that age group of 30-39 years has received additional formal training for ERP since the conclusion of the above training than age group above 60 years.

- As the mean rank of the statement “I have received informal training for ERP” in case of age group 40-49 years is 271.42 and of age group above 60 years is 194.86, we can interpret that age group of 40-49 years has received informal training for ERP than age group above 60 years.
- As the mean rank of the statement “I feel that I need additional ERP training to complete my current job tasks” in case of age group 50-59 years is 291.83 and of age group 40-49 years is 228.38, we can interpret that age group of 50-59 years feels that they need additional training to complete their current job tasks than age group of 40-49 years.
- As the mean rank of the statement “I ask other users for help with this application rather than the support staff” in case of age group above 60 years is 356.89 and of age group 40-49 years is 236.53, we can interpret that age group above 60 years ask other users for help with ERP application rather than the support staff compared to age group of 40-49 years.
- As the mean rank of the statement “Using ERP solution in my job enables me to accomplish tasks more quickly” in case of age group 20-29 years is 318.06 and of age group above 60 years is 200.31, we can interpret that age group of 20-29 years requires more support of software manuals than age group above 60 years.
- As the mean rank of the statement “Using ERP solution improves my job performance” in case of age group 20-29 years is 358.98 and of age group above 60 years is 226.81, we can interpret that age group of 20-29 years feels that using ERP solution improves their job performance than age group above 60 years.
- As the mean rank of the statement “Using ERP solution enhances my effectiveness on the job” in case of age group 20-29 years is 333.48 and of age group 30-39 years is 232.94, we can interpret that age group of 20-29 years feels that using ERP solution enhances their effectiveness on the job than age group above 60 years.
- As the mean rank of the statement “I find ERP solution useful in my job” in case of age group 20-29 years is 363.37 and of age group 30-39 years is 237.41, we can interpret that age group of 20-29 years find ERP solution useful in their job than age group of 30-39 years.

- As the mean rank of the statement “Using the ERP system is a good idea” in case of age group 20-29 years is 338.29 and of age group above 60 years is 217.22, we can interpret that age group of 20-29 years feels that using the ERP system is a good idea than age group above 60 years.
- As the mean rank of the statement “I like the idea of using the ERP system to perform my job” in case of age group 20-29 years is 327.85 and of age group 30-39 years is 236.68, we can interpret that age group of 20-29 years like the idea of using the ERP system to perform their job than age group above 60 years.

**Hypothesis:**

**H<sub>0</sub>:** There is no significant effect of **Education of respondent** on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of Education of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.



**Kruskal-Wallis Test****TABLE 5.21 Mean Ranks: ERP Use and Education of the respondent**

	Education of the respondent	N	Mean Rank
If there was no one around to tell me what to do as I go.	High School	18	274.86
	Graduate	234	257.68
	Post Graduate	227	256.25
	Doctorate	16	168.72
	Any Other	13	244.00
	Total	508	
If I had only the software manuals or/and the build-in help for assistance.	High School	18	238.81
	Graduate	234	267.57
	Post Graduate	227	240.90
	Doctorate	16	235.59
	Any Other	13	301.65
	Total	508	
If I could call someone for help if I got stuck.	High School	18	304.03
	Graduate	234	258.09
	Post Graduate	227	242.75
	Doctorate	16	259.38
	Any Other	13	320.46
	Total	508	
If I had a lot of time to complete the job for which the software was provided.	High School	18	237.28
	Graduate	234	250.66
	Post Graduate	227	253.14
	Doctorate	16	346.84
	Any Other	13	257.54
	Total	508	
If I hear about a new IT, I would look for ways to experiment with it.	High School	18	203.17
	Graduate	234	251.29
	Post Graduate	227	257.49
	Doctorate	16	295.81
	Any Other	13	280.27
	Total	508	
Among my peers I am usually the first to try out new IT.	High School	18	198.92
	Graduate	234	258.45
	Post Graduate	227	259.24
	Doctorate	16	203.84
	Any Other	13	240.00
	Total	508	

I like to experiment with new IT.	High School	18	129.56
	Graduate	234	261.67
	Post Graduate	227	257.27
	Doctorate	16	220.34
	Any Other	13	292.12
	Total	508	
Working with a computer makes me nervous.	High School	18	326.22
	Graduate	234	239.89
	Post Graduate	227	256.64
	Doctorate	16	319.13
	Any Other	13	301.31
	Total	508	
I get a sinking feeling when I think of trying to use a computer.	High School	18	265.14
	Graduate	234	243.15
	Post Graduate	227	260.77
	Doctorate	16	305.25
	Any Other	13	272.19
	Total	508	
I feel comfortable working with a computer.	High School	18	230.86
	Graduate	234	265.94
	Post Graduate	227	245.43
	Doctorate	16	202.16
	Any Other	13	304.12
	Total	508	
The ERP system provides the precise information I need.	High School	18	242.58
	Graduate	234	273.54
	Post Graduate	227	237.37
	Doctorate	16	189.72
	Any Other	13	307.19
	Total	508	
The information contents provided by the ERP system meet my needs.	High School	18	242.58
	Graduate	234	266.80
	Post Graduate	227	246.28
	Doctorate	16	171.38
	Any Other	13	295.46
	Total	508	
The ERP system provides reports that seem to be exactly what I need.	High School	18	276.94
	Graduate	234	260.30
	Post Graduate	227	248.88
	Doctorate	16	192.56

	Any Other	13	293.38
	Total	508	
The ERP system provides sufficient information to my needs.	High School	18	166.25
	Graduate	234	255.84
	Post Graduate	227	258.58
	Doctorate	16	283.03
	Any Other	13	246.15
	Total	508	
The ERP system provides complete features I need.	High School	18	196.56
	Graduate	234	262.98
	Post Graduate	227	248.49
	Doctorate	16	235.72
	Any Other	13	310.08
	Total	508	
I am satisfied with the speed of interacting with the system.	High School	18	195.56
	Graduate	234	267.78
	Post Graduate	227	252.73
	Doctorate	16	167.38
	Any Other	13	235.19
	Total	508	
It is easy to detect and correct possible errors in the ERP system.	High School	18	244.94
	Graduate	234	263.23
	Post Graduate	227	250.18
	Doctorate	16	215.41
	Any Other	13	234.04
	Total	508	
It is easy to change the output format.	High School	18	291.56
	Graduate	234	248.09
	Post Graduate	227	259.80
	Doctorate	16	242.34
	Any Other	13	240.96
	Total	508	
It is fast to search data in the ERP system.	High School	18	213.19
	Graduate	234	262.88
	Post Graduate	227	251.43
	Doctorate	16	219.38
	Any Other	13	257.62
	Total	508	
The ERP system loads quickly.	High School	18	263.86
	Graduate	234	271.46

	Post Graduate	227	243.15
	Doctorate	16	181.91
	Any Other	13	223.69
	Total	508	
The system reliably handles my queries.	High School	18	310.25
	Graduate	234	252.36
	Post Graduate	227	251.72
	Doctorate	16	206.34
	Any Other	13	323.62
	Total	508	
I was able to retrieve data quickly.	High School	18	195.92
	Graduate	234	259.07
	Post Graduate	227	251.63
	Doctorate	16	235.91
	Any Other	13	326.27
	Total	508	
It is fast to create a new record (vendor, customer etc.) in this system.	High School	18	232.56
	Graduate	234	264.38
	Post Graduate	227	247.81
	Doctorate	16	254.06
	Any Other	13	224.50
	Total	508	
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	High School	18	284.17
	Graduate	234	245.13
	Post Graduate	227	253.21
	Doctorate	16	298.47
	Any Other	13	350.58
	Total	508	
The ERP system is subject to frequent system problems and crashes.	High School	18	278.53
	Graduate	234	245.99
	Post Graduate	227	253.21
	Doctorate	16	305.44
	Any Other	13	334.23
	Total	508	
The description of the functions /commands displayed on screen is clear to me.	High School	18	276.06
	Graduate	234	262.71
	Post Graduate	227	251.29
	Doctorate	16	235.25
	Any Other	13	156.73
	Total	508	

The function / commands names of the ERP system are easy to remember.	High School	18	204.33
	Graduate	234	259.90
	Post Graduate	227	258.41
	Doctorate	16	182.19
	Any Other	13	247.50
	Total	508	
The exact definition of data fields relating to my tasks is easy to find out.	High School	18	226.39
	Graduate	234	270.10
	Post Graduate	227	249.95
	Doctorate	16	185.75
	Any Other	13	176.62
	Total	508	
The content and index of the user manuals are useful.	High School	18	242.36
	Graduate	234	280.00
	Post Graduate	227	234.47
	Doctorate	16	171.25
	Any Other	13	264.46
	Total	508	
The user manuals are current (up to date).	High School	18	246.14
	Graduate	234	270.84
	Post Graduate	227	233.51
	Doctorate	16	244.69
	Any Other	13	350.62
	Total	508	
The user manuals are complete.	High School	18	261.19
	Graduate	234	260.72
	Post Graduate	227	248.22
	Doctorate	16	250.34
	Any Other	13	248.15
	Total	508	
The user manuals are easy to understand and follow.	High School	18	183.94
	Graduate	234	267.88
	Post Graduate	227	246.00
	Doctorate	16	247.78
	Any Other	13	268.12
	Total	508	
My supervisor is very supportive of the use of the ERP system for my job.	High School	18	230.25
	Graduate	234	270.69
	Post Graduate	227	240.01
	Doctorate	16	224.84

	Any Other	13	286.23
	Total	508	
The organization has supported the use of the ERP system.	High School	18	232.47
	Graduate	234	267.12
	Post Graduate	227	248.05
	Doctorate	16	172.16
	Any Other	13	271.81
	Total	508	
People who influence my behaviour think that I should use the ERP system.	High School	18	192.53
	Graduate	234	261.25
	Post Graduate	227	250.99
	Doctorate	16	206.03
	Any Other	13	339.77
	Total	508	
People who are important to me think that I should use the ERP system.	High School	18	159.56
	Graduate	234	273.46
	Post Graduate	227	251.78
	Doctorate	16	144.47
	Any Other	13	227.69
	Total	508	
The ERP solution fits well with the business needs of me.	High School	18	237.03
	Graduate	234	261.50
	Post Graduate	227	253.55
	Doctorate	16	177.19
	Any Other	13	264.38
	Total	508	
The ERP solution fits well with the business need of my department.	High School	18	239.81
	Graduate	234	259.53
	Post Graduate	227	250.41
	Doctorate	16	195.66
	Any Other	13	328.23
	Total	508	
The ERP system is satisfactory in meeting my needs.	High School	18	283.72
	Graduate	234	254.17
	Post Graduate	227	255.20
	Doctorate	16	207.31
	Any Other	13	265.88
	Total	508	
I believe there are some important problems with the	High School	18	160.11
	Graduate	234	257.97

way the ERP system is managed	Post Graduate	227	262.09
	Doctorate	16	210.84
	Any Other	13	243.96
	Total	508	
The system maintenance and the way it is provided meet my need adequately.	High School	18	246.39
	Graduate	234	256.79
	Post Graduate	227	256.05
	Doctorate	16	200.84
	Any Other	13	263.50
	Total	508	
There is not enough training for me on how to find, understand, access or use the ERP system.	High School	18	238.33
	Graduate	234	252.02
	Post Graduate	227	254.18
	Doctorate	16	303.53
	Any Other	13	266.73
	Total	508	
I have received additional formal training for ERP since the conclusion of the above training.	High School	18	116.17
	Graduate	234	252.39
	Post Graduate	227	273.28
	Doctorate	16	219.78
	Any Other	13	198.73
	Total	508	
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	High School	18	203.81
	Graduate	234	267.58
	Post Graduate	227	251.85
	Doctorate	16	156.22
	Any Other	13	256.42
	Total	508	
I feel that I need additional ERP training to complete my current job tasks.	High School	18	304.06
	Graduate	234	248.23
	Post Graduate	227	252.12
	Doctorate	16	293.75
	Any Other	13	291.96
	Total	508	
I do not know who to phone for support for this application.	High School	18	290.08
	Graduate	234	234.25
	Post Graduate	227	261.61
	Doctorate	16	387.13
	Any Other	13	282.31
	Total	508	

The support people talk in terms that I do not understand.	High School	18	289.64
	Graduate	234	233.24
	Post Graduate	227	272.31
	Doctorate	16	244.06
	Any Other	13	290.50
	Total	508	
I ask other users for help with this application rather than the support staff.	High School	18	361.78
	Graduate	234	232.94
	Post Graduate	227	256.27
	Doctorate	16	326.25
	Any Other	13	374.69
	Total	508	
The support for this application is inadequate.	High School	18	297.58
	Graduate	234	246.98
	Post Graduate	227	253.66
	Doctorate	16	225.41
	Any Other	13	380.81
	Total	508	
The ERP team does not provide feedback regarding users' requests to modify this application.	High School	18	303.08
	Graduate	234	241.86
	Post Graduate	227	254.51
	Doctorate	16	337.97
	Any Other	13	311.85
	Total	508	
The ERP team did not inform me about the current situation of this application.	High School	18	293.14
	Graduate	234	237.65
	Post Graduate	227	263.10
	Doctorate	16	279.59
	Any Other	13	323.31
	Total	508	
The ERP team did not explain how application modifications would impact my job.	High School	18	286.53
	Graduate	234	244.99
	Post Graduate	227	250.89
	Doctorate	16	312.63
	Any Other	13	372.88
	Total	508	
Using ERP solution in my job enables me to accomplish tasks more quickly.	High School	18	280.19
	Graduate	234	264.06
	Post Graduate	227	235.63
	Doctorate	16	259.81



	Any Other	13	369.85
	Total	508	
Using ERP solution improves my job performance.	High School	18	223.33
	Graduate	234	261.55
	Post Graduate	227	251.67
	Doctorate	16	256.31
	Any Other	13	217.85
	Total	508	
Using ERP solution enhances my effectiveness on the job.	High School	18	236.69
	Graduate	234	259.12
	Post Graduate	227	250.35
	Doctorate	16	211.53
	Any Other	13	321.35
	Total	508	
Using ERP solution makes it easier to do my job.	High School	18	157.61
	Graduate	234	260.77
	Post Graduate	227	260.06
	Doctorate	16	221.28
	Any Other	13	219.46
	Total	508	
I find ERP solution useful in my job.	High School	18	222.50
	Graduate	234	265.22
	Post Graduate	227	244.30
	Doctorate	16	192.34
	Any Other	13	360.38
	Total	508	
My interaction with ERP solution is clear and understandable.	High School	18	201.11
	Graduate	234	249.06
	Post Graduate	227	266.96
	Doctorate	16	253.56
	Any Other	13	209.88
	Total	508	
Interacting with ERP solution does not require a lot of my mental effort.	High School	18	242.11
	Graduate	234	253.85
	Post Graduate	227	267.67
	Doctorate	16	171.34
	Any Other	13	155.81
	Total	508	
I find ERP solution is easy to use.	High School	18	204.89
	Graduate	234	248.35

	Post Graduate	227	267.12
	Doctorate	16	236.34
	Any Other	13	235.92
	Total	508	
I find it easy to get ERP solution to do what I want it to do.	High School	18	185.83
	Graduate	234	258.76
	Post Graduate	227	264.18
	Doctorate	16	176.75
	Any Other	13	199.50
	Total	508	
Using ERP system is compatible with all aspects of my work.	High School	18	221.64
	Graduate	234	268.97
	Post Graduate	227	247.83
	Doctorate	16	220.31
	Any Other	13	198.19
	Total	508	
Using ERP system fits well with the way I like to work.	High School	18	198.00
	Graduate	234	265.33
	Post Graduate	227	251.06
	Doctorate	16	233.84
	Any Other	13	223.23
	Total	508	
Using ERP system fits into my work style.	High School	18	236.17
	Graduate	234	265.41
	Post Graduate	227	251.11
	Doctorate	16	217.28
	Any Other	13	188.54
	Total	508	
Using the ERP system is a good idea.	High School	18	214.78
	Graduate	234	274.34
	Post Graduate	227	245.42
	Doctorate	16	111.66
	Any Other	13	286.65
	Total	508	
I like the idea of using the ERP system to perform my job.	High School	18	254.06
	Graduate	234	266.86
	Post Graduate	227	245.28
	Doctorate	16	179.38
	Any Other	13	286.19
	Total	508	

I would rate the intensity of my job-related system use to be:	High School	18	174.72
	Graduate	234	276.03
	Post Graduate	227	244.12
	Doctorate	16	198.44
	Any Other	13	227.65
	Total	508	
Using most of the features of the ERP solution?	High School	18	143.36
	Graduate	234	271.84
	Post Graduate	227	255.93
	Doctorate	16	175.22
	Any Other	13	168.92
	Total	508	
Using more features than the other users of the ERP solution?	High School	18	173.44
	Graduate	234	272.83
	Post Graduate	227	250.95
	Doctorate	16	186.28
	Any Other	13	182.77
	Total	508	
Using more obscure aspects of the ERP solution?	High School	18	150.39
	Graduate	234	277.03
	Post Graduate	227	253.04
	Doctorate	16	103.69
	Any Other	13	204.15
	Total	508	

**TABLE 5.22 Non-Parametric Test: ERP Use and Education**

	Chi-Square	df	Asymp. Sig.
If there was no one around to tell me what to do as I go.	6.409	4	.171
If I had only the software manuals or/and the build-in help for assistance.	5.957	4	.202
If I could call someone for help if I got stuck.	6.752	4	.150
If I had a lot of time to complete the job for which the software was provided.	7.142	4	.129
If I hear about a new IT, I would look for ways to experiment with it.	4.274	4	.370

Among my peers I am usually the first to try out new IT.	5.314	4	.257
I like to experiment with new IT.	16.081	4	<b>.003</b>
Working with a computer makes me nervous.	11.808	4	<b>.019</b>
I get a sinking feeling when I think of trying to use a computer.	4.245	4	.374
I feel comfortable working with a computer.	6.679	4	.154
The ERP system provides the precise information I need.	13.166	4	<b>.010</b>
The information contents provided by the ERP system meet my needs.	9.468	4	.050
The ERP system provides reports that seem to be exactly what I need.	5.363	4	.252
The ERP system provides sufficient information to my needs.	8.029	4	.091
The ERP system provides complete features I need.	6.593	4	.159
I am satisfied with the speed of interacting with the system.	11.545	4	<b>.021</b>
It is easy to detect and correct possible errors in the ERP system.	2.696	4	.610
It is easy to change the output format.	2.224	4	.695
It is fast to search data in the ERP system.	3.474	4	.482
The ERP system loads quickly.	9.829	4	<b>.043</b>
The system reliably handles my queries.	7.959	4	.093
I was able to retrieve data quickly.	7.265	4	.123
It is fast to create a new record (vendor, customer etc.) in this system.	2.677	4	.613
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	9.032	4	.060

The ERP system is subject to frequent system problems and crashes.	7.381	4	.117
The description of the functions /commands displayed on screen is clear to me.	7.973	4	.093
The function / commands names of the ERP system are easy to remember.	7.029	4	.134
The exact definition of data fields relating to my tasks is easy to find out.	11.467	4	<b>.022</b>
The content and index of the user manuals are useful.	18.087	4	<b>.001</b>
The user manuals are current (up to date).	14.608	4	<b>.006</b>
The user manuals are complete.	.993	4	.911
The user manuals are easy to understand and follow.	7.596	4	.108
My supervisor is very supportive of the use of the ERP system for my job.	7.397	4	.116
The organization has supported the use of the ERP system.	8.636	4	.071
People who influence my behaviour think that I should use the ERP system.	10.822	4	<b>.029</b>
People who are important to me think that I should use the ERP system.	22.525	4	<b>.000</b>
The ERP solution fits well with the business needs of me.	5.821	4	.213
The ERP solution fits well with the business need of my department.	7.038	4	.134
The ERP system is satisfactory in meeting my needs.	2.651	4	.618
I believe there are some important problems with the way the ERP system is managed	10.056	4	<b>.039</b>

The system maintenance and the way it is provided meet my need adequately.	2.501	4	.644
There is not enough training for me on how to find, understand, access or use the ERP system.	2.236	4	.692
I have received additional formal training for ERP since the conclusion of the above training.	23.560	4	<b>.000</b>
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	11.741	4	<b>.019</b>
I feel that I need additional ERP training to complete my current job tasks.	4.797	4	.309
I do not know who to phone for support for this application.	20.826	4	<b>.000</b>
The support people talk in terms that I do not understand.	10.663	4	<b>.031</b>
I ask other users for help with this application rather than the support staff.	27.975	4	<b>.000</b>
The support for this application is inadequate.	12.895	4	<b>.012</b>
The ERP team does not provide feedback regarding users' requests to modify this application.	11.327	4	<b>.023</b>
The ERP team did not inform me about the current situation of this application.	8.751	4	.068
The ERP team did not explain how application modifications would impact my job.	13.370	4	<b>.010</b>
Using ERP solution in my job enables me to accomplish tasks more quickly.	14.618	4	<b>.006</b>
Using ERP solution improves my job performance.	2.468	4	.650
Using ERP solution enhances my effectiveness on the job.	5.245	4	.263

Using ERP solution makes it easier to do my job.	11.206	4	<b>.024</b>
I find ERP solution useful in my job.	14.114	4	<b>.007</b>
My interaction with ERP solution is clear and understandable.	6.170	4	.187
Interacting with ERP solution does not require a lot of my mental effort.	13.866	4	<b>.008</b>
I find ERP solution is easy to use.	5.088	4	.278
I find it easy to get ERP solution to do what I want it to do.	12.262	4	<b>.016</b>
Using ERP system is compatible with all aspects of my work.	7.079	4	.132
Using ERP system fits well with the way I like to work.	5.460	4	.243
Using ERP system fits into my work style.	5.848	4	.211
Using the ERP system is a good idea.	24.563	4	<b>.000</b>
I like the idea of using the ERP system to perform my job.	8.145	4	.086
I would rate the intensity of my job-related system use to be:	15.130	4	<b>.004</b>
Using most of the features of the ERP solution?	23.983	4	<b>.000</b>
Using more features than the other users of the ERP solution?	16.693	4	<b>.002</b>
Using more obscure aspects of the ERP solution?	34.323	4	<b>.000</b>

a. Kruskal Wallis Test

b. Grouping Variable: Education of the respondent

### **Interpretation:-**

- **As p-value of the statements** “I like to experiment with new IT”, “Working with a computer makes me nervous”, “The ERP system provides the precise information I need”, “I am satisfied with the speed of interacting with the system”, “The ERP system loads quickly”, “The exact definition of data fields relating to

my tasks is easy to find out”, “The content and index of the user manuals are useful”, “The user manuals are current (up-to-date)”, “People who influence my behaviour think that I should use the ERP system”, “People who are important to me think that I should use the ERP system”, “I believe there are some important problems with the way the ERP system is managed”, “I have received additional formal training for ERP since the conclusion of the above training”, “I have received informal training (e.g. half hour of support from a peer or training officer) for ERP”, “I do not know who to phone for support for this application”, “The support people talk in terms that I do not understand”, “I ask other users for help with this application rather than the support staff”, “The support for this application is inadequate”, “The ERP team does not provide feedback regarding users’ requests to modify this application”, “The ERP team did not explain how application modifications would impact my job”, “Using ERP solution in my job enables me to accomplish tasks more quickly”, “Using ERP solution makes it easier to do my job”, “I find ERP solution useful in my job”, “Interacting with ERP solution does not require a lot of my mental effort”, “I find it easy to get ERP solution to do what I want it to do”, “Using the ERP system is a good idea”, “I would rate the intensity of my job-related system use to be”, “Likelihood of using most of the features of the ERP solution”, “Likelihood of using more features than the other users of the ERP solution” and “Likelihood of using more obscure aspects of the ERP solution” **is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of Education on above statements.**

- As the mean rank of the statement “I like to experiment with new IT” in case of Graduates are 261.67 and in Post-Graduate are 257.27, we can interpret that Graduate likes to experiment with new IT than Post-Graduate.
- As the mean rank of the statement “Working with a computer makes me nervous” in case of Graduates are 239.89 and in Post-Graduate are 256.64, we can interpret that Graduate is less nervous working with a computer than Post-Graduate.
- As the mean rank of the statement “The ERP system provides the precise information I need” in case of Graduates are 273.54 and in Post-Graduate are 237.37, we can interpret that Graduate gets precise information that they need from ERP system than Post-Graduate.



- As the mean rank of the statement “I am satisfied with the speed of interacting with the system” in case of Graduates are 267.78 and in Post-Graduate are 252.73, we can interpret that Graduate is satisfied with the speed of interacting with the ERP system than Post-Graduate.
- As the mean rank of the statement “The ERP system loads quickly” in case of Graduates are 271.46 and in Post-Graduate are 243.15, we can interpret that Graduate feels that the ERP system loads quickly than Post-Graduate.
- As the mean rank of the statement “The exact definition of data fields relating to my tasks is easy to find out” in case of Graduates are 270.10 and in Post-Graduate are 249.95, we can interpret that Graduate feels that exact definition of data fields relating to their tasks is easy to find out than Post-Graduate.
- As the mean rank of the statement “The content and index of the user manuals are useful” in case of Graduates are 280.00 and in Post-Graduate are 234.47, we can interpret that Graduate feels that the content and index of the user manuals are useful than Post-Graduate.
- As the mean rank of the statement “The user manuals are current (up-to-date)” in case of Graduates are 270.84 and in Post-Graduate are 233.51, we can interpret that Graduate feels that user manuals are current (up-to-date) than Post-Graduate.
- As the mean rank of the statement “People who influence my behaviour think that I should use the ERP system” in case of Graduates are 261.25 and in Post-Graduate are 250.99, we can interpret that Graduate feels that people who influence their behaviour think that they should use the ERP system than Post-Graduate.
- As the mean rank of the statement “People who are important to me think that I should use the ERP system” in case of Graduates are 273.46 and in Post-Graduate are 251.78, we can interpret that Graduate feels that people who are important to them think that they should use the ERP system than Post-Graduate.
- As the mean rank of the statement “I believe there are some important problems with the way the ERP system is managed” in case of Graduates are 257.97 and in Post-Graduate are 262.09, we can interpret that Post-Graduate believes that there are some important problems with the way the ERP system is managed than

Graduate.

- As the mean rank of the statement “I have received additional formal training for ERP since the conclusion of the above training” in case of Graduates are 252.39 and in Post-Graduate are 273.28, we can interpret that Post-Graduate have received additional formal training for ERP since the conclusion of the above training than Graduate.
- As the mean rank of the statement “I have received informal training (e.g. half hour of support from a peer or training officer) for ERP” in case of Graduates are 267.58 and in Post-Graduate are 251.85, we can interpret that Graduate has received informal training (e.g. half hour of support from a peer or training officer) for ERP than Post-Graduate.
- As the mean rank of the statement “I do not know who to phone for support for this application” in case of Graduates are 234.25 and in Post-Graduate are 261.61, we can interpret that Post-Graduate do not know who to phone for support for this application than Graduate.
- As the mean rank of the statement “The support people talk in terms that I do not understand” in case of Graduates are 233.24 and in Post-Graduate are 272.31, we can interpret that Post-Graduate feels that the support people talk in terms that they do not understand than Graduate.
- As the mean rank of the statement “I ask other users for help with this application rather than the support staff” in case of Graduates are 232.94 and in Post-Graduate are 256.27, we can interpret that Post-Graduate ask other users for help with this application rather than the support staff compared to Graduate.
- As the mean rank of the statement “The support for this application is inadequate” in case of Graduates are 246.98 and in Post-Graduate are 253.66, we can interpret that Post-Graduate feels that the support for this application is inadequate than Graduate.
- As the mean rank of the statement “The ERP team does not provide feedback regarding users’ requests to modify this application” in case of Graduates are 241.86 and in Post-Graduate are 254.51, we can interpret that Post-Graduate feels that the ERP team does not provide feedback regarding users’ requests to modify

this application than Graduate.

- As the mean rank of the statement “The ERP team did not explain how application modifications would impact my job” in case of Graduates are 244.99 and in Post-Graduate are 250.89, we can interpret that Post-Graduate feels that the ERP team did not explain how application modifications would impact their job Graduate.
- As the mean rank of the statement “Using ERP solution in my job enables me to accomplish tasks more quickly” in case of Graduates are 264.06 and in Post-Graduate are 235.63, we can interpret that Graduate feels that using ERP solution in their job enables them to accomplish tasks more quickly than Post-Graduate.
- As the mean rank of the statement “Using ERP solution makes it easier to do my job” in case of Graduates are 260.77 and in Post-Graduate are 260.06, we can interpret that Graduate & Post-Graduate both feels that using ERP solution makes it easier to do their job.
- As the mean rank of the statement “I find ERP solution useful in my job” in case of Graduates are 265.22 and in Post-Graduate are 244.30, we can interpret that Graduate find ERP solution useful in their job than Post-Graduate.
- As the mean rank of the statement “Interacting with ERP solution does not require a lot of my mental effort” in case of Graduates are 253.85 and in Post-Graduate are 267.67, we can interpret that Post-Graduate feels that interacting with ERP solution does not require a lot of their mental effort than Graduate.
- As the mean rank of the statement “I find it easy to get ERP solution to do what I want it to do” in case of Graduates are 258.76 and in Post-Graduate are 264.18, we can interpret that Post-Graduate finds it easy to get ERP solution to do what they want it to do than Graduate.
- As the mean rank of the statement “Using the ERP system is a good idea” in case of Graduates are 274.34 and in Post-Graduate are 245.42, we can interpret that Graduate feels that using the ERP system is a good idea than Post-Graduate.
- As the mean rank of the statement “I would rate the intensity of my job-related system use to be” in case of Graduates are 276.03 and in Post-Graduate are 244.12, we can interpret that Graduate would rate the intensity of their job-related system use to be than Post-Graduate.

- As the mean rank of the statement “Likelihood of using most of the features of the ERP solution” in case of Graduates are 271.84 and in Post-Graduate are 255.93, we can interpret that likelihood of using most of the features of the ERP solution in case of Graduate is more than Post-Graduate.
- As the mean rank of the statement “Likelihood of using more features than the other users of the ERP solution” in case of Graduates are 272.83 and in Post-Graduate are 250.95, we can interpret that likelihood of using more features than the other users of the ERP solution in case of Graduate is more than Post-Graduate.
- As the mean rank of the statement “Likelihood of using more obscure aspects of the ERP solution” in case of Graduates are 277.03 and in Post-Graduate are 253.04, we can interpret that likelihood of using more obscure aspects of the ERP solution in case of Graduate is more than Post-Graduate.

**Hypothesis:**

**H<sub>0</sub>:** There is no significant effect of **working place of respondent** on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of working place of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**Kruskal-Wallis Test****TABLE 5.23 Mean Ranks: ERP Use and Working Place**

	Working place	N	Mean Rank
If there was no one around to tell me what to do as I go.	Worker	183	252.87
	Lower Management	206	249.80
	Middle Management	104	277.66
	Top Management	15	178.37
	Total	508	
If I had only the software manuals or/and the build-in help for assistance.	Worker	183	252.54
	Lower Management	206	269.24
	Middle Management	104	237.91
	Top Management	15	191.03
	Total	508	
If I could call someone for help if I got stuck.	Worker	183	250.86
	Lower Management	206	266.84
	Middle Management	104	235.17
	Top Management	15	263.33
	Total	508	
If I had a lot of time to complete the job for which the software was provided.	Worker	183	258.71
	Lower Management	206	267.82
	Middle Management	104	227.54
	Top Management	15	207.20
	Total	508	
If I hear about a new IT, I would look for ways to experiment with it.	Worker	183	269.70
	Lower Management	206	239.42
	Middle Management	104	267.01
	Top Management	15	189.43
	Total	508	

Among my peers I am usually the first to try out new IT.	Worker	183	224.70
	Lower Management	206	282.09
	Middle Management	104	263.48
	Top Management	15	176.97
	Total	508	
I like to experiment with new IT.	Worker	183	248.42
	Lower Management	206	264.08
	Middle Management	104	261.79
	Top Management	15	146.50
	Total	508	
Working with a computer makes me nervous.	Worker	183	276.40
	Lower Management	206	241.07
	Middle Management	104	238.56
	Top Management	15	282.33
	Total	508	
I get a sinking feeling when I think of trying to use a computer.	Worker	183	276.53
	Lower Management	206	250.95
	Middle Management	104	217.34
	Top Management	15	292.17
	Total	508	
I feel comfortable working with a computer.	Worker	183	249.47
	Lower Management	206	240.88
	Middle Management	104	285.49
	Top Management	15	288.07
	Total	508	
The ERP system provides the precise information I need.	Worker	183	263.53
	Lower Management	206	245.09
	Middle Management	104	260.98
	Top Management	15	228.60
	Total	508	
The information contents provided by the ERP system meet my needs.	Worker	183	245.43
	Lower Management	206	246.81
	Middle Management	104	286.60
	Top Management	15	248.20
	Total	508	
The ERP system provides reports that seem to be exactly what I need.	Worker	183	246.95
	Lower Management	206	251.05
	Middle Management	104	272.02
	Top Management	15	272.50
	Total	508	

The ERP system provides sufficient information to my needs.	Worker	183	250.36
	Lower Management	206	258.63
	Middle Management	104	261.04
	Top Management	15	202.83
	Total	508	
The ERP system provides complete features I need.	Worker	183	256.27
	Lower Management	206	257.90
	Middle Management	104	246.98
	Top Management	15	238.43
	Total	508	
I am satisfied with the speed of interacting with the system.	Worker	183	256.99
	Lower Management	206	257.83
	Middle Management	104	250.33
	Top Management	15	207.37
	Total	508	
It is easy to detect and correct possible errors in the ERP system.	Worker	183	247.02
	Lower Management	206	259.55
	Middle Management	104	267.71
	Top Management	15	184.87
	Total	508	
It is easy to change the output format.	Worker	183	242.62
	Lower Management	206	267.74
	Middle Management	104	258.64
	Top Management	15	188.80
	Total	508	
It is fast to search data in the ERP system.	Worker	183	259.62
	Lower Management	206	238.44
	Middle Management	104	283.22
	Top Management	15	213.47
	Total	508	
The ERP system loads quickly.	Worker	183	259.01
	Lower Management	206	252.52
	Middle Management	104	258.54
	Top Management	15	198.70
	Total	508	
The system reliably handles my queries.	Worker	183	248.60
	Lower Management	206	260.95
	Middle Management	104	261.57
	Top Management	15	188.83
	Total	508	

I was able to retrieve data quickly.	Worker	183	242.42
	Lower Management	206	255.16
	Middle Management	104	272.07
	Top Management	15	271.07
	Total	508	
It is fast to create a new record (vendor, customer etc.) in this system.	Worker	183	255.47
	Lower Management	206	262.49
	Middle Management	104	240.77
	Top Management	15	228.17
	Total	508	
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	Worker	183	250.50
	Lower Management	206	227.26
	Middle Management	104	299.28
	Top Management	15	366.93
	Total	508	
The ERP system is subject to frequent system problems and crashes.	Worker	183	254.08
	Lower Management	206	229.51
	Middle Management	104	292.24
	Top Management	15	341.17
	Total	508	
The description of the functions /commands displayed on screen is clear to me.	Worker	183	266.79
	Lower Management	206	245.88
	Middle Management	104	254.96
	Top Management	15	219.77
	Total	508	
The function / commands names of the ERP system are easy to remember.	Worker	183	245.52
	Lower Management	206	264.85
	Middle Management	104	251.19
	Top Management	15	244.93
	Total	508	
The exact definition of data fields relating to my tasks is easy to find out.	Worker	183	267.76
	Lower Management	206	253.17
	Middle Management	104	239.41
	Top Management	15	215.57
	Total	508	
The content and index of the user manuals are useful.	Worker	183	265.41
	Lower Management	206	262.03
	Middle Management	104	231.25
	Top Management	15	179.10
	Total	508	



The user manuals are current (up to date).	Worker	183	255.67
	Lower Management	206	263.84
	Middle Management	104	239.06
	Top Management	15	219.03
	Total	508	
The user manuals are complete.	Worker	183	262.57
	Lower Management	206	264.09
	Middle Management	104	227.73
	Top Management	15	209.97
	Total	508	
The user manuals are easy to understand and follow.	Worker	183	269.74
	Lower Management	206	260.57
	Middle Management	104	220.72
	Top Management	15	219.43
	Total	508	
My supervisor is very supportive of the use of the ERP system for my job.	Worker	183	263.95
	Lower Management	206	244.92
	Middle Management	104	262.13
	Top Management	15	217.90
	Total	508	
The organization has supported the use of the ERP system.	Worker	183	240.47
	Lower Management	206	255.19
	Middle Management	104	284.26
	Top Management	15	209.87
	Total	508	
People who influence my behaviour think that I should use the ERP system.	Worker	183	244.46
	Lower Management	206	264.84
	Middle Management	104	253.90
	Top Management	15	239.03
	Total	508	
People who are important to me think that I should use the ERP system.	Worker	183	242.77
	Lower Management	206	265.02
	Middle Management	104	260.29
	Top Management	15	212.93
	Total	508	
The ERP solution fits well with the business needs of me.	Worker	183	257.66
	Lower Management	206	244.08
	Middle Management	104	270.05
	Top Management	15	251.20
	Total	508	

The ERP solution fits well with the business need of my department.	Worker	183	253.04
	Lower Management	206	245.33
	Middle Management	104	274.03
	Top Management	15	262.73
	Total	508	
The ERP system is satisfactory in meeting my needs.	Worker	183	257.23
	Lower Management	206	248.70
	Middle Management	104	266.88
	Top Management	15	215.07
	Total	508	
I believe there are some important problems with the way the ERP system is managed	Worker	183	267.40
	Lower Management	206	271.05
	Middle Management	104	208.06
	Top Management	15	191.70
	Total	508	
The system maintenance and the way it is provided meet my need adequately.	Worker	183	245.22
	Lower Management	206	261.81
	Middle Management	104	265.41
	Top Management	15	191.77
	Total	508	
There is not enough training for me on how to find, understand, access or use the ERP system.	Worker	183	260.97
	Lower Management	206	262.89
	Middle Management	104	228.33
	Top Management	15	241.80
	Total	508	
I have received additional formal training for ERP since the conclusion of the above training.	Worker	183	252.63
	Lower Management	206	266.34
	Middle Management	104	232.37
	Top Management	15	268.23
	Total	508	
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	Worker	183	255.49
	Lower Management	206	261.33
	Middle Management	104	242.87
	Top Management	15	229.30
	Total	508	
I feel that I need additional ERP training to complete my current job tasks.	Worker	183	267.66
	Lower Management	206	246.85
	Middle Management	104	243.47
	Top Management	15	275.47
	Total	508	

I do not know who to phone for support for this application.	Worker	183	256.51
	Lower Management	206	243.82
	Middle Management	104	263.98
	Top Management	15	311.00
	Total	508	
The support people talk in terms that I do not understand.	Worker	183	256.46
	Lower Management	206	253.83
	Middle Management	104	240.72
	Top Management	15	335.37
	Total	508	
I ask other users for help with this application rather than the support staff.	Worker	183	248.47
	Lower Management	206	245.80
	Middle Management	104	260.75
	Top Management	15	404.20
	Total	508	
The support for this application is inadequate.	Worker	183	247.14
	Lower Management	206	266.80
	Middle Management	104	237.23
	Top Management	15	295.03
	Total	508	
The ERP team does not provide feedback regarding users' requests to modify this application.	Worker	183	256.05
	Lower Management	206	240.88
	Middle Management	104	269.54
	Top Management	15	318.40
	Total	508	
The ERP team did not inform me about the current situation of this application.	Worker	183	253.96
	Lower Management	206	245.24
	Middle Management	104	268.90
	Top Management	15	288.33
	Total	508	
The ERP team did not explain how application modifications would impact my job.	Worker	183	255.60
	Lower Management	206	243.66
	Middle Management	104	265.52
	Top Management	15	313.67
	Total	508	
Using ERP solution in my job enables me to accomplish tasks more quickly.	Worker	183	244.03
	Lower Management	206	254.33
	Middle Management	104	276.50
	Top Management	15	231.97
	Total	508	

Using ERP solution improves my job performance.	Worker	183	233.15
	Lower Management	206	255.20
	Middle Management	104	293.97
	Top Management	15	231.63
	Total	508	
Using ERP solution enhances my effectiveness on the job.	Worker	183	242.81
	Lower Management	206	254.55
	Middle Management	104	273.78
	Top Management	15	262.73
	Total	508	
Using ERP solution makes it easier to do my job.	Worker	183	251.48
	Lower Management	206	250.79
	Middle Management	104	263.02
	Top Management	15	283.33
	Total	508	
I find ERP solution useful in my job.	Worker	183	250.46
	Lower Management	206	250.95
	Middle Management	104	276.23
	Top Management	15	201.87
	Total	508	
My interaction with ERP solution is clear and understandable.	Worker	183	258.95
	Lower Management	206	238.73
	Middle Management	104	280.89
	Top Management	15	233.80
	Total	508	
Interacting with ERP solution does not require a lot of my mental effort.	Worker	183	253.68
	Lower Management	206	253.62
	Middle Management	104	267.59
	Top Management	15	185.83
	Total	508	
I find ERP solution is easy to use.	Worker	183	247.21
	Lower Management	206	254.15
	Middle Management	104	268.79
	Top Management	15	249.17
	Total	508	
I find it easy to get ERP solution to do what I want it to do.	Worker	183	236.00
	Lower Management	206	261.04
	Middle Management	104	274.55
	Top Management	15	251.30
	Total	508	

Using ERP system is compatible with all aspects of my work.	Worker	183	248.11
	Lower Management	206	255.12
	Middle Management	104	270.10
	Top Management	15	215.77
	Total	508	
Using ERP system fits well with the way I like to work.	Worker	183	244.12
	Lower Management	206	252.36
	Middle Management	104	282.37
	Top Management	15	217.30
	Total	508	
Using ERP system fits into my work style.	Worker	183	236.50
	Lower Management	206	261.96
	Middle Management	104	275.35
	Top Management	15	227.13
	Total	508	
Using the ERP system is a good idea.	Worker	183	255.97
	Lower Management	206	237.82
	Middle Management	104	286.05
	Top Management	15	246.83
	Total	508	
I like the idea of using the ERP system to perform my job.	Worker	183	241.24
	Lower Management	206	241.90
	Middle Management	104	301.90
	Top Management	15	260.63
	Total	508	

**TABLE 5.24 Non-Parametric Test: ERP Use and Working Place**

	Chi-Square	df	Asymp. Sig.
If there was no one around to tell me what to do as I go.	7.302	3	.063
If I had only the software manuals or/and the build-in help for assistance.	6.618	3	.085
If I could call someone for help if I got stuck.	3.680	3	.298
If I had a lot of time to complete the job for which the software was provided.	7.298	3	.063
If I hear about a new IT, I would look for ways to experiment with it.	8.221	3	<b>.042</b>

Among my peers I am usually the first to try out new IT.	20.534	3	<b>.000</b>
I like to experiment with new IT.	9.991	3	<b>.019</b>
Working with a computer makes me nervous.	8.053	3	<b>.045</b>
I get a sinking feeling when I think of trying to use a computer.	12.593	3	<b>.006</b>
I feel comfortable working with a computer.	7.887	3	<b>.048</b>
The ERP system provides the precise information I need.	2.434	3	.487
The information contents provided by the ERP system meet my needs.	6.883	3	.076
The ERP system provides reports that seem to be exactly what I need.	2.534	3	.469
The ERP system provides sufficient information to my needs.	2.594	3	.459
The ERP system provides complete features I need.	.638	3	.888
I am satisfied with the speed of interacting with the system.	1.928	3	.587
It is easy to detect and correct possible errors in the ERP system.	5.348	3	.148
It is easy to change the output format.	6.285	3	.099
It is fast to search data in the ERP system.	8.485	3	<b>.037</b>
The ERP system loads quickly.	2.671	3	.445
The system reliably handles my queries.	4.274	3	.233
I was able to retrieve data quickly.	3.246	3	.355

It is fast to create a new record (vendor, customer etc.) in this system.	2.174	3	.537
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	26.655	3	<b>.000</b>
The ERP system is subject to frequent system problems and crashes.	18.926	3	<b>.000</b>
The description of the functions /commands displayed on screen is clear to me.	3.108	3	.375
The function / commands names of the ERP system are easy to remember.	1.977	3	.577
The exact definition of data fields relating to my tasks is easy to find out.	3.930	3	.269
The content and index of the user manuals are useful.	8.836	3	<b>.032</b>
The user manuals are current (up to date).	3.167	3	.367
The user manuals are complete.	6.846	3	.077
The user manuals are easy to understand and follow.	9.417	3	<b>.024</b>
My supervisor is very supportive of the use of the ERP system for my job.	3.097	3	.377
The organization has supported the use of the ERP system.	8.135	3	<b>.043</b>
People who influence my behaviour think that I should use the ERP system.	2.222	3	.528
People who are important to me think that I should use the ERP system.	3.864	3	.277

The ERP solution fits well with the business needs of me.	2.526	3	.471
The ERP solution fits well with the business need of my department.	2.941	3	.401
The ERP system is satisfactory in meeting my needs.	2.387	3	.496
I believe there are some important problems with the way the ERP system is managed	17.888	3	<b>.000</b>
The system maintenance and the way it is provided meet my need adequately.	4.905	3	.179
There is not enough training for me on how to find, understand, access or use the ERP system.	4.601	3	.203
I have received additional formal training for ERP since the conclusion of the above training.	4.043	3	.257
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	1.617	3	.656
I feel that I need additional ERP training to complete my current job tasks.	3.097	3	.377
I do not know who to phone for support for this application.	4.024	3	.259
The support people talk in terms that I do not understand.	5.787	3	.122
I ask other users for help with this application rather than the support staff.	17.281	3	<b>.001</b>
The support for this application is inadequate.	4.659	3	.199



The ERP team does not provide feedback regarding users' requests to modify this application.	5.973	3	.113
The ERP team did not inform me about the current situation of this application.	2.719	3	.437
The ERP team did not explain how application modifications would impact my job.	4.296	3	.231
Using ERP solution in my job enables me to accomplish tasks more quickly.	3.969	3	.265
Using ERP solution improves my job performance.	12.904	3	<b>.005</b>
Using ERP solution enhances my effectiveness on the job.	3.319	3	.345
Using ERP solution makes it easier to do my job.	1.256	3	.740
I find ERP solution useful in my job.	4.913	3	.178
My interaction with ERP solution is clear and understandable.	6.912	3	.075
Interacting with ERP solution does not require a lot of my mental effort.	4.407	3	.221
I find ERP solution is easy to use.	1.614	3	.656
I find it easy to get ERP solution to do what I want it to do.	5.642	3	.130
Using ERP system is compatible with all aspects of my work.	2.832	3	.418
Using ERP system fits well with the way I like to work.	6.227	3	.101
Using ERP system fits into my work style.	6.456	3	.091

Using the ERP system is a good idea.	8.309	3	<b>.040</b>
I like the idea of using the ERP system to perform my job.	15.380	3	<b>.002</b>

a. Kruskal Wallis Test

b. Grouping Variable: Working place

### **Interpretation:-**

- **As p-value of the statements** “If I hear about a new IT, I would look for ways to experiment with it”, “Among my peers I am usually the first to try out new IT”, “I like to experiment with new IT”, “Working with a computer makes me nervous”, “I get a sinking feeling when I think of trying to use a computer”, “I feel comfortable working with a computer”, “It is fast to search data in the ERP system”, “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work”, “The ERP system is subject to frequent system problems and crashes”, “The content and index of the user manuals are useful”, “The user manuals are easy to understand and follow”, “The organization has supported the use of the ERP system”, “I believe there are some important problems with the way the ERP system is managed”, “I ask other users for help with this application rather than the support staff”, “Using ERP solution improves my job performance”, “Using the ERP system is a good idea” and “I like the idea of using the ERP system to perform my job” **is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of Working Place on above statements.**
- As the mean rank of the statement “If I hear about a new IT, I would look for ways to experiment with it” in case of Workers is 269.70 and in Lower Management is 239.42, we can interpret that Workers would work for ways to experiment with new IT when they hear about it than Lower Management.
- As the mean rank of the statement “Among my peers I am usually the first to try out new IT” in case of Lower Management is 282.09 and in Workers is 224.70, we can interpret that Lower Management feels that among their peers, they are usually the first to try out new IT than Workers.
- As the mean rank of the statement “I like to experiment with new IT” in case of Lower Management is 264.08 and in Workers is 248.42, we can interpret that

Lower Management likes to experiment with new IT than Workers.

- As the mean rank of the statement “Working with a computer makes me nervous” in case of Workers is 276.40 and in Middle Management is 238.56, we can interpret that Workers feels more nervous while working with a computer than Middle Management.
- As the mean rank of the statement “I get a sinking feeling when I think of trying to use a computer” in case of Workers is 276.53 and in Middle Management is 217.34, we can interpret that Workers get more sinking feeling when they think of trying to use a computer than Middle Management.
- As the mean rank of the statement “I feel comfortable working with a computer” in case of Middle Management is 285.49 and in Lower Management is 240.88, we can interpret that Middle Management feels more comfortable working with a computer than Lower Management.
- As the mean rank of the statement “It is fast to search data in the ERP system” in case of Middle Management is 283.22 and in Lower Management is 238.44, we can interpret that Middle Management feels that it is fast to search data in the ERP system than Lower Management.
- As the mean rank of the statement “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work” in case of Middle Management is 299.28 and in Lower Management is 227.26, we can interpret that Middle Management feels that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than Lower Management.
- As the mean rank of the statement “The ERP system is subject to frequent system problems and crashes” in case of Middle Management is 292.24 and in Lower Management is 229.51, we can interpret that Middle Management feels that the ERP system is subject to frequent system problems and crashes than Lower Management.
- As the mean rank of the statement “The content and index of the user manuals are useful” in case of Workers is 265.41 and in Middle Management is 231.25, we can interpret that Workers feel that the content and index of the user manuals are

useful than Middle Management.

- As the mean rank of the statement “The user manuals are easy to understand and follow” in case of Workers is 269.74 and in Middle Management is 220.72, we can interpret that Workers feel that the user manuals are easy to understand and follow than Middle Management.
- As the mean rank of the statement “The organization has supported the use of the ERP system” in case of Middle Management is 284.26 and in Workers is 240.47, we can interpret that Middle Management feels that the organization has supported the use of the ERP system than Workers.
- As the mean rank of the statement “I believe there are some important problems with the way the ERP system is managed” in case of Lower Management is 271.05 and in Middle Management is 208.06, we can interpret that Lower Management believes there are some important problems with the way the ERP system is managed than Middle Management.
- As the mean rank of the statement “I ask other users for help with this application rather than the support staff” in case of Middle Management is 260.75 and in Lower Management is 245.80, we can interpret that Middle Management ask other users for help with this application rather than the support staff than Lower Management.
- As the mean rank of the statement “Using ERP solution improves my job performance” in case of Middle Management is 293.97 and in Workers is 233.15, we can interpret that Middle Management feels that using ERP solution improves their job performance Workers.
- As the mean rank of the statement “Using the ERP system is a good idea” in case of Middle Management is 286.05 and in Lower Management is 237.82, we can interpret that Middle Management feels that using the ERP system is a good idea than Lower Management.
- As the mean rank of the statement “I like the idea of using the ERP system to perform my job” in case of Middle Management is 301.90 and in Workers is 241.24, we can interpret that Middle Management likes the idea of using the ERP system to perform their job than Workers.

**Hypothesis:**

**H<sub>0</sub>:** There is no significant effect of **company experience of respondent** on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of company experience of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**Kruskal-Wallis Test****TABLE 5.25 Mean Ranks: ERP Use and Company Experience**

	How long have you worked with the company? (Binned)	N	Mean Rank
If there was no one around to tell me what to do as I go.	<= 12.00	469	251.24
	13.00 - 23.50	32	293.28
	23.51+	7	295.43
	Total	508	
If I had only the software manuals or/and the build-in help for assistance.	<= 12.00	469	250.46
	13.00 - 23.50	32	308.67
	23.51+	7	277.79
	Total	508	
If I could call someone for help if I got stuck.	<= 12.00	469	251.09
	13.00 - 23.50	32	296.25
	23.51+	7	292.07
	Total	508	
If I had a lot of time to complete the job for which the software was provided.	<= 12.00	469	256.22
	13.00 - 23.50	32	260.31
	23.51+	7	112.57
	Total	508	
If I hear about a new IT, I would look for ways to experiment with it.	<= 12.00	469	249.97
	13.00 - 23.50	32	292.41
	23.51+	7	384.50
	Total	508	
Among my peers I am usually the first to try out new IT.	<= 12.00	469	249.43
	13.00 - 23.50	32	319.55
	23.51+	7	297.07

Total		508	
I like to experiment with new IT.	<= 12.00	469	249.62
	13.00 - 23.50	32	328.17
	23.51+	7	244.79
	Total	508	
Working with a computer makes me nervous.	<= 12.00	469	255.21
	13.00 - 23.50	32	248.08
	23.51+	7	236.50
	Total	508	
I get a sinking feeling when I think of trying to use a computer.	<= 12.00	469	256.11
	13.00 - 23.50	32	247.98
	23.51+	7	176.57
	Total	508	
I feel comfortable working with a computer.	<= 12.00	469	249.43
	13.00 - 23.50	32	290.06
	23.51+	7	431.50
	Total	508	
The ERP system provides the precise information I need.	<= 12.00	469	250.24
	13.00 - 23.50	32	295.69
	23.51+	7	351.57
	Total	508	
The information contents provided by the ERP system meet my needs.	<= 12.00	469	250.41
	13.00 - 23.50	32	284.14
	23.51+	7	393.21
	Total	508	
The ERP system provides reports that seem to be exactly what I need.	<= 12.00	469	250.50
	13.00 - 23.50	32	305.81
	23.51+	7	287.93
	Total	508	
The ERP system provides sufficient information to my needs.	<= 12.00	469	254.12
	13.00 - 23.50	32	242.91
	23.51+	7	333.29
	Total	508	
The ERP system provides complete features I need.	<= 12.00	469	254.85
	13.00 - 23.50	32	254.95
	23.51+	7	228.79
	Total	508	
I am satisfied with the speed of interacting with the	<= 12.00	469	252.15
	13.00 - 23.50	32	274.66

system.	23.51+	7	319.71
	Total	508	
It is easy to detect and correct possible errors in the ERP system.	<= 12.00	469	251.35
	13.00 - 23.50	32	285.06
	23.51+	7	325.79
	Total	508	
It is easy to change the output format.	<= 12.00	469	255.38
	13.00 - 23.50	32	266.80
	23.51+	7	139.36
	Total	508	
It is fast to search data in the ERP system.	<= 12.00	469	249.11
	13.00 - 23.50	32	303.72
	23.51+	7	390.93
	Total	508	
The ERP system loads quickly.	<= 12.00	469	254.21
	13.00 - 23.50	32	247.94
	23.51+	7	304.07
	Total	508	
The system reliably handles my queries.	<= 12.00	469	252.80
	13.00 - 23.50	32	257.39
	23.51+	7	355.50
	Total	508	
I was able to retrieve data quickly.	<= 12.00	469	250.06
	13.00 - 23.50	32	294.91
	23.51+	7	367.07
	Total	508	
It is fast to create a new record (vendor, customer etc.) in this system.	<= 12.00	469	250.61
	13.00 - 23.50	32	282.66
	23.51+	7	386.64
	Total	508	
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	<= 12.00	469	252.98
	13.00 - 23.50	32	249.83
	23.51+	7	377.93
	Total	508	
The ERP system is subject to frequent system problems and crashes.	<= 12.00	469	255.98
	13.00 - 23.50	32	238.20
	23.51+	7	229.86
	Total	508	

The description of the functions /commands displayed on screen is clear to me.	<= 12.00	469	254.37
	13.00 - 23.50	32	277.47
	23.51+	7	158.21
	Total	508	
The function / commands names of the ERP system are easy to remember.	<= 12.00	469	253.82
	13.00 - 23.50	32	278.39
	23.51+	7	191.07
	Total	508	
The exact definition of data fields relating to my tasks is easy to find out.	<= 12.00	469	252.71
	13.00 - 23.50	32	288.09
	23.51+	7	220.57
	Total	508	
The content and index of the user manuals are useful.	<= 12.00	469	253.30
	13.00 - 23.50	32	275.89
	23.51+	7	237.14
	Total	508	
The user manuals are current (up to date).	<= 12.00	469	253.96
	13.00 - 23.50	32	268.41
	23.51+	7	227.07
	Total	508	
The user manuals are complete.	<= 12.00	469	254.48
	13.00 - 23.50	32	272.98
	23.51+	7	171.07
	Total	508	
The user manuals are easy to understand and follow.	<= 12.00	469	254.84
	13.00 - 23.50	32	259.20
	23.51+	7	210.43
	Total	508	
My supervisor is very supportive of the use of the ERP system for my job.	<= 12.00	469	250.81
	13.00 - 23.50	32	288.19
	23.51+	7	347.43
	Total	508	
The organization has supported the use of the ERP system.	<= 12.00	469	249.56
	13.00 - 23.50	32	306.88
	23.51+	7	346.21
	Total	508	
People who influence my behaviour think that I should use the ERP system.	<= 12.00	469	251.54
	13.00 - 23.50	32	278.86
	23.51+	7	341.50



	Total	508	
People who are important to me think that I should use the ERP system.	<= 12.00	469	252.04
	13.00 - 23.50	32	290.59
	23.51+	7	254.50
	Total	508	
The ERP solution fits well with the business needs of me.	<= 12.00	469	247.99
	13.00 - 23.50	32	316.75
	23.51+	7	406.21
	Total	508	
The ERP solution fits well with the business need of my department.	<= 12.00	469	249.20
	13.00 - 23.50	32	302.88
	23.51+	7	388.57
	Total	508	
The ERP system is satisfactory in meeting my needs.	<= 12.00	469	248.70
	13.00 - 23.50	32	302.00
	23.51+	7	426.21
	Total	508	
I believe there are some important problems with the way the ERP system is managed	<= 12.00	469	252.99
	13.00 - 23.50	32	273.66
	23.51+	7	267.79
	Total	508	
The system maintenance and the way it is provided meet my need adequately.	<= 12.00	469	252.51
	13.00 - 23.50	32	268.33
	23.51+	7	324.64
	Total	508	
There is not enough training for me on how to find, understand, access or use the ERP system.	<= 12.00	469	253.43
	13.00 - 23.50	32	288.03
	23.51+	7	173.00
	Total	508	
I have received additional formal training for ERP since the conclusion of the above training.	<= 12.00	469	254.84
	13.00 - 23.50	32	259.17
	23.51+	7	210.07
	Total	508	
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	<= 12.00	469	254.93
	13.00 - 23.50	32	248.16
	23.51+	7	254.79
	Total	508	
I feel that I need additional ERP training to complete my	<= 12.00	469	250.69
	13.00 - 23.50	32	297.47

current job tasks.	23.51+	7	313.29
	Total	508	
I do not know who to phone for support for this application.	<= 12.00	469	256.90
	13.00 - 23.50	32	235.41
	23.51+	7	181.21
	Total	508	
The support people talk in terms that I do not understand.	<= 12.00	469	256.99
	13.00 - 23.50	32	218.11
	23.51+	7	253.93
	Total	508	
I ask other users for help with this application rather than the support staff.	<= 12.00	469	254.79
	13.00 - 23.50	32	243.25
	23.51+	7	286.71
	Total	508	
The support for this application is inadequate.	<= 12.00	469	253.52
	13.00 - 23.50	32	254.00
	23.51+	7	322.43
	Total	508	
The ERP team does not provide feedback regarding users' requests to modify this application.	<= 12.00	469	254.98
	13.00 - 23.50	32	246.56
	23.51+	7	258.71
	Total	508	
The ERP team did not inform me about the current situation of this application.	<= 12.00	469	256.14
	13.00 - 23.50	32	227.58
	23.51+	7	267.79
	Total	508	
The ERP team did not explain how application modifications would impact my job.	<= 12.00	469	255.44
	13.00 - 23.50	32	240.09
	23.51+	7	257.43
	Total	508	
Using ERP solution in my job enables me to accomplish tasks more quickly.	<= 12.00	469	249.80
	13.00 - 23.50	32	309.83
	23.51+	7	316.43
	Total	508	
Using ERP solution improves my job performance.	<= 12.00	469	251.13
	13.00 - 23.50	32	300.58
	23.51+	7	269.57
	Total	508	
Using ERP solution	<= 12.00	469	251.40

enhances my effectiveness on the job.	13.00 - 23.50	32	288.06
	23.51+	7	308.79
	Total	508	
Using ERP solution makes it easier to do my job.	<= 12.00	469	249.76
	13.00 - 23.50	32	285.13
	23.51+	7	431.93
	Total	508	
I find ERP solution useful in my job.	<= 12.00	469	249.05
	13.00 - 23.50	32	305.80
	23.51+	7	385.07
	Total	508	
My interaction with ERP solution is clear and understandable.	<= 12.00	469	251.98
	13.00 - 23.50	32	274.34
	23.51+	7	332.71
	Total	508	
Interacting with ERP solution does not require a lot of my mental effort.	<= 12.00	469	253.23
	13.00 - 23.50	32	266.61
	23.51+	7	284.21
	Total	508	
I find ERP solution is easy to use.	<= 12.00	469	252.93
	13.00 - 23.50	32	264.70
	23.51+	7	312.93
	Total	508	
I find it easy to get ERP solution to do what I want it to do.	<= 12.00	469	250.01
	13.00 - 23.50	32	307.69
	23.51+	7	311.93
	Total	508	
Using ERP system is compatible with all aspects of my work.	<= 12.00	469	255.55
	13.00 - 23.50	32	251.63
	23.51+	7	197.43
	Total	508	
Using ERP system fits well with the way I like to work.	<= 12.00	469	252.77
	13.00 - 23.50	32	285.25
	23.51+	7	230.14
	Total	508	
Using ERP system fits into my work style.	<= 12.00	469	253.11
	13.00 - 23.50	32	266.02
	23.51+	7	294.71
	Total	508	

Using the ERP system is a good idea.	<= 12.00	469	250.94
	13.00 - 23.50	32	281.44
	23.51+	7	369.86
	Total	508	
I like the idea of using the ERP system to perform my job.	<= 12.00	469	249.80
	13.00 - 23.50	32	297.88
	23.51+	7	371.14
	Total	508	

**TABLE 5.26 Non-Parametric Test: ERP Use and Company Experience**

	Chi-Square	df	Asymp. Sig.
If there was no one around to tell me what to do as I go.	3.204	2	.202
If I had only the software manuals or/and the build-in help for assistance.	5.185	2	.075
If I could call someone for help if I got stuck.	3.544	2	.170
If I had a lot of time to complete the job for which the software was provided.	7.030	2	<b>.030</b>
If I hear about a new IT, I would look for ways to experiment with it.	8.465	2	<b>.015</b>
Among my peers I am usually the first to try out new IT.	7.869	2	<b>.020</b>
I like to experiment with new IT.	8.990	2	<b>.011</b>
Working with a computer makes me nervous.	.189	2	.910
I get a sinking feeling when I think of trying to use a computer.	2.215	2	.330
I feel comfortable working with a computer.	13.430	2	<b>.001</b>
The ERP system provides the precise information I need.	6.589	2	<b>.037</b>
The information contents provided by the ERP system meet my needs.	8.701	2	<b>.013</b>

The ERP system provides reports that seem to be exactly what I need.	5.079	2	.079
The ERP system provides sufficient information to my needs.	2.425	2	.297
The ERP system provides complete features I need.	.236	2	.889
I am satisfied with the speed of interacting with the system.	2.269	2	.322
It is easy to detect and correct possible errors in the ERP system.	3.525	2	.172
It is easy to change the output format.	4.795	2	.091
It is fast to search data in the ERP system.	11.123	2	<b>.004</b>
The ERP system loads quickly.	.939	2	.625
The system reliably handles my queries.	3.680	2	.159
I was able to retrieve data quickly.	7.737	2	<b>.021</b>
It is fast to create a new record (vendor, customer etc.) in this system.	7.763	2	<b>.021</b>
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	5.217	2	.074
The ERP system is subject to frequent system problems and crashes.	.670	2	.716
The description of the functions /commands displayed on screen is clear to me.	4.163	2	.125
The function / commands names of the ERP system are easy to remember.	2.344	2	.310

The exact definition of data fields relating to my tasks is easy to find out.	2.273	2	.321
The content and index of the user manuals are useful.	.880	2	.644
The user manuals are current (up to date).	.593	2	.743
The user manuals are complete.	3.021	2	.221
The user manuals are easy to understand and follow.	.722	2	.697
My supervisor is very supportive of the use of the ERP system for my job.	5.200	2	.074
The organization has supported the use of the ERP system.	8.136	2	<b>.017</b>
People who influence my behaviour think that I should use the ERP system.	3.835	2	.147
People who are important to me think that I should use the ERP system.	2.224	2	.329
The ERP solution fits well with the business needs of me.	15.566	2	<b>.000</b>
The ERP solution fits well with the business need of my department.	10.777	2	<b>.005</b>
The ERP system is satisfactory in meeting my needs.	14.775	2	<b>.001</b>
I believe there are some important problems with the way the ERP system is managed	.678	2	.712
The system maintenance and the way it is provided meet my need adequately.	2.119	2	.347
There is not enough training for me on how to find, understand, access or use the ERP system.	3.986	2	.136

I have received additional formal training for ERP since the conclusion of the above training.	.707	2	.702
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	.067	2	.967
I feel that I need additional ERP training to complete my current job tasks.	4.428	2	.109
I do not know who to phone for support for this application.	2.566	2	.277
The support people talk in terms that I do not understand.	2.209	2	.331
I ask other users for help with this application rather than the support staff.	.541	2	.763
The support for this application is inadequate.	1.578	2	.454
The ERP team does not provide feedback regarding users' requests to modify this application.	.109	2	.947
The ERP team did not inform me about the current situation of this application.	1.237	2	.539
The ERP team did not explain how application modifications would impact my job.	.341	2	.843
Using ERP solution in my job enables me to accomplish tasks more quickly.	6.873	2	<b>.032</b>
Using ERP solution improves my job performance.	3.813	2	.149
Using ERP solution enhances my effectiveness on the job.	3.139	2	.208

Using ERP solution makes it easier to do my job.	13.361	2	<b>.001</b>
I find ERP solution useful in my job.	11.101	2	<b>.004</b>
My interaction with ERP solution is clear and understandable.	3.018	2	.221
Interacting with ERP solution does not require a lot of my mental effort.	.577	2	.749
I find ERP solution is easy to use.	1.458	2	.482
I find it easy to get ERP solution to do what I want it to do.	6.123	2	<b>.047</b>
Using ERP system is compatible with all aspects of my work.	1.206	2	.547
Using ERP system fits well with the way I like to work.	1.826	2	.401
Using ERP system fits into my work style.	.835	2	.659
Using the ERP system is a good idea.	6.270	2	<b>.043</b>
I like the idea of using the ERP system to perform my job.	8.525	2	<b>.014</b>

a. Kruskal Wallis Test

b. Grouping Variable: How long have you worked with the company? (Binned)

### **Interpretation:-**

- **As p-value of the statements** “If I had a lot of time to complete the job for which the software was provided”, “If I hear about a new IT, I would look for ways to experiment with it”, “Among my peers I am usually the first to try out new IT”, “I like to experiment with new IT”, “I feel comfortable working with a computer”, “The ERP system provides the precise information I need”, “The information contents provided by the ERP system meet my needs”, “It is fast to search data in the ERP system”, “I was able to retrieve data quickly”, “It is fast to create a new record (vendor, customer etc.) in this system”, “The organization has supported the use of the ERP system”, “The ERP solution fits well with the business needs of me”, “The ERP solution fits well with the business need of my department”,



“The ERP system is satisfactory in meeting my needs”, “Using ERP solution in my job enables me to accomplish tasks more quickly”, “Using ERP solution makes it easier to do my job”, “I find ERP solution useful in my job”, “I find it easy to get ERP solution to do what I want it to do”, “Using a ERP system is a good idea” and “I like the idea of using the ERP system to perform my job” **is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of Company Experience on above statements.**

- As the mean rank of the statement “If I had a lot of time to complete the job for which the software was provided” in case of users with company experience between 13 to 23 years is 260.31 and users with company experience less than or equal to 12 years is 256.22, we can interpret that users with company experience between 13 to 23 years had lot of time to complete the job for which the software was provided than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “If I hear about a new IT, I would look for ways to experiment with it” in case of users with company experience between 13 to 23 years is 292.41 and users with company experience less than or equal to 12 years is 249.97, we can interpret that users with company experience between 13 to 23 years when they hear about a new IT, they would look for ways to experiment with it than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “Among my peers I am usually the first to try out new IT”, “I like to experiment with new IT” in case of users with company experience between 13 to 23 years is 319.55 and users with company experience less than or equal to 12 years is 249.43, we can interpret that users with company experience between 13 to 23 years are usually the first to try out new IT among their peers than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “I like to experiment with new IT” in case of users with company experience between 13 to 23 years is 328.17 and users with company experience less than or equal to 12 years is 249.62, we can interpret that users with company experience between 13 to 23 years like to experiment with new IT than those with company experience less than or equal to 12 years.

- As the mean rank of the statement “I feel comfortable working with a computer” in case of users with company experience between 13 to 23 years is 290.06 and users with company experience less than or equal to 12 years is 249.43, we can interpret that users with company experience between 13 to 23 years feel more comfortable working with a computer than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “The ERP system provides the precise information I need” in case of users with company experience between 13 to 23 years is 295.69 and users with company experience less than or equal to 12 years is 250.24, we can interpret that users with company experience between 13 to 23 years feel that ERP system provides the precise information they need than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “The information contents provided by the ERP system meet my needs” in case of users with company experience between 13 to 23 years is 284.14 and users with company experience less than or equal to 12 years is 250.41, we can interpret that users with company experience between 13 to 23 years feel that the information contents provided by the ERP system meet their needs than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “It is fast to search data in the ERP system” in case of users with company experience between 13 to 23 years is 303.72 and users with company experience less than or equal to 12 years is 249.11, we can interpret that users with company experience between 13 to 23 years feels that it is fast to search data in the ERP system than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “I was able to retrieve data quickly” in case of users with company experience between 13 to 23 years is 294.91 and users with company experience less than or equal to 12 years is 250.06, we can interpret that users with company experience between 13 to 23 years were able to retrieve data quickly than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “It is fast to create a new record (vendor, customer etc.) in this system” in case of users with company experience between 13 to 23 years is 282.66 and users with company experience less than or equal to

12 years is 250.61, we can interpret that users with company experience between 13 to 23 years feels that it is fast to create a new record (vendor, customer etc.) in ERP system than those with company experience less than or equal to 12 years.

- As the mean rank of the statement “The organization has supported the use of the ERP system” in case of users with company experience between 13 to 23 years is 306.88 and users with company experience less than or equal to 12 years is 249.56, we can interpret that users with company experience between 13 to 23 years feels that their organization has supported the use of the ERP system than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “The ERP solution fits well with the business needs of me” in case of users with company experience between 13 to 23 years is 316.75 and users with company experience less than or equal to 12 years is 247.99, we can interpret that users with company experience between 13 to 23 years feels that the ERP solution fits well with the business needs of them than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “The ERP solution fits well with the business need of my department” in case of users with company experience between 13 to 23 years is 302.88 and users with company experience less than or equal to 12 years is 249.20, we can interpret that users with company experience between 13 to 23 years feels that the ERP solution fits well with the business need of their department than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “The ERP system is satisfactory in meeting my needs” in case of users with company experience between 13 to 23 years is 302.00 and users with company experience less than or equal to 12 years is 248.70, we can interpret that users with company experience between 13 to 23 years feels that the ERP system is satisfactory in meeting their needs than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “Using ERP solution in my job enables me to accomplish tasks more quickly” in case of users with company experience between 13 to 23 years is 309.83 and users with company experience less than or equal to 12 years is 249.80, we can interpret that users with company experience between 13 to 23 years feels that using ERP solution in their job enables them to

accomplish tasks more quickly than those with company experience less than or equal to 12 years.

- As the mean rank of the statement “Using ERP solution makes it easier to do my job” in case of users with company experience between 13 to 23 years is 285.13 and users with company experience less than or equal to 12 years is 249.76, we can interpret that users with company experience between 13 to 23 years feels that using ERP solution makes it easier to do their job than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “I find ERP solution useful in my job” in case of users with company experience between 13 to 23 years is 305.80 and users with company experience less than or equal to 12 years is 249.05, we can interpret that users with company experience between 13 to 23 years find ERP solution useful in their job than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “I find it easy to get ERP solution to do what I want it to do” in case of users with company experience between 13 to 23 years is 307.69 and users with company experience less than or equal to 12 years is 250.01, we can interpret that users with company experience between 13 to 23 years find it easy to get ERP solution to do what they want it to do than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “Using a ERP system is a good idea” in case of users with company experience between 13 to 23 years is 281.44 and users with company experience less than or equal to 12 years is 250.94, we can interpret that users with company experience between 13 to 23 years feels that using a ERP system is a good idea than those with company experience less than or equal to 12 years.
- As the mean rank of the statement “I like the idea of using the ERP system to perform my job” in case of users with company experience between 13 to 23 years is 297.88 and users with company experience less than or equal to 12 years is 249.80, we can interpret that users with company experience between 13 to 23 years like the idea of using the ERP system to perform their job than those with company experience less than or equal to 12 years.

**Hypothesis:**

**H<sub>0</sub>:** There is no significant effect of **current job experience** of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of current job experience of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**Kruskal-Wallis Test****TABLE 5.27 Mean Ranks: ERP Use and Current Job Experience**

	How long have you worked in your current job? (Binned)	N	Mean Rank
If there was no one around to tell me what to do as I go.	<= 12.00	489	250.61
	13.00 - 23.50	12	355.38
	23.51+	7	353.57
	Total	508	
If I had only the software manuals or/and the build-in help for assistance.	<= 12.00	489	251.17
	13.00 - 23.50	12	379.96
	23.51+	7	271.71
	Total	508	
If I could call someone for help if I got stuck.	<= 12.00	489	253.08
	13.00 - 23.50	12	304.50
	23.51+	7	268.14
	Total	508	
If I had a lot of time to complete the job for which the software was provided.	<= 12.00	489	256.64
	13.00 - 23.50	12	253.63
	23.51+	7	106.71
	Total	508	
If I hear about a new IT, I would look for ways to experiment with it.	<= 12.00	489	250.24
	13.00 - 23.50	12	340.67
	23.51+	7	404.50
	Total	508	
Among my peers I am usually the first to try out new IT.	<= 12.00	489	252.03
	13.00 - 23.50	12	342.08
	23.51+	7	277.00
	Total	508	

Data Analysis

I like to experiment with new IT.	<= 12.00	489	252.45
	13.00 - 23.50	12	353.46
	23.51+	7	227.93
	Total	508	
Working with a computer makes me nervous.	<= 12.00	489	255.71
	13.00 - 23.50	12	192.92
	23.51+	7	275.64
	Total	508	
I get a sinking feeling when I think of trying to use a computer.	<= 12.00	489	256.76
	13.00 - 23.50	12	195.33
	23.51+	7	197.79
	Total	508	
I feel comfortable working with a computer.	<= 12.00	489	247.77
	13.00 - 23.50	12	435.88
	23.51+	7	414.00
	Total	508	
The ERP system provides the precise information I need.	<= 12.00	489	251.70
	13.00 - 23.50	12	323.63
	23.51+	7	331.50
	Total	508	
The information contents provided by the ERP system meet my needs.	<= 12.00	489	251.61
	13.00 - 23.50	12	302.67
	23.51+	7	373.64
	Total	508	
The ERP system provides reports that seem to be exactly what I need.	<= 12.00	489	252.68
	13.00 - 23.50	12	309.00
	23.51+	7	287.93
	Total	508	
The ERP system provides sufficient information to my needs.	<= 12.00	489	250.84
	13.00 - 23.50	12	331.13
	23.51+	7	378.86
	Total	508	
The ERP system provides complete features I need.	<= 12.00	489	252.83
	13.00 - 23.50	12	298.29
	23.51+	7	296.07
	Total	508	
I am satisfied with the speed of interacting with the system.	<= 12.00	489	252.40
	13.00 - 23.50	12	322.50
	23.51+	7	284.43
	Total	508	

## Data Analysis

It is easy to detect and correct possible errors in the ERP system.	<= 12.00	489	250.33
	13.00 - 23.50	12	354.13
	23.51+	7	375.14
	Total	508	
It is easy to change the output format.	<= 12.00	489	259.65
	13.00 - 23.50	12	110.42
	23.51+	7	141.57
	Total	508	
It is fast to search data in the ERP system.	<= 12.00	489	249.65
	13.00 - 23.50	12	358.92
	23.51+	7	414.64
	Total	508	
The ERP system loads quickly.	<= 12.00	489	252.76
	13.00 - 23.50	12	272.25
	23.51+	7	345.36
	Total	508	
The system reliably handles my queries.	<= 12.00	489	251.99
	13.00 - 23.50	12	297.75
	23.51+	7	355.50
	Total	508	
I was able to retrieve data quickly.	<= 12.00	489	250.76
	13.00 - 23.50	12	341.42
	23.51+	7	367.07
	Total	508	
It is fast to create a new record (vendor, customer etc.) in this system.	<= 12.00	489	248.94
	13.00 - 23.50	12	371.42
	23.51+	7	442.79
	Total	508	
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	<= 12.00	489	250.50
	13.00 - 23.50	12	323.04
	23.51+	7	416.36
	Total	508	
The ERP system is subject to frequent system problems and crashes.	<= 12.00	489	254.97
	13.00 - 23.50	12	259.63
	23.51+	7	213.00
	Total	508	
The description of the functions /commands displayed on screen is clear to me.	<= 12.00	489	252.87
	13.00 - 23.50	12	363.67
	23.51+	7	181.50
	Total	508	

Data Analysis

The function / commands names of the ERP system are easy to remember.	<= 12.00	489	253.59
	13.00 - 23.50	12	297.67
	23.51+	7	243.93
	Total	508	
The exact definition of data fields relating to my tasks is easy to find out.	<= 12.00	489	253.03
	13.00 - 23.50	12	318.46
	23.51+	7	247.86
	Total	508	
The content and index of the user manuals are useful.	<= 12.00	489	253.43
	13.00 - 23.50	12	284.54
	23.51+	7	277.43
	Total	508	
The user manuals are current (up to date).	<= 12.00	489	253.47
	13.00 - 23.50	12	273.33
	23.51+	7	294.14
	Total	508	
The user manuals are complete.	<= 12.00	489	254.06
	13.00 - 23.50	12	293.50
	23.51+	7	218.57
	Total	508	
The user manuals are easy to understand and follow.	<= 12.00	489	254.17
	13.00 - 23.50	12	279.46
	23.51+	7	234.43
	Total	508	
My supervisor is very supportive of the use of the ERP system for my job.	<= 12.00	489	249.75
	13.00 - 23.50	12	393.75
	23.51+	7	347.43
	Total	508	
The organization has supported the use of the ERP system.	<= 12.00	489	250.56
	13.00 - 23.50	12	361.75
	23.51+	7	346.21
	Total	508	
People who influence my behaviour think that I should use the ERP system.	<= 12.00	489	252.83
	13.00 - 23.50	12	271.71
	23.51+	7	341.50
	Total	508	
People who are important to me think that I should use the ERP system.	<= 12.00	489	252.82
	13.00 - 23.50	12	322.83
	23.51+	7	254.50
	Total	508	



Data Analysis

The ERP solution fits well with the business needs of me.	<= 12.00	489	248.12
	13.00 - 23.50	12	400.25
	23.51+	7	450.43
	Total	508	
The ERP solution fits well with the business need of my department.	<= 12.00	489	249.45
	13.00 - 23.50	12	367.92
	23.51+	7	412.71
	Total	508	
The ERP system is satisfactory in meeting my needs.	<= 12.00	489	247.49
	13.00 - 23.50	12	415.50
	23.51+	7	468.00
	Total	508	
I believe there are some important problems with the way the ERP system is managed	<= 12.00	489	253.25
	13.00 - 23.50	12	272.75
	23.51+	7	310.79
	Total	508	
The system maintenance and the way it is provided meet my need adequately.	<= 12.00	489	251.26
	13.00 - 23.50	12	345.75
	23.51+	7	324.64
	Total	508	
There is not enough training for me on how to find, understand, access or use the ERP system.	<= 12.00	489	255.52
	13.00 - 23.50	12	260.42
	23.51+	7	173.00
	Total	508	
I have received additional formal training for ERP since the conclusion of the above training.	<= 12.00	489	255.64
	13.00 - 23.50	12	252.58
	23.51+	7	178.36
	Total	508	
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	<= 12.00	489	253.96
	13.00 - 23.50	12	276.33
	23.51+	7	254.79
	Total	508	
I feel that I need additional ERP training to complete my current job tasks.	<= 12.00	489	253.50
	13.00 - 23.50	12	270.75
	23.51+	7	296.43
	Total	508	
I do not know who to phone for support for this application.	<= 12.00	489	256.31
	13.00 - 23.50	12	212.25
	23.51+	7	200.43
	Total	508	

Data Analysis

The support people talk in terms that I do not understand.	<= 12.00	489	256.96
	13.00 - 23.50	12	190.83
	23.51+	7	191.64
	Total	508	
I ask other users for help with this application rather than the support staff.	<= 12.00	489	256.83
	13.00 - 23.50	12	167.17
	23.51+	7	241.43
	Total	508	
The support for this application is inadequate.	<= 12.00	489	253.24
	13.00 - 23.50	12	248.13
	23.51+	7	353.64
	Total	508	
The ERP team does not provide feedback regarding users' requests to modify this application.	<= 12.00	489	256.43
	13.00 - 23.50	12	196.00
	23.51+	7	219.79
	Total	508	
The ERP team did not inform me about the current situation of this application.	<= 12.00	489	255.66
	13.00 - 23.50	12	221.33
	23.51+	7	230.21
	Total	508	
The ERP team did not explain how application modifications would impact my job.	<= 12.00	489	256.25
	13.00 - 23.50	12	199.00
	23.51+	7	227.07
	Total	508	
Using ERP solution in my job enables me to accomplish tasks more quickly.	<= 12.00	489	251.90
	13.00 - 23.50	12	322.21
	23.51+	7	319.93
	Total	508	
Using ERP solution improves my job performance.	<= 12.00	489	251.28
	13.00 - 23.50	12	368.92
	23.51+	7	283.07
	Total	508	
Using ERP solution enhances my effectiveness on the job.	<= 12.00	489	250.92
	13.00 - 23.50	12	353.92
	23.51+	7	334.00
	Total	508	
Using ERP solution makes it easier to do my job.	<= 12.00	489	248.28
	13.00 - 23.50	12	407.88
	23.51+	7	426.14
	Total	508	

Data Analysis

I find ERP solution useful in my job.	<= 12.00	489	248.77
	13.00 - 23.50	12	386.21
	23.51+	7	429.21
	Total	508	
My interaction with ERP solution is clear and understandable.	<= 12.00	489	250.55
	13.00 - 23.50	12	354.42
	23.51+	7	359.00
	Total	508	
Interacting with ERP solution does not require a lot of my mental effort.	<= 12.00	489	252.56
	13.00 - 23.50	12	294.83
	23.51+	7	321.00
	Total	508	
I find ERP solution is easy to use.	<= 12.00	489	251.62
	13.00 - 23.50	12	322.88
	23.51+	7	338.50
	Total	508	
I find it easy to get ERP solution to do what I want it to do.	<= 12.00	489	250.61
	13.00 - 23.50	12	351.75
	23.51+	7	359.79
	Total	508	
Using ERP system is compatible with all aspects of my work.	<= 12.00	489	254.59
	13.00 - 23.50	12	272.25
	23.51+	7	218.07
	Total	508	
Using ERP system fits well with the way I like to work.	<= 12.00	489	253.25
	13.00 - 23.50	12	304.67
	23.51+	7	255.57
	Total	508	
Using ERP system fits into my work style.	<= 12.00	489	254.02
	13.00 - 23.50	12	250.42
	23.51+	7	294.71
	Total	508	
Using the ERP system is a good idea.	<= 12.00	489	249.57
	13.00 - 23.50	12	399.75
	23.51+	7	349.93
	Total	508	
I like the idea of using the ERP system to perform my job.	<= 12.00	489	248.94
	13.00 - 23.50	12	413.21
	23.51+	7	371.14
	Total	508	

**TABLE 5.28 Non-Parametric Test: ERP Use and Current Job Experience**

	Chi-Square	df	Asymp. Sig.
If there was no one around to tell me what to do as I go.	9.796	2	<b>.007</b>
If I had only the software manuals or/and the build-in help for assistance.	9.662	2	<b>.008</b>
If I could call someone for help if I got stuck.	1.610	2	.447
If I had a lot of time to complete the job for which the software was provided.	7.601	2	<b>.022</b>
If I hear about a new IT, I would look for ways to experiment with it.	12.437	2	<b>.002</b>
Among my peers I am usually the first to try out new IT.	4.844	2	.089
I like to experiment with new IT.	6.034	2	<b>.049</b>
Working with a computer makes me nervous.	2.439	2	.295
I get a sinking feeling when I think of trying to use a computer.	3.293	2	.193
I feel comfortable working with a computer.	29.398	2	<b>.000</b>
The ERP system provides the precise information I need.	5.254	2	.072
The information contents provided by the ERP system meet my needs.	6.694	2	<b>.035</b>
The ERP system provides reports that seem to be exactly what I need.	2.299	2	.317
The ERP system provides sufficient information to my needs.	9.395	2	<b>.009</b>
The ERP system provides complete features I need.	1.832	2	.400
I am satisfied with the speed of interacting with the system.	3.197	2	.202

It is easy to detect and correct possible errors in the ERP system.	11.538	2	<b>.003</b>
It is easy to change the output format.	17.189	2	<b>.000</b>
It is fast to search data in the ERP system.	16.167	2	<b>.000</b>
The ERP system loads quickly.	3.181	2	.204
The system reliably handles my queries.	4.884	2	.087
I was able to retrieve data quickly.	9.593	2	<b>.008</b>
It is fast to create a new record (vendor, customer etc.) in this system.	21.442	2	<b>.000</b>
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	11.913	2	<b>.003</b>
The ERP system is subject to frequent system problems and crashes.	.606	2	.738
The description of the functions /commands displayed on screen is clear to me.	9.244	2	<b>.010</b>
The function / commands names of the ERP system are easy to remember.	1.183	2	.553
The exact definition of data fields relating to my tasks is easy to find out.	2.512	2	.285
The content and index of the user manuals are useful.	.761	2	.684
The user manuals are current (up to date).	.808	2	.668
The user manuals are complete.	1.387	2	.500
The user manuals are easy to understand and follow.	.520	2	.771
My supervisor is very supportive of the use of the ERP system for my job.	15.335	2	<b>.000</b>

The organization has supported the use of the ERP system.	10.524	2	<b>.005</b>
People who influence my behaviour think that I should use the ERP system.	2.918	2	.232
People who are important to me think that I should use the ERP system.	2.867	2	.238
The ERP solution fits well with the business needs of me.	27.739	2	<b>.000</b>
The ERP solution fits well with the business need of my department.	17.234	2	<b>.000</b>
The ERP system is satisfactory in meeting my needs.	32.829	2	<b>.000</b>
I believe there are some important problems with the way the ERP system is managed	1.301	2	.522
The system maintenance and the way it is provided meet my need adequately.	6.968	2	<b>.031</b>
There is not enough training for me on how to find, understand, access or use the ERP system.	2.277	2	.320
I have received additional formal training for ERP since the conclusion of the above training.	2.003	2	.367
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	.284	2	.868
I feel that I need additional ERP training to complete my current job tasks.	.785	2	.675
I do not know who to phone for support for this application.	2.148	2	.342
The support people talk in terms that I do not understand.	3.867	2	.145
I ask other users for help with this application rather than the support staff.	4.547	2	.103

The support for this application is inadequate.	3.375	2	.185
The ERP team does not provide feedback regarding users' requests to modify this application.	2.483	2	.289
The ERP team did not inform me about the current situation of this application.	.866	2	.648
The ERP team did not explain how application modifications would impact my job.	2.097	2	.350
Using ERP solution in my job enables me to accomplish tasks more quickly.	4.489	2	.106
Using ERP solution improves my job performance.	8.550	2	<b>.014</b>
Using ERP solution enhances my effectiveness on the job.	8.677	2	<b>.013</b>
Using ERP solution makes it easier to do my job.	25.987	2	<b>.000</b>
I find ERP solution useful in my job.	22.353	2	<b>.000</b>
My interaction with ERP solution is clear and understandable.	10.534	2	<b>.005</b>
Interacting with ERP solution does not require a lot of my mental effort.	2.596	2	.273
I find ERP solution is easy to use.	5.628	2	.060
I find it easy to get ERP solution to do what I want it to do.	9.877	2	<b>.007</b>
Using ERP system is compatible with all aspects of my work.	.669	2	.716
Using ERP system fits well with the way I like to work.	1.578	2	.454
Using ERP system fits into my work style.	.590	2	.744
Using the ERP system is a good idea.	16.856	2	<b>.000</b>

I like the idea of using the ERP system to perform my job.	21.216	2	.000
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a. Kruskal Wallis Test

b. Grouping Variable: How long have you worked in your current job? (Binned)

### **Interpretation:-**

- As p-value of the statements** “I could complete the job using ERP system, if there was no one around to tell me what to do as I go”, “I could complete the job using ERP system, if I had only the software manuals or/and the build-in help for assistance”, “I could complete the job using ERP system, if I had a lot of time to complete the job for which the software was provided”, “If I hear about a new IT, I would look for ways to experiment with it”, “I like to experiment with new IT”, “I feel comfortable working with a computer”, “The information contents provided by the ERP system meet my needs”, “The ERP system provides sufficient information to my needs”, “It is easy to detect and correct possible errors in the ERP system”, “It is easy to change the output format”, “It is fast to search data in the ERP system”, “I was able to retrieve data quickly”, “It is fast to create a new record (vendor, customer etc.) in this system”, “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work”, “The description of the functions/commands displayed on screen is clear to me”, “My supervisor is very supportive of the use of the ERP system for my job”, “The organization has supported the use of the ERP system”, “The ERP solution fits well with the business needs of me”, “The ERP solution fits well with the business need of my department”, “The ERP system is satisfactory in meeting my needs”, “The system maintenance and the way it is provided meet my need adequately”, “Using ERP solution improves my job performance”, “Using ERP solution enhances my effectiveness on the job”, “Using ERP solution makes it easier to do my job”, “I find ERP solution useful in my job”, “My interaction with ERP solution is clear and understandable”, “I find it easy to get ERP solution to do what I want it do to”, “Using the ERP system is a good idea” and “I like the idea of using the ERP system to perform my job” **is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of Current Job Experience on above statements.**
- As the mean rank of the statement “I could complete the job using ERP system, if



there was no one around to tell me what to do as I go” in case of users with current job experience between 13 to 23 years is 355.38 and users with current job experience less than or equal to 12 years is 250.61, we can interpret that users with current job experience between 13 to 23 years could complete the job using ERP system, if there was no one around to tell them what to do as they go than those with current job experience less than or equal to 12 years.

- As the mean rank of the statement “I could complete the job using ERP system, if I had only the software manuals or/and the build-in help for assistance” in case of users with current job experience between 13 to 23 years is 379.96 and users with current job experience less than or equal to 12 years is 251.17, we can interpret that users with current job experience between 13 to 23 years could complete the job using ERP system, if they had only the software manuals or/and the build-in help for assistance than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “I could complete the job using ERP system, if I had a lot of time to complete the job for which the software was provided” in case of users with current job experience between 13 to 23 years is 253.63 and users with current job experience less than or equal to 12 years is 256.64, we can interpret that users with current job experience less than or equal to 12 years could complete the job using ERP system, if they had a lot of time to complete the job for which the software was provided than those with current job experience between 13 to 23 years.
- As the mean rank of the statement “If I hear about a new IT, I would look for ways to experiment with it” in case of users with current job experience between 13 to 23 years is 340.67 and users with current job experience less than or equal to 12 years is 250.24, we can interpret that users with current job experience between 13 to 23 when they hear about a new IT, they would look for ways to experiment with it than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “I like to experiment with new IT” in case of users with current job experience between 13 to 23 years is 353.46 and users with current job experience less than or equal to 12 years is 252.45, we can interpret that users with current job experience between 13 to 23 years like to experiment

- with new IT than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “I feel comfortable working with a computer” in case of users with current job experience between 13 to 23 years is 435.88 and users with current job experience less than or equal to 12 years is 247.77, we can interpret that users with current job experience between 13 to 23 years feel comfortable working with a computer than those with current job experience less than or equal to 12 years.
  - As the mean rank of the statement “The information contents provided by the ERP system meet my needs” in case of users with current job experience between 13 to 23 years is 302.67 and users with current job experience less than or equal to 12 years is 251.61, we can interpret that users with current job experience between 13 to 23 years feel that the information contents provided by the ERP system meet their needs than those with current job experience less than or equal to 12 years.
  - As the mean rank of the statement “The ERP system provides sufficient information to my needs” in case of users with current job experience between 13 to 23 years is 331.13 and users with current job experience less than or equal to 12 years is 250.84, we can interpret that users with current job experience between 13 to 23 years feel that the system provides sufficient information to their needs than those with current job experience less than or equal to 12 years.
  - As the mean rank of the statement “It is easy to detect and correct possible errors in the ERP system” in case of users with current job experience between 13 to 23 years is 354.13 and users with current job experience less than or equal to 12 years is 250.33, we can interpret that users with current job experience between 13 to 23 years feel that it is easy to detect and correct possible errors in the ERP system than those with current job experience less than or equal to 12 years.
  - As the mean rank of the statement “It is easy to change the output format” in case of users with current job experience between 13 to 23 years is 110.42 and users with current job experience less than or equal to 12 years is 259.65, we can interpret that users with current job experience less than or equal to 12 years feel that it is easy to change the output format than those with current job experience between 13 to 23 years.
  - As the mean rank of the statement “It is fast to search data in the ERP system” in

case of users with current job experience between 13 to 23 years is 358.92 and users with current job experience less than or equal to 12 years is 249.65, we can interpret that users with current job experience between 13 to 23 years feel that it is fast to search data in the ERP system than those with current job experience less than or equal to 12 years.

- As the mean rank of the statement “I was able to retrieve data quickly” in case of users with current job experience between 13 to 23 years is 341.42 and users with current job experience less than or equal to 12 years is 250.76, we can interpret that users with current job experience between 13 to 23 years were able to retrieve data quickly than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “It is fast to create a new record (vendor, customer etc.) in this system” in case of users with current job experience between 13 to 23 years is 371.42 and users with current job experience less than or equal to 12 years is 248.94, we can interpret that users with current job experience between 13 to 23 years feel that it is fast to create a new record (vendor, customer etc.) in ERP system than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work” in case of users with current job experience between 13 to 23 years is 323.04 and users with current job experience less than or equal to 12 years is 250.50, we can interpret that users with current job experience between 13 to 23 years feel that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “The description of the functions/commands displayed on screen is clear to me” in case of users with current job experience between 13 to 23 years is 363.67 and users with current job experience less than or equal to 12 years is 252.87, we can interpret that users with current job experience between 13 to 23 years feel that the description of the functions/commands displayed on screen is clear to them than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “My supervisor is very supportive of the use of

the ERP system for my job” in case of users with current job experience between 13 to 23 years is 393.75 and users with current job experience less than or equal to 12 years is 249.75, we can interpret that users with current job experience between 13 to 23 years feel that their supervisor is very supportive of the use of the ERP system for their job than those with current job experience less than or equal to 12 years.

- As the mean rank of the statement “The organization has supported the use of the ERP system” in case of users with current job experience between 13 to 23 years is 361.75 and users with current job experience less than or equal to 12 years is 250.56, we can interpret that users with current job experience between 13 to 23 years feel that their organization has supported the use of the ERP system than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “The ERP solution fits well with the business needs of me” in case of users with current job experience between 13 to 23 years is 400.25 and users with current job experience less than or equal to 12 years is 248.12, we can interpret that users with current job experience between 13 to 23 years feel that the ERP solution fits well with their business needs than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “The ERP solution fits well with the business need of my department” in case of users with current job experience between 13 to 23 years is 367.92 and users with current job experience less than or equal to 12 years is 249.45, we can interpret that users with current job experience between 13 to 23 years feel that the ERP solution fits well with the business need of their department than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “The ERP system is satisfactory in meeting my needs” in case of users with current job experience between 13 to 23 years is 415.50 and users with current job experience less than or equal to 12 years is 247.49, we can interpret that users with current job experience between 13 to 23 feel that the ERP system is satisfactory in meeting their needs than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “The system maintenance and the way it is provided meet my need adequately” in case of users with current job experience

between 13 to 23 years is 345.75 and users with current job experience less than or equal to 12 years is 251.26, we can interpret that users with current job experience between 13 to 23 years feel that the system maintenance and the way it is provided meet their need adequately than those with current job experience less than or equal to 12 years.

- As the mean rank of the statement “Using ERP solution improves my job performance” in case of users with current job experience between 13 to 23 years is 368.92 and users with current job experience less than or equal to 12 years is 251.28, we can interpret that users with current job experience between 13 to 23 years feel that using ERP solution improves their job performance than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “Using ERP solution enhances my effectiveness on the job” in case of users with current job experience between 13 to 23 years is 353.92 and users with current job experience less than or equal to 12 years is 250.92, we can interpret that users with current job experience between 13 to 23 years feel that using ERP solution enhances their effectiveness on the job than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “Using ERP solution makes it easier to do my job” in case of users with current job experience between 13 to 23 years is 407.88 and users with current job experience less than or equal to 12 years is 248.28, we can interpret that users with current job experience between 13 to 23 years feel that using ERP solution makes it easier to do their job than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “I find ERP solution useful in my job” in case of users with current job experience between 13 to 23 years is 386.21 and users with current job experience less than or equal to 12 years is 248.77, we can interpret that users with current job experience between 13 to 23 years finds ERP solution useful in their job than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “My interaction with ERP solution is clear and understandable” in case of users with current job experience between 13 to 23 years is 354.42 and users with current job experience less than or equal to 12 years

is 250.55, we can interpret that users with current job experience between 13 to 23 years feel that their interaction with ERP solution is clear and understandable than those with current job experience less than or equal to 12 years.

- As the mean rank of the statement “I find it easy to get ERP solution to do what I want it do to” in case of users with current job experience between 13 to 23 years is 351.75 and users with current job experience less than or equal to 12 years is 250.61, we can interpret that users with current job experience between 13 to 23 years find it easy to get ERP solution to do what they want it do to than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “Using the ERP system is a good idea” in case of users with current job experience between 13 to 23 years is 399.75 and users with current job experience less than or equal to 12 years is 249.57, we can interpret that users with current job experience between 13 to 23 years feel that using the ERP system is a good idea than those with current job experience less than or equal to 12 years.
- As the mean rank of the statement “I like the idea of using the ERP system to perform my job” in case of users with current job experience between 13 to 23 years is 413.21 and users with current job experience less than or equal to 12 years is 248.94, we can interpret that users with current job experience between 13 to 23 years like the idea of using the ERP system to perform their job than those with current job experience less than or equal to 12 years.

**Hypothesis:**

**H<sub>0</sub>:** There is no significant effect of **ERP experience of respondent** on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of ERP experience of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**Kruskal-Wallis Test****TABLE 5.29 Mean Ranks: ERP Use and ERP Experience**

	How long have you worked with the ERP system? (Binned)	N	Mean Rank
If there was no one around to tell me what to do as I go.	<= 4.00	227	244.14
	5.00 - 9.00	263	262.55
	10.00+	18	267.53
	Total	508	
If I had only the software manuals or/and the build-in help for assistance.	<= 4.00	227	263.17
	5.00 - 9.00	263	244.56
	10.00+	18	290.42
	Total	508	
If I could call someone for help if I got stuck.	<= 4.00	227	251.18
	5.00 - 9.00	263	255.68
	10.00+	18	279.11
	Total	508	
If I had a lot of time to complete the job for which the software was provided.	<= 4.00	227	247.18
	5.00 - 9.00	263	269.13
	10.00+	18	132.97
	Total	508	
If I hear about a new IT, I would look for ways to experiment with it.	<= 4.00	227	250.97
	5.00 - 9.00	263	250.17
	10.00+	18	362.28
	Total	508	
Among my peers I am usually the first to try out new IT.	<= 4.00	227	236.81
	5.00 - 9.00	263	264.43
	10.00+	18	332.56
	Total	508	

I like to experiment with new IT.	<= 4.00	227	239.82
	5.00 - 9.00	263	261.74
	10.00+	18	333.86
	Total	508	
Working with a computer makes me nervous.	<= 4.00	227	253.20
	5.00 - 9.00	263	262.63
	10.00+	18	152.11
	Total	508	
I get a sinking feeling when I think of trying to use a computer.	<= 4.00	227	256.72
	5.00 - 9.00	263	261.79
	10.00+	18	120.00
	Total	508	
I feel comfortable working with a computer.	<= 4.00	227	261.28
	5.00 - 9.00	263	240.91
	10.00+	18	367.50
	Total	508	
The ERP system provides the precise information I need.	<= 4.00	227	254.38
	5.00 - 9.00	263	247.44
	10.00+	18	359.22
	Total	508	
The information contents provided by the ERP system meet my needs.	<= 4.00	227	246.05
	5.00 - 9.00	263	255.69
	10.00+	18	343.72
	Total	508	
The ERP system provides reports that seem to be exactly what I need.	<= 4.00	227	247.91
	5.00 - 9.00	263	258.47
	10.00+	18	279.50
	Total	508	
The ERP system provides sufficient information to my needs.	<= 4.00	227	250.31
	5.00 - 9.00	263	252.20
	10.00+	18	340.94
	Total	508	
The ERP system provides complete features I need.	<= 4.00	227	254.50
	5.00 - 9.00	263	251.76
	10.00+	18	294.56
	Total	508	
I am satisfied with the speed of interacting with the system.	<= 4.00	227	253.15
	5.00 - 9.00	263	251.00
	10.00+	18	322.72
	Total	508	



It is easy to detect and correct possible errors in the ERP system.	<= 4.00	227	237.64
	5.00 - 9.00	263	267.24
	10.00+	18	280.94
	Total	508	
It is easy to change the output format.	<= 4.00	227	233.02
	5.00 - 9.00	263	278.87
	10.00+	18	169.25
	Total	508	
It is fast to search data in the ERP system.	<= 4.00	227	244.57
	5.00 - 9.00	263	258.24
	10.00+	18	325.14
	Total	508	
The ERP system loads quickly.	<= 4.00	227	247.38
	5.00 - 9.00	263	254.27
	10.00+	18	347.69
	Total	508	
The system reliably handles my queries.	<= 4.00	227	240.36
	5.00 - 9.00	263	261.89
	10.00+	18	324.86
	Total	508	
I was able to retrieve data quickly.	<= 4.00	227	235.33
	5.00 - 9.00	263	266.26
	10.00+	18	324.44
	Total	508	
It is fast to create a new record (vendor, customer etc.) in this system.	<= 4.00	227	244.06
	5.00 - 9.00	263	256.94
	10.00+	18	350.50
	Total	508	
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	<= 4.00	227	272.46
	5.00 - 9.00	263	236.37
	10.00+	18	292.97
	Total	508	
The ERP system is subject to frequent system problems and crashes.	<= 4.00	227	276.92
	5.00 - 9.00	263	239.24
	10.00+	18	194.72
	Total	508	
The description of the functions /commands displayed on screen is clear to me.	<= 4.00	227	247.26
	5.00 - 9.00	263	260.89
	10.00+	18	252.44
	Total	508	

The function / commands names of the ERP system are easy to remember.	<= 4.00	227	244.25
	5.00 - 9.00	263	260.44
	10.00+	18	296.94
	Total	508	
The exact definition of data fields relating to my tasks is easy to find out.	<= 4.00	227	248.65
	5.00 - 9.00	263	259.87
	10.00+	18	249.78
	Total	508	
The content and index of the user manuals are useful.	<= 4.00	227	255.42
	5.00 - 9.00	263	245.63
	10.00+	18	372.47
	Total	508	
The user manuals are current (up to date).	<= 4.00	227	247.31
	5.00 - 9.00	263	255.36
	10.00+	18	332.58
	Total	508	
The user manuals are complete.	<= 4.00	227	245.45
	5.00 - 9.00	263	259.64
	10.00+	18	293.53
	Total	508	
The user manuals are easy to understand and follow.	<= 4.00	227	252.16
	5.00 - 9.00	263	250.99
	10.00+	18	335.31
	Total	508	
My supervisor is very supportive of the use of the ERP system for my job.	<= 4.00	227	261.62
	5.00 - 9.00	263	239.60
	10.00+	18	382.39
	Total	508	
The organization has supported the use of the ERP system.	<= 4.00	227	244.39
	5.00 - 9.00	263	255.70
	10.00+	18	364.50
	Total	508	
People who influence my behaviour think that I should use the ERP system.	<= 4.00	227	258.00
	5.00 - 9.00	263	247.45
	10.00+	18	313.25
	Total	508	
People who are important to me think that I should use the ERP system.	<= 4.00	227	248.11
	5.00 - 9.00	263	252.65
	10.00+	18	362.14
	Total	508	

The ERP solution fits well with the business needs of me.	<= 4.00	227	250.53
	5.00 - 9.00	263	253.51
	10.00+	18	319.00
	Total	508	
The ERP solution fits well with the business need of my department.	<= 4.00	227	241.53
	5.00 - 9.00	263	260.59
	10.00+	18	329.03
	Total	508	
The ERP system is satisfactory in meeting my needs.	<= 4.00	227	249.79
	5.00 - 9.00	263	253.57
	10.00+	18	327.44
	Total	508	
I believe there are some important problems with the way the ERP system is managed	<= 4.00	227	251.65
	5.00 - 9.00	263	263.33
	10.00+	18	161.44
	Total	508	
The system maintenance and the way it is provided meet my need adequately.	<= 4.00	227	245.65
	5.00 - 9.00	263	257.50
	10.00+	18	322.28
	Total	508	
There is not enough training for me on how to find, understand, access or use the ERP system.	<= 4.00	227	263.45
	5.00 - 9.00	263	252.40
	10.00+	18	172.28
	Total	508	
I have received additional formal training for ERP since the conclusion of the above training.	<= 4.00	227	254.08
	5.00 - 9.00	263	259.58
	10.00+	18	185.56
	Total	508	
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	<= 4.00	227	250.71
	5.00 - 9.00	263	251.73
	10.00+	18	342.81
	Total	508	
I feel that I need additional ERP training to complete my current job tasks.	<= 4.00	227	259.11
	5.00 - 9.00	263	251.45
	10.00+	18	240.94
	Total	508	
I do not know who to phone for support for this application.	<= 4.00	227	269.93
	5.00 - 9.00	263	249.83
	10.00+	18	128.17
	Total	508	

The support people talk in terms that I do not understand.	<= 4.00	227	271.78
	5.00 - 9.00	263	243.17
	10.00+	18	202.17
	Total	508	
I ask other users for help with this application rather than the support staff.	<= 4.00	227	267.19
	5.00 - 9.00	263	243.94
	10.00+	18	248.83
	Total	508	
The support for this application is inadequate.	<= 4.00	227	269.92
	5.00 - 9.00	263	240.32
	10.00+	18	267.19
	Total	508	
The ERP team does not provide feedback regarding users' requests to modify this application.	<= 4.00	227	262.21
	5.00 - 9.00	263	247.91
	10.00+	18	253.58
	Total	508	
The ERP team did not inform me about the current situation of this application.	<= 4.00	227	266.70
	5.00 - 9.00	263	242.82
	10.00+	18	271.25
	Total	508	
The ERP team did not explain how application modifications would impact my job.	<= 4.00	227	276.07
	5.00 - 9.00	263	234.12
	10.00+	18	280.22
	Total	508	
Using ERP solution in my job enables me to accomplish tasks more quickly.	<= 4.00	227	252.86
	5.00 - 9.00	263	252.81
	10.00+	18	299.92
	Total	508	
Using ERP solution improves my job performance.	<= 4.00	227	241.08
	5.00 - 9.00	263	263.13
	10.00+	18	297.67
	Total	508	
Using ERP solution enhances my effectiveness on the job.	<= 4.00	227	239.78
	5.00 - 9.00	263	261.00
	10.00+	18	345.17
	Total	508	
Using ERP solution makes it easier to do my job.	<= 4.00	227	239.75
	5.00 - 9.00	263	257.66
	10.00+	18	394.33
	Total	508	

I find ERP solution useful in my job.	<= 4.00	227	255.69
	5.00 - 9.00	263	243.16
	10.00+	18	405.17
	Total	508	
My interaction with ERP solution is clear and understandable.	<= 4.00	227	237.82
	5.00 - 9.00	263	262.80
	10.00+	18	343.50
	Total	508	
Interacting with ERP solution does not require a lot of my mental effort.	<= 4.00	227	236.46
	5.00 - 9.00	263	267.09
	10.00+	18	298.03
	Total	508	
I find ERP solution is easy to use.	<= 4.00	227	239.09
	5.00 - 9.00	263	262.72
	10.00+	18	328.83
	Total	508	
I find it easy to get ERP solution to do what I want it to do.	<= 4.00	227	226.02
	5.00 - 9.00	263	274.46
	10.00+	18	322.00
	Total	508	
Using ERP system is compatible with all aspects of my work.	<= 4.00	227	245.13
	5.00 - 9.00	263	256.19
	10.00+	18	348.00
	Total	508	
Using ERP system fits well with the way I like to work.	<= 4.00	227	237.06
	5.00 - 9.00	263	262.05
	10.00+	18	364.19
	Total	508	
Using ERP system fits into my work style.	<= 4.00	227	238.19
	5.00 - 9.00	263	263.53
	10.00+	18	328.22
	Total	508	
Using the ERP system is a good idea.	<= 4.00	227	246.25
	5.00 - 9.00	263	251.68
	10.00+	18	399.75
	Total	508	
I like the idea of using the ERP system to perform my job.	<= 4.00	227	242.75
	5.00 - 9.00	263	252.47
	10.00+	18	432.31
	Total	508	

**TABLE 5.30 Non-Parametric Test: ERP Use and ERP Experience**

	Chi-Square	df	Asymp. Sig.
If there was no one around to tell me what to do as I go.	2.196	2	.334
If I had only the software manuals or/and the build-in help for assistance.	3.261	2	.196
If I could call someone for help if I got stuck.	.686	2	.710
If I had a lot of time to complete the job for which the software was provided.	16.382	2	<b>.000</b>
If I hear about a new IT, I would look for ways to experiment with it.	10.556	2	<b>.005</b>
Among my peers I am usually the first to try out new IT.	10.155	2	<b>.006</b>
I like to experiment with new IT.	8.533	2	<b>.014</b>
Working with a computer makes me nervous.	10.204	2	<b>.006</b>
I get a sinking feeling when I think of trying to use a computer.	16.740	2	<b>.000</b>
I feel comfortable working with a computer.	14.270	2	<b>.001</b>
The ERP system provides the precise information I need.	10.774	2	<b>.005</b>
The information contents provided by the ERP system meet my needs.	8.151	2	<b>.017</b>
The ERP system provides reports that seem to be exactly what I need.	1.288	2	.525
The ERP system provides sufficient information to my needs.	7.094	2	<b>.029</b>
The ERP system provides complete features I need.	1.550	2	.461
I am satisfied with the speed of interacting with the system.	4.373	2	.112
It is easy to detect and correct possible errors in the ERP system.	6.022	2	<b>.049</b>

It is easy to change the output format.	19.167	2	<b>.000</b>
It is fast to search data in the ERP system.	5.820	2	.054
The ERP system loads quickly.	8.470	2	<b>.014</b>
The system reliably handles my queries.	7.501	2	<b>.024</b>
I was able to retrieve data quickly.	10.706	2	<b>.005</b>
It is fast to create a new record (vendor, customer etc.) in this system.	9.644	2	<b>.008</b>
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	8.967	2	<b>.011</b>
The ERP system is subject to frequent system problems and crashes.	11.648	2	<b>.003</b>
The description of the functions /commands displayed on screen is clear to me.	1.157	2	.561
The function / commands names of the ERP system are easy to remember.	3.293	2	.193
The exact definition of data fields relating to my tasks is easy to find out.	.784	2	.676
The content and index of the user manuals are useful.	13.707	2	<b>.001</b>
The user manuals are current (up to date).	6.230	2	<b>.044</b>
The user manuals are complete.	2.681	2	.262
The user manuals are easy to understand and follow.	6.138	2	<b>.046</b>
My supervisor is very supportive of the use of the ERP system for my job.	18.369	2	<b>.000</b>
The organization has supported the use of the ERP system.	12.420	2	<b>.002</b>

People who influence my behaviour think that I should use the ERP system.	3.930	2	.140
People who are important to me think that I should use the ERP system.	10.922	2	<b>.004</b>
The ERP solution fits well with the business needs of me.	4.017	2	.134
The ERP solution fits well with the business need of my department.	7.453	2	<b>.024</b>
The ERP system is satisfactory in meeting my needs.	5.071	2	.079
I believe there are some important problems with the way the ERP system is managed	8.607	2	<b>.014</b>
The system maintenance and the way it is provided meet my need adequately.	5.137	2	.077
There is not enough training for me on how to find, understand, access or use the ERP system.	6.771	2	<b>.034</b>
I have received additional formal training for ERP since the conclusion of the above training.	4.486	2	.106
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	7.052	2	<b>.029</b>
I feel that I need additional ERP training to complete my current job tasks.	.519	2	.771
I do not know who to phone for support for this application.	17.138	2	<b>.000</b>
The support people talk in terms that I do not understand.	7.360	2	<b>.025</b>
I ask other users for help with this application rather than the support staff.	3.170	2	.205
The support for this application is inadequate.	5.285	2	.071



The ERP team does not provide feedback regarding users' requests to modify this application.	1.206	2	.547
The ERP team did not inform me about the current situation of this application.	3.598	2	.165
The ERP team did not explain how application modifications would impact my job.	10.874	2	<b>.004</b>
Using ERP solution in my job enables me to accomplish tasks more quickly.	1.957	2	.376
Using ERP solution improves my job performance.	4.786	2	.091
Using ERP solution enhances my effectiveness on the job.	10.689	2	<b>.005</b>
Using ERP solution makes it easier to do my job.	20.687	2	<b>.000</b>
I find ERP solution useful in my job.	22.600	2	<b>.000</b>
My interaction with ERP solution is clear and understandable.	11.568	2	<b>.003</b>
Interacting with ERP solution does not require a lot of my mental effort.	7.424	2	<b>.024</b>
I find ERP solution is easy to use.	8.792	2	<b>.012</b>
I find it easy to get ERP solution to do what I want it to do.	18.454	2	<b>.000</b>
Using ERP system is compatible with all aspects of my work.	9.105	2	<b>.011</b>
Using ERP system fits well with the way I like to work.	15.322	2	<b>.000</b>
Using ERP system fits into my work style.	9.116	2	<b>.010</b>
Using the ERP system is a good idea.	20.367	2	<b>.000</b>
I like the idea of using the ERP system to perform my job.	30.924	2	<b>.000</b>

- a. Kruskal Wallis Test
- b. Grouping Variable: How long have you worked with the ERP system? (Binned)

**Interpretation:-**

- **As p-value of the statements** “I could complete the job using ERP, if I had a lot of time to complete the job for which the software was provided”, “If I hear about a new IT, I would look for ways to experiment with it”, “Among my peers I am usually the first to try out new IT”, “I like to experiment with new IT”, “Working with a computer makes me nervous”, “I get a sinking feeling when I think of trying to use a computer”, “I feel comfortable working with a computer”, “The ERP system provides the precise information I need”, “The information contents provided by the ERP system meet my needs”, “The ERP system provides sufficient information to my needs”, “It is easy to detect and correct possible errors in the ERP system”, “It is easy to change the output format”, “The ERP system loads quickly”, “The system reliably handles my queries”, “I was able to retrieve data quickly”, “It is fast to create a new record (vendor, customer etc.) in this system”, “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work”, “The ERP system is subject to frequent system problems and crashes”, “The content and index of the user manuals are useful”, “The user manuals are current (up to date)”, “The user manuals are easy to understand and follow”, “My supervisor is very supportive of the use of the ERP system for my job”, “the organization has supported the use of the ERP system”, “People who are important to me think that I should use the ERP system”, “The ERP solution fits well with the business needs of me”, “I believe there are some important problems with the way the ERP system is managed”, “There is not enough training for me on how to find, understand, access or use the ERP system”, “I have received informal training (e.g. half hour of support from a peer or training officer) for ERP”, “I do not know who to phone for support for this application”, “The support people talk in terms that I do not understand”, “The ERP team did not explain how application modifications would impact my job”, “Using ERP solution enhances my effectiveness on the job”, “Using ERP solution makes it easier to do my job”, “I find ERP solution useful in my job”, “My interaction with ERP solution is clear and understandable”, “Interacting with ERP solution does not require a lot of my mental effort”, “I find

ERP solution is easy to use”, “I find it easy to get ERP solution to do what I want it to do”, “Using ERP system is compatible with all aspects of my work”, “Using ERP system fits well with the way I like to work”, “Using ERP system fits into my work style”, “Using the ERP system is a good idea”, and “I like the idea of using the ERP system to perform my job” **is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of ERP Experience on above statements.**

- As the mean rank of the statement “I could complete the job using ERP, if I had a lot of time to complete the job for which the software was provided” in case of users with ERP experience between 5 to 9 years is 269.13 and users with ERP experience less than or equal to 4 years is 247.18, we can interpret that users with ERP experience between 5 to 9 years could complete the job using ERP system, if they had a lot of time to complete the job for which the software was provided than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “If I hear about a new IT, I would look for ways to experiment with it” in case of users with ERP experience between 5 to 9 years is 250.17 and users with ERP experience less than or equal to 4 years is 250.97, we can interpret that users with ERP experience between 5 to 9 years and those with ERP experience less than or equal to 4 years, both would look for ways to experiment with IT, if they hear about a new IT.
- As the mean rank of the statement “Among my peers I am usually the first to try out new IT” in case of users with ERP experience between 5 to 9 years is 264.43 and users with ERP experience less than or equal to 4 years is 236.81, we can interpret that users with ERP experience between 5 to 9 years would be usually the first to try out new IT among their peers than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I like to experiment with new IT” in case of users with ERP experience between 5 to 9 years is 261.74 and users with ERP experience less than or equal to 4 years is 239.82, we can interpret that users with ERP experience between 5 to 9 years like to experiment with new IT than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “Working with a computer makes me nervous”

in case of users with ERP experience between 5 to 9 years is 262.63 and users with ERP experience less than or equal to 4 years is 253.20, we can interpret that users with ERP experience between 5 to 9 years are more nervous while working with a computer than those with ERP experience less than or equal to 4 years.

- As the mean rank of the statement “I get a sinking feeling when I think of trying to use a computer” in case of users with ERP experience between 5 to 9 years is 261.79 and users with ERP experience less than or equal to 4 years is 256.72, we can interpret that users with ERP experience between 5 to 9 years get a sinking feeling when they think of trying to use a computer than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I feel comfortable working with a computer” in case of users with ERP experience between 5 to 9 years is 240.91 and users with ERP experience less than or equal to 4 years is 261.28, we can interpret that users with ERP experience between 5 to 9 years are less comfortable working with a computer than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “The ERP system provides the precise information I need” in case of users with ERP experience between 5 to 9 years is 247.44 and users with ERP experience less than or equal to 4 years is 254.38, we can interpret that users with ERP experience less than or equal to 4 years feel that the ERP system provides the precise information they need than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “The information contents provided by the ERP system meet my needs” in case of users with ERP experience between 5 to 9 years is 255.69 and users with ERP experience less than or equal to 4 years is 246.05, we can interpret that users with ERP experience between 5 to 9 years feel that the information contents provided by the ERP system meet their needs than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “The ERP system provides sufficient information to my needs” in case of users with ERP experience between 5 to 9 years is 252.20 and users with ERP experience less than or equal to 4 years is 250.31, we can interpret that users with ERP experience between 5 to 9 years feel that the ERP system provides sufficient information to their needs than those with

ERP experience less than or equal to 4 years.

- As the mean rank of the statement “It is easy to detect and correct possible errors in the ERP system” in case of users with ERP experience between 5 to 9 years is 267.24 and users with ERP experience less than or equal to 4 years is 237.64, we can interpret that users with ERP experience between 5 to 9 years feel that it is easy to detect and correct possible errors in the ERP system than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “It is easy to change the output format” in case of users with ERP experience between 5 to 9 years is 278.87 and users with ERP experience less than or equal to 4 years is 233.02, we can interpret that users with ERP experience between 5 to 9 years feel that it is easy to change the output format than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “The ERP system loads quickly” in case of users with ERP experience between 5 to 9 years is 254.27 and users with ERP experience less than or equal to 4 years is 247.38, we can interpret that users with ERP experience between 5 to 9 years feel that the ERP system loads quickly than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “The system reliably handles my queries” in case of users with ERP experience between 5 to 9 years is 261.89 and users with ERP experience less than or equal to 4 years is 240.36, we can interpret that users with ERP experience between 5 to 9 years feel that the system reliably handles their queries than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I was able to retrieve data quickly” in case of users with ERP experience between 5 to 9 years is 266.26 and users with ERP experience less than or equal to 4 years is 235.33, we can interpret that users with ERP experience between 5 to 9 years were able to retrieve data quickly than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “It is fast to create a new record (vendor, customer etc.) in this system” in case of users with ERP experience between 5 to 9 years is 256.94 and users with ERP experience less than or equal to 4 years is 244.06, we can interpret that users with ERP experience between 5 to 9 years feel that it is fast to create a new record (vendor, customer etc.) in ERP system than

those with ERP experience less than or equal to 4 years.

- As the mean rank of the statement “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work” in case of users with ERP experience between 5 to 9 years is 236.37 and users with ERP experience less than or equal to 4 years is 272.46, we can interpret that users with ERP experience less than or equal to 4 years feel that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “The ERP system is subject to frequent system problems and crashes” in case of users with ERP experience between 5 to 9 years is 239.24 and users with ERP experience less than or equal to 4 years is 276.92, we can interpret that users with ERP experience less than or equal to 4 years feel that the ERP system is subject to frequent system problems and crashes than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “I could complete the job using ERP” in case of users with ERP experience between 5 to 9 years is 245.63 and users with ERP experience less than or equal to 4 years is 255.42, we can interpret that users with ERP experience less than or equal to 4 years could complete the job using ERP than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “The user manuals are current (up-to-date)” in case of users with ERP experience between 5 to 9 years is 255.36 and users with ERP experience less than or equal to 4 years is 247.31, we can interpret that users with ERP experience between 5 to 9 years feel that the user manuals are current (up-to-date) than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “The user manuals are easy to understand and follow” in case of users with ERP experience between 5 to 9 years is 250.99 and users with ERP experience less than or equal to 4 years is 252.16, we can interpret that users with ERP experience less than or equal to 4 years feel that the user manuals are easy to understand and follow than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “My supervisor is very supportive of the use of the ERP system for my job” in case of users with ERP experience between 5 to 9

years is 239.60 and users with ERP experience less than or equal to 4 years is 261.62, we can interpret that users with ERP experience less than or equal to 4 years feel that their supervisor is very supportive of the use of the ERP system for their job than those with ERP experience between 5 to 9 years.

- As the mean rank of the statement “The organization has supported the use of the ERP system” in case of users with ERP experience between 5 to 9 years is 255.70 and users with ERP experience less than or equal to 4 years is 244.39, we can interpret that users with ERP experience between 5 to 9 years feel that their organization has supported the use of the ERP system than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “People who are important to me think that I should use the ERP system” in case of users with ERP experience between 5 to 9 years is 252.65 and users with ERP experience less than or equal to 4 years is 248.11, we can interpret that users with ERP experience between 5 to 9 years feel that the people who are important to them think that they should use the ERP system than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “The ERP solution fits well with the business needs of me” in case of users with ERP experience between 5 to 9 years is 260.59 and users with ERP experience less than or equal to 4 years is 241.53, we can interpret that users with ERP experience between 5 to 9 years feel that the ERP solution fits well with their business needs than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I believe there are some important problems with the way the ERP system is managed” in case of users with ERP experience between 5 to 9 years is 263.33 and users with ERP experience less than or equal to 4 years is 251.65, we can interpret that users with ERP experience between 5 to 9 years believe that there are some important problems with the way the ERP system is managed than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “There is not enough training for me on how to find, understand, access or use the ERP system” in case of users with ERP experience between 5 to 9 years is 252.40 and users with ERP experience less than or equal to 4 years is 263.45, we can interpret that users with ERP experience

less than or equal to 4 years feel that there is not enough training for them on how to find, understand, access or use the ERP system than those with ERP experience between 5 to 9 years.

- As the mean rank of the statement “I have received informal training (e.g. half hour of support from a peer or training officer) for ERP” in case of users with ERP experience between 5 to 9 years is 251.73 and users with ERP experience less than or equal to 4 years is 250.71, we can interpret that users with ERP experience between 5 to 9 years have received informal training (e.g. half hour of support from a peer or training officer) for ERP than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I do not know who to phone for support for this application” in case of users with ERP experience between 5 to 9 years is 249.83 and users with ERP experience less than or equal to 4 years is 269.93, we can interpret that users with ERP experience less than or equal to 4 years do not know who to phone for support for this application than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “The support people talk in terms that I do not understand” in case of users with ERP experience between 5 to 9 years is 243.17 and users with ERP experience less than or equal to 4 years is 271.78, we can interpret that users with ERP experience less than or equal to 4 years feel that the support people talk in terms that they do not understand than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “The ERP team did not explain how application modifications would impact my job” in case of users with ERP experience between 5 to 9 years is 234.12 and users with ERP experience less than or equal to 4 years is 276.07, we can interpret that users with ERP experience less than or equal to 4 years feel that the ERP team did not explain how application modifications would impact their job than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “Using ERP solution enhances my effectiveness on the job” in case of users with ERP experience between 5 to 9 years is 261.00 and users with ERP experience less than or equal to 4 years is



239.78, we can interpret that users with ERP experience between 5 to 9 years feel that using ERP solution enhances their effectiveness on the job than those with ERP experience less than or equal to 4 years.

- As the mean rank of the statement “Using ERP solution makes it easier to do my job” in case of users with ERP experience between 5 to 9 years is 257.66 and users with ERP experience less than or equal to 4 years is 239.75, we can interpret that users with ERP experience between 5 to 9 years feel that using ERP solution makes it easier to do their job than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I find ERP solution useful in my job” in case of users with ERP experience between 5 to 9 years is 243.16 and users with ERP experience less than or equal to 4 years is 255.69, we can interpret that users with ERP experience less than or equal to 4 years find ERP solution useful in their job than those with ERP experience between 5 to 9 years.
- As the mean rank of the statement “My interaction with ERP solution is clear and understandable” in case of users with ERP experience between 5 to 9 years is 262.80 and users with ERP experience less than or equal to 4 years is 237.82, we can interpret that users with ERP experience between 5 to 9 years feel that their interaction with ERP solution is clear and understandable than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “Interacting with ERP solution does not require a lot of my mental effort” in case of users with ERP experience between 5 to 9 years is 267.09 and users with ERP experience less than or equal to 4 years is 236.46, we can interpret that users with ERP experience between 5 to 9 years feel that interacting with ERP solution does not require a lot of their mental effort than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I find ERP solution is easy to use” in case of users with ERP experience between 5 to 9 years is 262.72 and users with ERP experience less than or equal to 4 years is 239.09, we can interpret that users with ERP experience between 5 to 9 years find ERP solution is easy to use than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I find it easy to get ERP solution to do what I

want it to do” in case of users with ERP experience between 5 to 9 years is 274.46 and users with ERP experience less than or equal to 4 years is 226.02, we can interpret that users with ERP experience between 5 to 9 years find it easy to get ERP solution to do what they want it to do than those with ERP experience less than or equal to 4 years.

- As the mean rank of the statement “Using ERP system is compatible with all aspects of my work” in case of users with ERP experience between 5 to 9 years is 256.19 and users with ERP experience less than or equal to 4 years is 245.13, we can interpret that users with ERP experience between 5 to 9 years feel that using ERP system is compatible with all aspects of their work than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “Using ERP system fits well with the way I like to work” in case of users with ERP experience between 5 to 9 years is 262.05 and users with ERP experience less than or equal to 4 years is 237.06, we can interpret that users with ERP experience between 5 to 9 years feel that using ERP system fits well with the way they like to work than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “Using ERP system fits into my work style” in case of users with ERP experience between 5 to 9 years is 263.53 and users with ERP experience less than or equal to 4 years is 238.19, we can interpret that users with ERP experience between 5 to 9 years feel that using ERP system fits into their work style than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “Using the ERP system is a good idea” in case of users with ERP experience between 5 to 9 years is 251.68 and users with ERP experience less than or equal to 4 years is 246.25, we can interpret that users with ERP experience between 5 to 9 years feel that using the ERP system is a good idea than those with ERP experience less than or equal to 4 years.
- As the mean rank of the statement “I like the idea of using the ERP system to perform my job” in case of users with ERP exp. between 5 to 9 years is 252.47 and users with ERP exp. less than or equal to 4 years is 242.75, we can interpret that users with ERP exp. between 5 to 9 years like the idea of using the ERP system to perform their job than those with ERP exp. less than or equal to 4 years.

**Hypothesis:**

**H<sub>0</sub>:** There is no significant effect of **Company of respondent** on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of Company of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**Kruskal-Wallis Test****TABLE 5.31 Mean Ranks: ERP Use and Company**

	Company	N	Mean Rank
If there was no one around to tell me what to do as I go.	ABC	51	111.12
	Apollo	51	282.40
	Aventis	51	309.71
	CEAT	61	284.94
	GSFC	60	284.80
	L&T	51	210.57
	Linde	51	265.87
	Zydus	51	317.25
	GNFC	33	239.96
	FAG	48	237.81
Total	508		
If I had only the software manuals or/and the build-in help for assistance.	ABC	51	151.06
	Apollo	51	261.38
	Aventis	51	305.35
	CEAT	61	263.02
	GSFC	60	313.96
	L&T	51	300.51
	Linde	51	227.58
	Zydus	51	254.88
	GNFC	33	245.05
	FAG	48	221.83
Total	508		
If I could call someone for help if I got stuck.	ABC	51	132.60
	Apollo	51	279.51
	Aventis	51	258.24

	CEAT	61	247.44
	GSFC	60	303.06
	L&T	51	324.72
	Linde	51	276.31
	Zydus	51	207.53
	GNFC	33	279.14
	FAG	48	237.42
	Total	508	
If I had a lot of time to complete the job for which the software was provided.	ABC	51	223.62
	Apollo	51	291.91
	Aventis	51	281.78
	CEAT	61	300.85
	GSFC	60	264.05
	L&T	51	230.43
	Linde	51	275.81
	Zydus	51	226.02
	GNFC	33	214.39
	FAG	48	234.56
	Total	508	
	If I hear about a new IT, I would look for ways to experiment with it.	ABC	51
Apollo		51	324.23
Aventis		51	282.30
CEAT		61	263.64
GSFC		60	303.89
L&T		51	198.13
Linde		51	227.03
Zydus		51	288.89
GNFC		33	291.36
FAG		48	260.60
Total		508	
Among my peers I am usually the first to try out new IT.		ABC	51
	Apollo	51	306.10
	Aventis	51	269.87
	CEAT	61	254.64
	GSFC	60	243.11
	L&T	51	277.78
	Linde	51	172.47
	Zydus	51	306.75
	GNFC	33	255.42
	FAG	48	237.87

	Total	508	
I like to experiment with new IT.	ABC	51	150.55
	Apollo	51	309.73
	Aventis	51	285.10
	CEAT	61	269.77
	GSFC	60	251.32
	L&T	51	297.93
	Linde	51	196.47
	Zydus	51	265.13
	GNFC	33	272.19
	FAG	48	247.50
	Total	508	
Working with a computer makes me nervous.	ABC	51	257.01
	Apollo	51	274.25
	Aventis	51	236.26
	CEAT	61	257.79
	GSFC	60	222.86
	L&T	51	222.64
	Linde	51	287.37
	Zydus	51	244.25
	GNFC	33	251.92
	FAG	48	290.54
	Total	508	
I get a sinking feeling when I think of trying to use a computer.	ABC	51	317.22
	Apollo	51	281.06
	Aventis	51	221.60
	CEAT	61	261.37
	GSFC	60	219.67
	L&T	51	207.82
	Linde	51	259.72
	Zydus	51	252.66
	GNFC	33	230.10
	FAG	48	292.83
	Total	508	
I feel comfortable working with a computer.	ABC	51	165.45
	Apollo	51	189.73
	Aventis	51	252.18
	CEAT	61	255.97
	GSFC	60	304.84
	L&T	51	287.23

	Linde	51	292.44
	Zydus	51	227.05
	GNFC	33	327.28
	FAG	48	245.70
	Total	508	
The ERP system provides the precise information I need.	ABC	51	100.44
	Apollo	51	271.45
	Aventis	51	267.90
	CEAT	61	273.22
	GSFC	60	272.51
	L&T	51	338.27
	Linde	51	224.98
	Zydus	51	303.50
	GNFC	33	279.45
	FAG	48	214.25
	Total	508	
The information contents provided by the ERP system meet my needs.	ABC	51	140.28
	Apollo	51	260.06
	Aventis	51	260.32
	CEAT	61	291.32
	GSFC	60	277.40
	L&T	51	314.21
	Linde	51	198.71
	Zydus	51	256.75
	GNFC	33	293.81
	FAG	48	253.69
	Total	508	
The ERP system provides reports that seem to be exactly what I need.	ABC	51	112.09
	Apollo	51	267.19
	Aventis	51	262.48
	CEAT	61	278.27
	GSFC	60	266.90
	L&T	51	315.58
	Linde	51	254.34
	Zydus	51	262.90
	GNFC	33	273.39
	FAG	48	252.60
	Total	508	
The ERP system provides sufficient information to my	ABC	51	211.70
	Apollo	51	274.31

needs.	Aventis	51	240.88
	CEAT	61	259.47
	GSFC	60	298.19
	L&T	51	267.79
	Linde	51	170.39
	Zydus	51	285.95
	GNFC	33	298.05
	FAG	48	239.97
	Total	508	
The ERP system provides complete features I need.	ABC	51	222.78
	Apollo	51	267.61
	Aventis	51	266.13
	CEAT	61	313.95
	GSFC	60	280.84
	L&T	51	209.73
	Linde	51	218.14
	Zydus	51	281.87
	GNFC	33	277.68
FAG	48	207.18	
Total	508		
I am satisfied with the speed of interacting with the system.	ABC	51	156.23
	Apollo	51	226.82
	Aventis	51	265.36
	CEAT	61	281.04
	GSFC	60	285.11
	L&T	51	316.15
	Linde	51	172.01
	Zydus	51	270.89
	GNFC	33	311.30
FAG	48	262.32	
Total	508		
It is easy to detect and correct possible errors in the ERP system.	ABC	51	203.60
	Apollo	51	235.94
	Aventis	51	236.60
	CEAT	61	279.26
	GSFC	60	289.35
	L&T	51	290.87
	Linde	51	204.30
	Zydus	51	259.70
	GNFC	33	261.51

	FAG	48	284.14
	Total	508	
It is easy to change the output format.	ABC	51	170.30
	Apollo	51	301.75
	Aventis	51	241.66
	CEAT	61	286.12
	GSFC	60	220.41
	L&T	51	261.60
	Linde	51	276.59
	Zydus	51	268.01
	GNFC	33	233.57
	FAG	48	284.18
	Total	508	
It is fast to search data in the ERP system.	ABC	51	150.21
	Apollo	51	279.83
	Aventis	51	279.19
	CEAT	61	225.34
	GSFC	60	316.85
	L&T	51	257.84
	Linde	51	213.39
	Zydus	51	290.20
	GNFC	33	286.13
	FAG	48	247.25
	Total	508	
The ERP system loads quickly.	ABC	51	210.26
	Apollo	51	287.62
	Aventis	51	286.62
	CEAT	61	239.65
	GSFC	60	259.32
	L&T	51	278.46
	Linde	51	203.50
	Zydus	51	279.22
	GNFC	33	275.38
	FAG	48	225.79
	Total	508	
The system reliably handles my queries.	ABC	51	160.87
	Apollo	51	254.55
	Aventis	51	256.51
	CEAT	61	247.42
	GSFC	60	284.91



	L&T	51	294.76
	Linde	51	316.73
	Zydus	51	217.09
	GNFC	33	273.33
	FAG	48	239.57
	Total	508	
I was able to retrieve data quickly.	ABC	51	223.58
	Apollo	51	293.31
	Aventis	51	243.12
	CEAT	61	227.73
	GSFC	60	300.11
	L&T	51	282.40
	Linde	51	224.77
	Zydus	51	225.92
	GNFC	33	271.04
	FAG	48	253.67
	Total	508	
It is fast to create a new record (vendor, customer etc.) in this system.	ABC	51	259.83
	Apollo	51	232.74
	Aventis	51	249.74
	CEAT	61	246.52
	GSFC	60	308.85
	L&T	51	247.87
	Linde	51	211.09
	Zydus	51	242.03
	GNFC	33	287.77
	FAG	48	259.87
	Total	508	
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	ABC	51	221.99
	Apollo	51	220.45
	Aventis	51	187.38
	CEAT	61	161.24
	GSFC	60	315.69
	L&T	51	323.15
	Linde	51	280.62
	Zydus	51	289.98
	GNFC	33	300.49
	FAG	48	245.82
	Total	508	
The ERP system is subject	ABC	51	225.62

to frequent system problems and crashes.	Apollo	51	187.96
	Aventis	51	190.11
	CEAT	61	209.69
	GSFC	60	253.09
	L&T	51	328.07
	Linde	51	298.85
	Zydus	51	292.92
	GNFC	33	281.13
	FAG	48	278.61
	Total	508	
The description of the functions /commands displayed on screen is clear to me.	ABC	51	195.10
	Apollo	51	286.91
	Aventis	51	290.79
	CEAT	61	254.94
	GSFC	60	266.75
	L&T	51	211.97
	Linde	51	260.59
	Zydus	51	249.70
	GNFC	33	277.64
	FAG	48	251.52
Total	508		
The function / commands names of the ERP system are easy to remember.	ABC	51	216.42
	Apollo	51	313.78
	Aventis	51	322.24
	CEAT	61	241.01
	GSFC	60	247.67
	L&T	51	207.16
	Linde	51	209.25
	Zydus	51	273.40
	GNFC	33	264.71
	FAG	48	249.75
Total	508		
The exact definition of data fields relating to my tasks is easy to find out.	ABC	51	258.20
	Apollo	51	334.62
	Aventis	51	295.01
	CEAT	61	253.99
	GSFC	60	230.45
	L&T	51	216.85
	Linde	51	229.32
	Zydus	51	289.24

	GNFC	33	224.46
	FAG	48	211.69
	Total	508	
The content and index of the user manuals are useful.	ABC	51	163.95
	Apollo	51	279.74
	Aventis	51	301.16
	CEAT	61	253.59
	GSFC	60	241.07
	L&T	51	297.59
	Linde	51	270.08
	Zydus	51	236.99
	GNFC	33	247.99
	FAG	48	252.60
	Total	508	
The user manuals are current (up to date).	ABC	51	186.79
	Apollo	51	287.60
	Aventis	51	291.78
	CEAT	61	242.53
	GSFC	60	253.18
	L&T	51	328.55
	Linde	51	245.87
	Zydus	51	222.31
	GNFC	33	265.85
	FAG	48	220.98
	Total	508	
The user manuals are complete.	ABC	51	197.02
	Apollo	51	299.15
	Aventis	51	282.20
	CEAT	61	255.21
	GSFC	60	244.72
	L&T	51	309.77
	Linde	51	251.31
	Zydus	51	223.17
	GNFC	33	248.80
	FAG	48	233.44
	Total	508	
The user manuals are easy to understand and follow.	ABC	51	275.60
	Apollo	51	265.22
	Aventis	51	285.17
	CEAT	61	293.05

	GSFC	60	252.69
	L&T	51	285.71
	Linde	51	168.81
	Zydus	51	264.75
	GNFC	33	250.64
	FAG	48	203.23
	Total	508	
My supervisor is very supportive of the use of the ERP system for my job.	ABC	51	77.28
	Apollo	51	261.34
	Aventis	51	269.04
	CEAT	61	247.84
	GSFC	60	295.65
	L&T	51	300.80
	Linde	51	293.01
	Zydus	51	261.69
	GNFC	33	317.30
	FAG	48	223.51
	Total	508	
The organization has supported the use of the ERP system.	ABC	51	142.55
	Apollo	51	255.62
	Aventis	51	271.49
	CEAT	61	212.68
	GSFC	60	297.36
	L&T	51	280.55
	Linde	51	269.17
	Zydus	51	241.98
	GNFC	33	321.36
	FAG	48	254.87
	Total	508	
People who influence my behaviour think that I should use the ERP system.	ABC	51	206.75
	Apollo	51	281.01
	Aventis	51	275.90
	CEAT	61	224.86
	GSFC	60	305.46
	L&T	51	278.98
	Linde	51	223.78
	Zydus	51	225.39
	GNFC	33	276.81
	FAG	48	246.93
	Total	508	

People who are important to me think that I should use the ERP system.	ABC	51	252.28
	Apollo	51	268.05
	Aventis	51	261.42
	CEAT	61	287.28
	GSFC	60	290.61
	L&T	51	309.72
	Linde	51	192.41
	Zydus	51	173.96
	GNFC	33	271.54
	FAG	48	238.39
Total	508		
The ERP solution fits well with the business needs of me.	ABC	51	157.69
	Apollo	51	279.29
	Aventis	51	276.94
	CEAT	61	254.43
	GSFC	60	316.63
	L&T	51	258.62
	Linde	51	202.22
	Zydus	51	262.56
	GNFC	33	304.78
	FAG	48	233.82
Total	508		
The ERP solution fits well with the business need of my department.	ABC	51	162.48
	Apollo	51	258.44
	Aventis	51	261.18
	CEAT	61	247.33
	GSFC	60	261.73
	L&T	51	262.71
	Linde	51	260.09
	Zydus	51	259.82
	GNFC	33	296.85
	FAG	48	276.04
Total	508		
The ERP system is satisfactory in meeting my needs.	ABC	51	231.61
	Apollo	51	291.71
	Aventis	51	269.56
	CEAT	61	232.96
	GSFC	60	326.82
	L&T	51	220.30
Linde	51	220.41	

	Zydus	51	227.27
	GNFC	33	297.11
	FAG	48	228.91
	Total	508	
I believe there are some important problems with the way the ERP system is managed	ABC	51	176.81
	Apollo	51	311.34
	Aventis	51	320.94
	CEAT	61	306.10
	GSFC	60	272.66
	L&T	51	200.05
	Linde	51	210.18
	Zydus	51	246.86
	GNFC	33	268.32
	FAG	48	232.28
	Total	508	
The system maintenance and the way it is provided meet my need adequately.	ABC	51	181.99
	Apollo	51	257.99
	Aventis	51	268.25
	CEAT	61	276.73
	GSFC	60	304.31
	L&T	51	284.27
	Linde	51	228.25
	Zydus	51	205.59
	GNFC	33	268.02
	FAG	48	270.13
	Total	508	
There is not enough training for me on how to find, understand, access or use the ERP system.	ABC	51	152.57
	Apollo	51	354.69
	Aventis	51	271.48
	CEAT	61	345.79
	GSFC	60	252.05
	L&T	51	210.90
	Linde	51	267.48
	Zydus	51	220.66
	GNFC	33	267.77
	FAG	48	202.14
	Total	508	
I have received additional formal training for ERP since the conclusion of the	ABC	51	283.50
	Apollo	51	302.42
	Aventis	51	278.84

above training.	CEAT	61	312.26
	GSFC	60	229.96
	L&T	51	195.53
	Linde	51	162.48
	Zydus	51	233.32
	GNFC	33	298.71
	FAG	48	249.70
	Total	508	
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	ABC	51	253.55
	Apollo	51	307.37
	Aventis	51	288.88
	CEAT	61	301.19
	GSFC	60	256.60
	L&T	51	257.02
	Linde	51	168.47
	Zydus	51	212.02
	GNFC	33	293.26
	FAG	48	208.17
	Total	508	
I feel that I need additional ERP training to complete my current job tasks.	ABC	51	251.05
	Apollo	51	276.69
	Aventis	51	216.41
	CEAT	61	335.44
	GSFC	60	240.69
	L&T	51	276.35
	Linde	51	274.45
	Zydus	51	162.44
	GNFC	33	297.11
	FAG	48	216.04
	Total	508	
I do not know who to phone for support for this application.	ABC	51	225.02
	Apollo	51	261.56
	Aventis	51	237.03
	CEAT	61	195.56
	GSFC	60	306.86
	L&T	51	203.06
	Linde	51	305.55
	Zydus	51	265.11
	GNFC	33	262.12
	FAG	48	283.43

	Total	508	
The support people talk in terms that I do not understand.	ABC	51	320.62
	Apollo	51	244.00
	Aventis	51	256.87
	CEAT	61	155.27
	GSFC	60	255.76
	L&T	51	193.14
	Linde	51	317.53
	Zydus	51	233.19
	GNFC	33	277.45
	FAG	48	292.07
	Total	508	
I ask other users for help with this application rather than the support staff.	ABC	51	267.69
	Apollo	51	214.94
	Aventis	51	179.39
	CEAT	61	213.55
	GSFC	60	250.98
	L&T	51	347.90
	Linde	51	376.31
	Zydus	51	195.94
	GNFC	33	263.57
	FAG	48	235.08
	Total	508	
The support for this application is inadequate.	ABC	51	312.34
	Apollo	51	188.41
	Aventis	51	214.22
	CEAT	61	174.65
	GSFC	60	268.41
	L&T	51	303.05
	Linde	51	345.68
	Zydus	51	210.31
	GNFC	33	266.95
	FAG	48	261.47
	Total	508	
The ERP team does not provide feedback regarding users' requests to modify this application.	ABC	51	187.86
	Apollo	51	226.73
	Aventis	51	203.21
	CEAT	61	192.93
	GSFC	60	287.45
	L&T	51	327.69



	Linde	51	326.96
	Zydus	51	275.04
	GNFC	33	278.49
	FAG	48	239.59
	Total	508	
The ERP team did not inform me about the current situation of this application.	ABC	51	373.95
	Apollo	51	166.96
	Aventis	51	184.94
	CEAT	61	164.52
	GSFC	60	232.55
	L&T	51	300.36
	Linde	51	307.79
	Zydus	51	298.22
	GNFC	33	272.29
	FAG	48	244.12
	Total	508	
	The ERP team did not explain how application modifications would impact my job.	ABC	51
Apollo		51	174.55
Aventis		51	206.62
CEAT		61	183.39
GSFC		60	234.35
L&T		51	304.68
Linde		51	346.25
Zydus		51	267.10
GNFC		33	284.11
FAG		48	245.87
Total		508	
Using ERP solution in my job enables me to accomplish tasks more quickly.		ABC	51
	Apollo	51	256.30
	Aventis	51	252.72
	CEAT	61	236.71
	GSFC	60	315.60
	L&T	51	303.88
	Linde	51	248.75
	Zydus	51	307.13
	GNFC	33	273.97
	FAG	48	248.76
	Total	508	
	Using ERP solution improves my job	ABC	51
Apollo		51	255.38

performance.	Aventis	51	243.64
	CEAT	61	244.59
	GSFC	60	285.16
	L&T	51	344.27
	Linde	51	239.40
	Zydus	51	283.92
	GNFC	33	258.69
	FAG	48	244.06
	Total	508	
Using ERP solution enhances my effectiveness on the job.	ABC	51	155.75
	Apollo	51	275.51
	Aventis	51	253.04
	CEAT	61	229.93
	GSFC	60	313.45
	L&T	51	323.40
	Linde	51	245.78
	Zydus	51	261.99
	GNFC	33	261.39
	FAG	48	225.03
Total	508		
Using ERP solution makes it easier to do my job.	ABC	51	181.34
	Apollo	51	287.62
	Aventis	51	243.56
	CEAT	61	255.76
	GSFC	60	310.00
	L&T	51	292.04
	Linde	51	180.81
	Zydus	51	271.53
	GNFC	33	281.70
	FAG	48	241.70
Total	508		
I find ERP solution useful in my job.	ABC	51	92.16
	Apollo	51	287.77
	Aventis	51	282.94
	CEAT	61	225.09
	GSFC	60	309.12
	L&T	51	324.71
	Linde	51	253.81
	Zydus	51	272.11
GNFC	33	285.16	

	FAG	48	213.33
	Total	508	
My interaction with ERP solution is clear and understandable.	ABC	51	194.83
	Apollo	51	245.64
	Aventis	51	253.55
	CEAT	61	281.55
	GSFC	60	282.97
	L&T	51	204.72
	Linde	51	236.00
	Zydus	51	311.15
	GNFC	33	275.03
	FAG	48	260.37
	Total	508	
Interacting with ERP solution does not require a lot of my mental effort.	ABC	51	217.43
	Apollo	51	279.61
	Aventis	51	288.41
	CEAT	61	253.75
	GSFC	60	261.00
	L&T	51	242.59
	Linde	51	219.60
	Zydus	51	312.95
	GNFC	33	265.38
	FAG	48	204.72
	Total	508	
I find ERP solution is easy to use.	ABC	51	248.78
	Apollo	51	270.00
	Aventis	51	248.40
	CEAT	61	248.91
	GSFC	60	260.48
	L&T	51	260.20
	Linde	51	223.22
	Zydus	51	268.09
	GNFC	33	251.21
	FAG	48	265.58
	Total	508	
I find it easy to get ERP solution to do what I want it to do.	ABC	51	251.86
	Apollo	51	277.74
	Aventis	51	241.92
	CEAT	61	316.50
	GSFC	60	264.39

	L&T	51	226.87
	Linde	51	170.14
	Zydus	51	281.35
	GNFC	33	258.29
	FAG	48	256.09
	Total	508	
Using ERP system is compatible with all aspects of my work.	ABC	51	207.22
	Apollo	51	295.30
	Aventis	51	251.26
	CEAT	61	283.39
	GSFC	60	259.37
	L&T	51	282.56
	Linde	51	239.38
	Zydus	51	272.89
	GNFC	33	263.51
	FAG	48	190.46
	Total	508	
Using ERP system fits well with the way I like to work.	ABC	51	196.00
	Apollo	51	293.61
	Aventis	51	237.82
	CEAT	61	229.75
	GSFC	60	263.47
	L&T	51	279.42
	Linde	51	267.32
	Zydus	51	297.57
	GNFC	33	251.45
	FAG	48	228.46
	Total	508	
Using ERP system fits into my work style.	ABC	51	203.20
	Apollo	51	295.28
	Aventis	51	265.37
	CEAT	61	238.74
	GSFC	60	260.62
	L&T	51	261.30
	Linde	51	221.77
	Zydus	51	293.15
	GNFC	33	262.98
	FAG	48	242.92
	Total	508	
Using the ERP system is a	ABC	51	175.38

good idea.	Apollo	51	277.57
	Aventis	51	244.10
	CEAT	61	225.48
	GSFC	60	284.56
	L&T	51	321.89
	Linde	51	239.96
	Zydus	51	251.43
	GNFC	33	295.53
	FAG	48	230.71
	Total	508	
I like the idea of using the ERP system to perform my job.	ABC	51	197.47
	Apollo	51	231.05
	Aventis	51	246.15
	CEAT	61	226.75
	GSFC	60	285.94
	L&T	51	320.01
	Linde	51	247.76
	Zydus	51	270.81
	GNFC	33	300.01
	FAG	48	220.82
Total	508		
I would rate the intensity of my job-related system use to be:	ABC	51	107.86
	Apollo	51	318.78
	Aventis	51	313.29
	CEAT	61	271.36
	GSFC	60	291.86
	L&T	51	251.36
	Linde	51	239.15
	Zydus	51	256.69
	GNFC	33	243.76
	FAG	48	250.46
Total	508		
Using most of the features of the ERP solution?	ABC	51	212.98
	Apollo	51	334.95
	Aventis	51	349.28
	CEAT	61	285.13
	GSFC	60	253.73
	L&T	51	149.86
	Linde	51	206.80
	Zydus	51	269.41

	GNFC	33	261.51
	FAG	48	221.62
	Total	508	
Using more features than the other users of the ERP solution?	ABC	51	183.72
	Apollo	51	343.57
	Aventis	51	362.52
	CEAT	61	300.29
	GSFC	60	315.16
	L&T	51	144.37
	Linde	51	188.08
	Zydus	51	263.82
	GNFC	33	239.19
	FAG	48	203.68
	Total	508	
	Using more obscure aspects of the ERP solution?	ABC	51
Apollo		51	338.86
Aventis		51	351.13
CEAT		61	324.12
GSFC		60	270.75
L&T		51	150.13
Linde		51	169.66
Zydus		51	261.80
GNFC		33	243.91
FAG		48	257.92
Total		508	

**TABLE 5.32 Non-Parametric Test: ERP Use and Company**

	Chi-Square	df	Asymp. Sig.
If there was no one around to tell me what to do as I go.	82.433	9	<b>.000</b>
If I had only the software manuals or/and the build-in help for assistance.	52.540	9	<b>.000</b>
If I could call someone for help if I got stuck.	67.094	9	<b>.000</b>
If I had a lot of time to complete the job for which the software was provided.	22.805	9	<b>.007</b>

If I hear about a new IT, I would look for ways to experiment with it.	90.753	9	.000
Among my peers I am usually the first to try out new IT.	36.152	9	.000
I like to experiment with new IT.	51.287	9	.000
Working with a computer makes me nervous.	13.225	9	.153
I get a sinking feeling when I think of trying to use a computer.	28.146	9	.001
I feel comfortable working with a computer.	58.200	9	.000
The ERP system provides the precise information I need.	97.572	9	.000
The information contents provided by the ERP system meet my needs.	60.219	9	.000
The ERP system provides reports that seem to be exactly what I need.	65.996	9	.000
The ERP system provides sufficient information to my needs.	37.803	9	.000
The ERP system provides complete features I need.	31.693	9	.000
I am satisfied with the speed of interacting with the system.	66.882	9	.000
It is easy to detect and correct possible errors in the ERP system.	25.331	9	.003
It is easy to change the output format.	34.106	9	.000
It is fast to search data in the ERP system.	53.424	9	.000
The ERP system loads quickly.	24.079	9	.004
The system reliably handles my queries.	44.201	9	.000

I was able to retrieve data quickly.	21.364	9	.011
It is fast to create a new record (vendor, customer etc.) in this system.	17.193	9	.046
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	68.525	9	.000
The ERP system is subject to frequent system problems and crashes.	53.377	9	.000
The description of the functions /commands displayed on screen is clear to me.	21.905	9	.009
The function / commands names of the ERP system are easy to remember.	37.282	9	.000
The exact definition of data fields relating to my tasks is easy to find out.	37.091	9	.000
The content and index of the user manuals are useful.	35.144	9	.000
The user manuals are current (up to date).	39.310	9	.000
The user manuals are complete.	27.592	9	.001
The user manuals are easy to understand and follow.	36.056	9	.000
My supervisor is very supportive of the use of the ERP system for my job.	107.558	9	.000
The organization has supported the use of the ERP system.	57.088	9	.000
People who influence my behaviour think that I should use the ERP system.	25.302	9	.003



People who are important to me think that I should use the ERP system.	42.134	9	.000
The ERP solution fits well with the business needs of me.	52.114	9	.000
The ERP solution fits well with the business need of my department.	28.125	9	.001
The ERP system is satisfactory in meeting my needs.	34.046	9	.000
I believe there are some important problems with the way the ERP system is managed	55.025	9	.000
The system maintenance and the way it is provided meet my need adequately.	32.665	9	.000
There is not enough training for me on how to find, understand, access or use the ERP system.	86.150	9	.000
I have received additional formal training for ERP since the conclusion of the above training.	54.383	9	.000
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	46.831	9	.000
I feel that I need additional ERP training to complete my current job tasks.	53.329	9	.000
I do not know who to phone for support for this application.	34.499	9	.000
The support people talk in terms that I do not understand.	60.814	9	.000
I ask other users for help with this application rather than the support staff.	88.792	9	.000

The support for this application is inadequate.	70.553	9	.000
The ERP team does not provide feedback regarding users' requests to modify this application.	60.513	9	.000
The ERP team did not inform me about the current situation of this application.	104.662	9	.000
The ERP team did not explain how application modifications would impact my job.	68.864	9	.000
Using ERP solution in my job enables me to accomplish tasks more quickly.	85.496	9	.000
Using ERP solution improves my job performance.	57.659	9	.000
Using ERP solution enhances my effectiveness on the job.	52.519	9	.000
Using ERP solution makes it easier to do my job.	46.108	9	.000
I find ERP solution useful in my job.	104.020	9	.000
My interaction with ERP solution is clear and understandable.	30.704	9	.000
Interacting with ERP solution does not require a lot of my mental effort.	26.736	9	.002
I find ERP solution is easy to use.	4.469	9	.878
I find it easy to get ERP solution to do what I want it to do.	33.660	9	.000
Using ERP system is compatible with all aspects of my work.	26.872	9	.001
Using ERP system fits well with the way I like to work.	24.042	9	.004

Using ERP system fits into my work style.	19.445	9	.022
Using the ERP system is a good idea.	40.765	9	.000
I like the idea of using the ERP system to perform my job.	35.025	9	.000
I would rate the intensity of my job-related system use to be:	78.268	9	.000
Using most of the features of the ERP solution?	81.792	9	.000
Using more features than the other users of the ERP solution?	124.362	9	.000
Using more obscure aspects of the ERP solution?	113.078	9	.000

a. Kruskal Wallis Test

b. Grouping Variable: Company

### **Interpretation:-**

- **As p-value of all the statements** except “Working with a computer makes me nervous” and “I find ERP solution is easy to use” **is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of Company on all statements except those statements mentioned above.**
- As the mean rank of the statement “I could complete the job using ERP, if there was no one around to tell me what to do as I go” in case of users from Zydus Pharma is 317.25 and users from ABC Bearing is 111.12, we can interpret that users from Zydus Pharma could complete the job using ERP system, if there was no one around to tell them what to do as they go than those from ABC Bearing.
- As the mean rank of the statement “I could complete the job using ERP, if I had only the software manuals or/and the build-in help for assistance” in case of users from Aventis is 305.35 and users from ABC Bearing is 151.06, we can interpret that users from Aventis could complete the job using ERP system, if they had only the software manuals or/and the build-in help for assistance than those from ABC Bearing.

- As the mean rank of the statement “I could complete the job using ERP, if I could call someone for help if I got stuck” in case of users from L&T is 324.72 and users from ABC Bearing is 132.60, we can interpret that users from L&T could complete the job using ERP system, if they could call someone for help if they got stuck than those from ABC Bearing.
- As the mean rank of the statement “I could complete the job using ERP, if I had a lot of time to complete the job for which the software was provided” in case of users from CEAT Tyres is 300.85 and users from GNFC is 214.39, we can interpret that users from CEAT could complete the job using ERP system, if they had a lot of time to complete the job for which the software was provided than those from GNFC.
- As the mean rank of the statement “If I hear about a new IT, I would look for ways to experiment with it” in case of users from GSFC is 303.89 and users from ABC Bearing is 106.38, we can interpret that users from GSFC would look for ways to experiment with IT, when they hear about a new IT than those from ABC Bearing.
- As the mean rank of the statement “Among my peers I am usually the first to try out new IT” in case of users from Zydus Pharma is 306.75 and users from Linde Engg is 172.47, we can interpret that users from Zydus Pharma among their peers are usually the first to try out new IT than those from Linde Engg.
- As the mean rank of the statement “I like to experiment with new IT” in case of users from Apollo Tyres is 309.73 and users from ABC Bearing is 150.55, we can interpret that users from Apollo Tyres like to experiment with new IT than those from ABC Bearing.
- As the mean rank of the statement “I get a sinking feeling when I think of trying to use a computer” in case of users from ABC Bearing is 317.22 and users from L&T is 207.82, we can interpret that users from ABC Bearing get a sinking feeling when they think of trying to use a computer than those from L&T.
- As the mean rank of the statement “I feel comfortable working with a computer” in case of users from GNFC is 327.28 and users from ABC Bearing is 165.45, we can interpret that users from GNFC feel comfortable working with a computer than those from ABC Bearing.

- As the mean rank of the statement “The ERP system provides the precise information I need” in case of users from L&T is 338.27 and users from ABC Bearing is 100.44, we can interpret that users from L&T feel that the ERP system provides the precise information they need than those from ABC Bearing.
- As the mean rank of the statement “The information contents provided by the ERP system meet my needs” in case of users from L&T is 314.21 and users from ABC Bearing is 140.28, we can interpret that users from L&T feel that the information contents provided by the ERP system meet their needs than those from ABC Bearing.
- As the mean rank of the statement “The ERP system provides reports that seem to be exactly what I need” in case of users from L&T is 315.58 and users from ABC Bearing is 112.09, we can interpret that users from L&T feel that the ERP system provides reports that seem to be exactly what they need than those from ABC Bearing.
- As the mean rank of the statement “The ERP system provides sufficient information to my needs” in case of users from GSFC is 298.19 and users from Linde Engg is 170.39, we can interpret that users from GSFC feel that the ERP system provides sufficient information to their needs than those from Linde Engg.
- As the mean rank of the statement “The ERP system provides complete features I need” in case of users from CEAT Tyres is 313.95 and users from L&T is 209.73, we can interpret that users from CEAT Tyres feel that the ERP system provides complete features they need than those from ABC Bearing.
- As the mean rank of the statement “I am satisfied with the speed of interacting with the system” in case of users from L&T is 316.15 and users from ABC Bearing is 156.23, we can interpret that users from L&T are satisfied with the speed of interacting with the ERP system than those from ABC Bearing.
- As the mean rank of the statement “It is easy to detect and correct possible errors in the ERP system” in case of users from L&T is 290.87 and users from ABC Bearing is 203.60, we can interpret that users from L&T feel that is easy to detect and correct possible errors in the ERP system than those from ABC Bearing.
- As the mean rank of the statement “It is easy to change the output format” in case

of users from Apollo Tyres is 301.75 and users from ABC Bearing is 170.30, we can interpret that users from Apollo Tyres feel that it is easy to change the output format than those from ABC Bearing.

- As the mean rank of the statement “It is fast to search data in the ERP system” in case of users from GSFC is 316.85 and users from ABC Bearing is 150.21, we can interpret that users from GSFC feel that it is fast to search data in the ERP system than those from ABC Bearing.
- As the mean rank of the statement “The ERP system loads quickly” in case of users from Apollo Tyres is 287.62 and users from Linde Engg is 203.50, we can interpret that users from Apollo Tyres feel that the ERP system loads quickly than those from Linde Engg.
- As the mean rank of the statement “The system reliably handles my queries” in case of users from Linde Engg is 316.73 and users from ABC Bearing is 160.87, we can interpret that users from Linde Engg feel that the ERP system reliably handles their queries than those from ABC Bearing.
- As the mean rank of the statement “I was able to retrieve data quickly” in case of users from GSFC is 300.11 and users from ABC Bearing is 223.58, we can interpret that users from GSFC were able to retrieve data quickly than those from ABC Bearing.
- As the mean rank of the statement “It is fast to create a new record (vendor, customer etc.) in this system” in case of users from GSFC is 308.85 and users from Linde Engg is 211.09, we can interpret that users from GSFC feel that it is fast to create a new record (vendor, customer etc.) in this system than those from Linde Engg.
- As the mean rank of the statement “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work” in case of users from L&T is 323.15 and users from CEAT Tyres is 161.24, we can interpret that users from L&T feel that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than those from CEAT Tyres.
- As the mean rank of the statement “The ERP system is subject to frequent system

problems and crashes” in case of users from L&T is 328.07 and users from Apollo Tyres is 187.96, we can interpret that users from L&T feel that the ERP system is subject to frequent system problems and crashes than those from Apollo Tyres.

- As the mean rank of the statement “The description of the functions /commands displayed on screen is clear to me” in case of users from Aventis is 290.79 and users from ABC Bearing is 195.10, we can interpret that users from Aventis feel that the description of the functions /commands displayed on screen is clear to them than those from ABC Bearing.
- As the mean rank of the statement “The function / commands names of the ERP system are easy to remember” in case of users from Aventis is 322.24 and users from L&T is 207.16, we can interpret that users from Aventis feel that the function / commands names of the ERP system are easy to remember than those from L&T.
- As the mean rank of the statement “The exact definition of data fields relating to my tasks is easy to find out” in case of users from Apollo Tyres is 334.62 and users from FAG Bearing is 211.69, we can interpret that users from Apollo Tyres feel that the exact definition of data fields relating to their tasks is easy to find out than those from FAG Bearing.
- As the mean rank of the statement “The content and index of the user manuals are useful” in case of users from Aventis is 301.16 and users from ABC Bearing is 163.95, we can interpret that users from Aventis feel that the content and index of the user manuals are useful than those from ABC Bearing.
- As the mean rank of the statement “The user manuals are current (up to date)” in case of users from L&T is 328.55 and users from ABC Bearing is 186.79, we can interpret that users from L&T feel that the user manuals are current (up to date) than those from ABC Bearing.
- As the mean rank of the statement “The user manuals are complete” in case of users from L&T is 309.77 and users from ABC Bearing is 197.02, we can interpret that users from L&T feel that the user manuals are current (up to date) than those from ABC Bearing.
- As the mean rank of the statement “The user manuals are easy to understand and

follow” in case of users from L&T is 285.71 and users from Linde Engg is 168.81, we can interpret that users from L&T feel that the user manuals are easy to understand and follow than those from ABC Bearing.

- As the mean rank of the statement “My supervisor is very supportive of the use of the ERP system for my job” in case of users from GNFC is 317.30 and users from ABC Bearing is 77.28, we can interpret that users from GNFC feel that their supervisor is very supportive of the use of the ERP system for their job than those from ABC Bearing.
- As the mean rank of the statement “The organization has supported the use of the ERP system” in case of users from GNFC is 321.36 and users from ABC Bearing is 142.55, we can interpret that users from GNFC feel that the organization has supported the use of the ERP system than those from ABC Bearing.
- As the mean rank of the statement “People who influence my behaviour think that I should use the ERP system” in case of users from GSFC is 305.46 and users from ABC Bearing is 206.75, we can interpret that users from GSFC feel that people who influence their behaviour think that they should use the ERP system than those from ABC Bearing.
- As the mean rank of the statement “People who are important to me think that I should use the ERP system” in case of users from L&T is 309.72 and users from Zydus Pharma is 173.96, we can interpret that users from L&T feel that people who are important to them think that they should use the ERP system than those from ABC Bearing.
- As the mean rank of the statement “The ERP solution fits well with the business needs of me” in case of users from GSFC is 316.63 and users from ABC Bearing is 157.69, we can interpret that users from GSFC feel that the ERP solution fits well with the their business needs than those from ABC Bearing.
- As the mean rank of the statement “The ERP solution fits well with the business need of my department” in case of users from GNFC is 296.85 and users from ABC Bearing is 162.48, we can interpret that users from GNFC feel that the ERP solution fits well with the business need of their department than those from ABC Bearing.



- As the mean rank of the statement “The ERP system is satisfactory in meeting my needs” in case of users from GSFC is 326.82 and users from L&T is 220.30, we can interpret that users from GSFC feel that the ERP system is satisfactory in meeting their needs than those from L&T.
- As the mean rank of the statement “I believe there are some important problems with the way the ERP system is managed and made available that make it harder to do my job” in case of users from Aventis is 320.94 and users from ABC Bearing is 176.81, we can interpret that users from Aventis believe that there are some important problems with the way the ERP system is managed and made available that make it harder to do their job than those from ABC Bearing.
- As the mean rank of the statement “The system maintenance and the way it is provided meet my need adequately” in case of users from GSFC is 304.31 and users from ABC Bearing is 181.99, we can interpret that users from GSFC feel that the system maintenance and the way it is provided meet their need adequately than those from ABC Bearing.
- As the mean rank of the statement “There is not enough training for me on how to find, understand, access or use the ERP system” in case of users from Apollo Tyres is 354.69 and users from ABC Bearing is 152.57, we can interpret that users from Apollo Tyres feel that there is not enough training for them on how to find, understand, access or use the ERP system than those from ABC Bearing.
- As the mean rank of the statement “I have received additional formal training for ERP since the conclusion of the above training” in case of users from CEAT Tyres is 312.26 and users from Linde Engg is 162.48, we can interpret that users from CEAT Tyres have received additional formal training for ERP since the conclusion of the above training than those from Linde Engg.
- As the mean rank of the statement “I have received informal training (e.g. half hour of support from a peer or training officer) for ERP” in case of users from Apollo Tyres is 307.37 and users from Linde Engg is 168.47, we can interpret that users from Apollo Tyres have received informal training (e.g. half hour of support from a peer or training officer) for ERP than those from Linde Engg.
- As the mean rank of the statement “I feel that I need additional ERP training to complete my current job tasks” in case of users from CEAT Tyres is 335.44 and

users from Zydus Pharma is 162.44, we can interpret that users from CEAT Tyres feel that they need additional ERP training to complete their current job tasks than those from Zydus Pharma.

- As the mean rank of the statement “I do not know who to phone for support for this application” in case of users from GSFC is 306.86 and users from CEAT Tyres is 195.56, we can interpret that users from GSFC do not know who to phone for support for this application than those from CEAT Tyres.
- As the mean rank of the statement “The support people talk in terms that I do not understand” in case of users from ABC Bearing is 320.62 and users from CEAT Tyres is 155.27, we can interpret that users from ABC Bearing feel that the support people talk in terms that they do not understand than those from CEAT Tyres.
- As the mean rank of the statement “I ask other users for help with this application rather than the support staff” in case of users from Linde Engg is 376.31 and users from Aventis is 179.39, we can interpret that users from Linde Engg ask other users for help with this application rather than the support staff than those from Aventis.
- As the mean rank of the statement “The support for this application is inadequate” in case of users from Linde Engg is 345.68 and users from CEAT Tyres is 174.65 we can interpret that users from Linde Engg feel that the support for ERP application is inadequate than those from CEAT Tyres.
- As the mean rank of the statement “The ERP team does not provide feedback regarding users’ requests to modify this application” in case of users from L&T is 327.69 and users from ABC Bearing is 187.86, we can interpret that users from L&T feel that the ERP team does not provide feedback regarding users’ requests to modify ERP application than those from ABC Bearing.
- As the mean rank of the statement “The ERP team did not inform me about the current situation of this application” in case of users from ABC Bearing is 373.95 and users from CEAT Tyres is 164.52, we can interpret that users from ABC Bearing feel that the ERP team did not inform them about the current situation of ERP application than those from CEAT Tyres.

- As the mean rank of the statement “The ERP team did not explain how application modifications would impact my job” in case of users from Linde Engg is 346.25 and users from Apollo Tyres is 174.55, we can interpret that users from Linde Engg feel that the ERP team did not explain how application modifications would impact their job than those from Apollo Tyres.
- As the mean rank of the statement “Using ERP solution in my job enables me to accomplish tasks more quickly” in case of users from GSFC is 315.60 and users from ABC Bearing is 101.94, we can interpret that users from GSFC feel that using ERP solution in their job enables them to accomplish tasks more quickly than those from ABC Bearing.
- As the mean rank of the statement “Using ERP solution improves my job performance” in case of users from L&T is 344.27 and users from ABC Bearing is 146.05, we can interpret that users from L&T feel that using ERP solution improves their job performance than those from ABC Bearing.
- As the mean rank of the statement “Using ERP solution enhances my effectiveness on the job” in case of users from L&T is 323.40 and users from ABC Bearing is 155.75, we can interpret that users from L&T feel that using ERP solution enhances their effectiveness on the job than those from ABC Bearing.
- As the mean rank of the statement “Using ERP solution makes it easier to do my job” in case of users from GSFC is 310.00 and users from Linde Engg is 180.81, we can interpret that users from GSFC feel that using ERP solution makes it easier to do their job than those from Linde Engg.
- As the mean rank of the statement “I find ERP solution useful in my job” in case of users from L&T is 324.71 and users from ABC Bearing is 92.16, we can interpret that users from L&T find ERP solution useful in their job than those from ABC Bearing.
- As the mean rank of the statement “My interaction with ERP solution is clear and understandable” in case of users from Zydus Pharma is 311.15 and users from ABC Bearing is 194.83, we can interpret that users from Zydus Pharma feel that their interaction with ERP solution is clear and understandable than those from ABC Bearing.

- As the mean rank of the statement “Interacting with ERP solution does not require a lot of my mental effort” in case of users from Zydus Pharma is 312.95 and users from FAG Bearing is 204.72, we can interpret that users from Zydus Pharma feel that interacting with ERP solution does not require a lot of their mental effort than those from FAG Bearing.
- As the mean rank of the statement “I find it easy to get ERP solution to do what I want it to do” in case of users from CEAT Tyres is 316.50 and users from Linde Engg is 170.14, we can interpret that users from CEAT Tyres find it easy to get ERP solution to do what they want it to do those from Linde Engg.
- As the mean rank of the statement “Using ERP system is compatible with all aspects of my work” in case of users from Apollo Tyres is 295.30 and users from FAG Bearing is 190.46, we can interpret that users from Apollo Tyres feel that using ERP system is compatible with all aspects of their work than those from FAG Bearing.
- As the mean rank of the statement “Using ERP system fits well with the way I like to work” in case of users from Zydus Pharma is 297.57 and users from ABC Bearing is 196.00, we can interpret that users from Zydus Pharma feel that using ERP system fits well with the way they like to work than those from ABC Bearing.
- As the mean rank of the statement “Using ERP system fits into my work style” in case of users from Apollo Tyres is 295.28 and users from ABC Bearing is 203.20, we can interpret that users from Apollo Tyres feel that using ERP system fits into their work style than those from ABC Bearing.
- As the mean rank of the statement “Using the ERP system is a good idea” in case of users from L&T is 321.89 and users from ABC Bearing is 175.38, we can interpret that users from L&T feel that using the ERP system is a good idea than those from ABC Bearing.
- As the mean rank of the statement “I like the idea of using the ERP system to perform my job” in case of users from L&T is 320.01 and users from ABC Bearing is 197.47, we can interpret that users from L&T like the idea of using the ERP system to perform their job than those from ABC Bearing.

- As the mean rank of the statement “I would rate the intensity of my job-related system use to be” in case of users from Apollo Tyres is 318.78 and users from ABC Bearing is 107.86, we can interpret that users from Apollo Tyres rate their intensity of their job-related system to be more than those from ABC Bearing.
- As the mean rank of the statement “Likelihood of you using most of the features of the ERP solution” in case of users from Aventis is 349.28 and users from L&T is 149.86, we can interpret that users from Aventis have more likelihood of using most of the features of the ERP solution than those from L&T.
- As the mean rank of the statement “Likelihood of you using more features than the other users of the ERP solution” in case of users from Apollo Tyres is 343.57 and users from L&T is 144.37, we can interpret that users from Apollo Tyres have more likelihood of using more features than the other users of the ERP solution compared to the users from L&T.
- As the mean rank of the statement “Likelihood of you using more obscure aspects of the ERP solution” in case of users from Aventis is 351.13 and users from L&T is 150.13, we can interpret that users from Aventis have more likelihood of using more obscure aspects of the ERP solution compared to the users from L&T.

**Hypothesis:**

**H<sub>0</sub>:** There is no significant effect of **Sector of respondent** on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**H<sub>1</sub>:** There is significant effect of Sector of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution.

**Kruskal-Wallis Test****TABLE 5.33 Mean Ranks: ERP Use and Sector**

	Sector	N	Mean Rank
If there was no one around to tell me what to do as I go.	Chemical Companies	93	266.88
	Bearing Companies	99	167.55
	Engineering Companies	102	238.22
	Pharma Companies	102	313.48
	Tyre Companies	112	282.19
	Total	508	
If I had only the software manuals or/and the build-in help for assistance.	Chemical Companies	93	292.08
	Bearing Companies	99	177.38
	Engineering Companies	102	264.04
	Pharma Companies	102	280.12
	Tyre Companies	112	259.44
	Total	508	
If I could call someone for help if I got stuck.	Chemical Companies	93	291.45
	Bearing Companies	99	180.58
	Engineering Companies	102	300.51
	Pharma Companies	102	232.88
	Tyre Companies	112	266.94
	Total	508	
If I had a lot of time to complete the job for which the software was provided.	Chemical Companies	93	228.20
	Bearing Companies	99	232.70
	Engineering Companies	102	253.12
	Pharma Companies	102	253.90
	Tyre Companies	112	297.41
	Total	508	
If I hear about a new IT, I would look for ways to	Chemical Companies	93	300.44
	Bearing Companies	99	174.34

experiment with it.	Engineering Companies	102	212.58
	Pharma Companies	102	285.60
	Tyre Companies	112	297.07
	Total	508	
Among my peers I am usually the first to try out new IT.	Chemical Companies	93	248.37
	Bearing Companies	99	224.66
	Engineering Companies	102	225.13
	Pharma Companies	102	288.31
	Tyre Companies	112	281.92
	Total	508	
I like to experiment with new IT.	Chemical Companies	93	256.15
	Bearing Companies	99	194.13
	Engineering Companies	102	247.20
	Pharma Companies	102	275.11
	Tyre Companies	112	294.37
	Total	508	
Working with a computer makes me nervous.	Chemical Companies	93	221.96
	Bearing Companies	99	277.82
	Engineering Companies	102	255.00
	Pharma Companies	102	240.26
	Tyre Companies	112	273.42
	Total	508	
I get a sinking feeling when I think of trying to use a computer.	Chemical Companies	93	209.58
	Bearing Companies	99	309.84
	Engineering Companies	102	233.77
	Pharma Companies	102	237.13
	Tyre Companies	112	277.58
	Total	508	
I feel comfortable working with a computer.	Chemical Companies	93	331.87
	Bearing Companies	99	193.88
	Engineering Companies	102	289.83
	Pharma Companies	102	239.61
	Tyre Companies	112	225.21
	Total	508	
The ERP system provides the precise information I need.	Chemical Companies	93	283.69
	Bearing Companies	99	152.07
	Engineering Companies	102	281.63
	Pharma Companies	102	285.70
	Tyre Companies	112	267.68
	Total	508	

The information contents provided by the ERP system meet my needs.	Chemical Companies	93	293.48
	Bearing Companies	99	191.80
	Engineering Companies	102	256.46
	Pharma Companies	102	258.53
	Tyre Companies	112	272.10
	Total	508	
The ERP system provides reports that seem to be exactly what I need.	Chemical Companies	93	267.92
	Bearing Companies	99	179.30
	Engineering Companies	102	284.96
	Pharma Companies	102	262.69
	Tyre Companies	112	274.62
	Total	508	
The ERP system provides sufficient information to my needs.	Chemical Companies	93	295.73
	Bearing Companies	99	224.41
	Engineering Companies	102	219.09
	Pharma Companies	102	263.42
	Tyre Companies	112	270.98
	Total	508	
The ERP system provides complete features I need.	Chemical Companies	93	273.03
	Bearing Companies	99	218.91
	Engineering Companies	102	213.93
	Pharma Companies	102	274.00
	Tyre Companies	112	289.76
	Total	508	
I am satisfied with the speed of interacting with the system.	Chemical Companies	93	303.06
	Bearing Companies	99	204.35
	Engineering Companies	102	244.08
	Pharma Companies	102	268.13
	Tyre Companies	112	255.59
	Total	508	
It is easy to detect and correct possible errors in the ERP system.	Chemical Companies	93	273.91
	Bearing Companies	99	240.70
	Engineering Companies	102	247.59
	Pharma Companies	102	248.15
	Tyre Companies	112	262.66
	Total	508	
It is easy to change the output format.	Chemical Companies	93	220.19
	Bearing Companies	99	230.14
	Engineering Companies	102	269.09
	Pharma Companies	102	254.83



	Tyre Companies	112	290.93
	Total	508	
It is fast to search data in the ERP system.	Chemical Companies	93	305.14
	Bearing Companies	99	192.20
	Engineering Companies	102	235.62
	Pharma Companies	102	284.69
	Tyre Companies	112	257.22
	Total	508	
The ERP system loads quickly.	Chemical Companies	93	263.38
	Bearing Companies	99	218.64
	Engineering Companies	102	240.98
	Pharma Companies	102	282.92
	Tyre Companies	112	265.26
	Total	508	
The system reliably handles my queries.	Chemical Companies	93	277.46
	Bearing Companies	99	197.77
	Engineering Companies	102	305.75
	Pharma Companies	102	236.80
	Tyre Companies	112	255.03
	Total	508	
I was able to retrieve data quickly.	Chemical Companies	93	291.54
	Bearing Companies	99	233.47
	Engineering Companies	102	253.59
	Pharma Companies	102	234.52
	Tyre Companies	112	261.36
	Total	508	
It is fast to create a new record (vendor, customer etc.) in this system.	Chemical Companies	93	306.94
	Bearing Companies	99	255.50
	Engineering Companies	102	229.48
	Pharma Companies	102	245.88
	Tyre Companies	112	240.71
	Total	508	
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	Chemical Companies	93	327.98
	Bearing Companies	99	230.01
	Engineering Companies	102	301.88
	Pharma Companies	102	238.68
	Tyre Companies	112	186.39
	Total	508	
The ERP system is subject to frequent system problems	Chemical Companies	93	273.19
	Bearing Companies	99	256.92

and crashes.	Engineering Companies	102	313.46
	Pharma Companies	102	241.51
	Tyre Companies	112	194.96
	Total	508	
The description of the functions /commands displayed on screen is clear to me.	Chemical Companies	93	265.70
	Bearing Companies	99	226.79
	Engineering Companies	102	236.28
	Pharma Companies	102	270.25
	Tyre Companies	112	271.95
Total	508		
The function / commands names of the ERP system are easy to remember.	Chemical Companies	93	245.42
	Bearing Companies	99	236.38
	Engineering Companies	102	208.21
	Pharma Companies	102	297.82
	Tyre Companies	112	280.77
Total	508		
The exact definition of data fields relating to my tasks is easy to find out.	Chemical Companies	93	223.74
	Bearing Companies	99	238.54
	Engineering Companies	102	223.09
	Pharma Companies	102	292.12
	Tyre Companies	112	288.50
Total	508		
The content and index of the user manuals are useful.	Chemical Companies	93	242.35
	Bearing Companies	99	212.67
	Engineering Companies	102	283.83
	Pharma Companies	102	269.07
	Tyre Companies	112	261.58
Total	508		
The user manuals are current (up to date).	Chemical Companies	93	246.26
	Bearing Companies	99	210.71
	Engineering Companies	102	287.21
	Pharma Companies	102	257.05
	Tyre Companies	112	267.93
Total	508		
The user manuals are complete.	Chemical Companies	93	235.48
	Bearing Companies	99	221.98
	Engineering Companies	102	280.54
	Pharma Companies	102	252.68
	Tyre Companies	112	276.97
Total	508		

The user manuals are easy to understand and follow.	Chemical Companies	93	246.12
	Bearing Companies	99	245.15
	Engineering Companies	102	227.26
	Pharma Companies	102	274.96
	Tyre Companies	112	275.90
	Total	508	
My supervisor is very supportive of the use of the ERP system for my job.	Chemical Companies	93	310.17
	Bearing Companies	99	146.39
	Engineering Companies	102	296.91
	Pharma Companies	102	265.36
	Tyre Companies	112	255.33
	Total	508	
The organization has supported the use of the ERP system.	Chemical Companies	93	319.99
	Bearing Companies	99	193.40
	Engineering Companies	102	274.86
	Pharma Companies	102	256.74
	Tyre Companies	112	233.55
	Total	508	
People who influence my behaviour think that I should use the ERP system.	Chemical Companies	93	295.72
	Bearing Companies	99	226.68
	Engineering Companies	102	251.38
	Pharma Companies	102	250.65
	Tyre Companies	112	251.21
	Total	508	
People who are important to me think that I should use the ERP system.	Chemical Companies	93	279.41
	Bearing Companies	99	248.49
	Engineering Companies	102	251.06
	Pharma Companies	102	217.69
	Tyre Companies	112	275.78
	Total	508	
The ERP solution fits well with the business needs of me.	Chemical Companies	93	316.34
	Bearing Companies	99	188.85
	Engineering Companies	102	230.42
	Pharma Companies	102	269.75
	Tyre Companies	112	269.23
	Total	508	
The ERP solution fits well with the business need of my department.	Chemical Companies	93	285.47
	Bearing Companies	99	211.72
	Engineering Companies	102	261.40
	Pharma Companies	102	260.50

	Tyre Companies	112	254.85
	Total	508	
The ERP system is satisfactory in meeting my needs.	Chemical Companies	93	321.70
	Bearing Companies	99	224.72
	Engineering Companies	102	220.36
	Pharma Companies	102	248.42
	Tyre Companies	112	261.65
	Total	508	
I believe there are some important problems with the way the ERP system is managed	Chemical Companies	93	263.10
	Bearing Companies	99	204.74
	Engineering Companies	102	205.11
	Pharma Companies	102	283.90
	Tyre Companies	112	309.55
	Total	508	
The system maintenance and the way it is provided meet my need adequately.	Chemical Companies	93	287.20
	Bearing Companies	99	222.50
	Engineering Companies	102	256.26
	Pharma Companies	102	236.92
	Tyre Companies	112	270.04
	Total	508	
There is not enough training for me on how to find, understand, access or use the ERP system.	Chemical Companies	93	242.68
	Bearing Companies	99	175.64
	Engineering Companies	102	239.19
	Pharma Companies	102	246.07
	Tyre Companies	112	355.65
	Total	508	
I have received additional formal training for ERP since the conclusion of the above training.	Chemical Companies	93	250.90
	Bearing Companies	99	264.99
	Engineering Companies	102	179.00
	Pharma Companies	102	256.08
	Tyre Companies	112	315.53
	Total	508	
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	Chemical Companies	93	260.38
	Bearing Companies	99	237.26
	Engineering Companies	102	212.75
	Pharma Companies	102	250.45
	Tyre Companies	112	306.58
	Total	508	
I feel that I need additional ERP training to complete my	Chemical Companies	93	258.78
	Bearing Companies	99	234.21

current job tasks.	Engineering Companies	102	275.40
	Pharma Companies	102	189.43
	Tyre Companies	112	309.11
	Total	508	
I do not know who to phone for support for this application.	Chemical Companies	93	285.54
	Bearing Companies	99	255.79
	Engineering Companies	102	254.30
	Pharma Companies	102	251.07
	Tyre Companies	112	230.88
	Total	508	
The support people talk in terms that I do not understand.	Chemical Companies	93	268.04
	Bearing Companies	99	308.55
	Engineering Companies	102	255.33
	Pharma Companies	102	245.03
	Tyre Companies	112	203.35
	Total	508	
I ask other users for help with this application rather than the support staff.	Chemical Companies	93	261.15
	Bearing Companies	99	251.33
	Engineering Companies	102	362.11
	Pharma Companies	102	187.67
	Tyre Companies	112	214.64
	Total	508	
The support for this application is inadequate.	Chemical Companies	93	271.75
	Bearing Companies	99	287.66
	Engineering Companies	102	324.36
	Pharma Companies	102	212.26
	Tyre Companies	112	185.71
	Total	508	
The ERP team does not provide feedback regarding users' requests to modify this application.	Chemical Companies	93	287.38
	Bearing Companies	99	212.42
	Engineering Companies	102	327.32
	Pharma Companies	102	239.12
	Tyre Companies	112	212.08
	Total	508	
The ERP team did not inform me about the current situation of this application.	Chemical Companies	93	254.42
	Bearing Companies	99	312.77
	Engineering Companies	102	304.08
	Pharma Companies	102	241.58
	Tyre Companies	112	169.67
	Total	508	

The ERP team did not explain how application modifications would impact my job.	Chemical Companies	93	262.36
	Bearing Companies	99	275.10
	Engineering Companies	102	325.47
	Pharma Companies	102	236.86
	Tyre Companies	112	181.21
	Total	508	
Using ERP solution in my job enables me to accomplish tasks more quickly.	Chemical Companies	93	307.77
	Bearing Companies	99	164.80
	Engineering Companies	102	276.32
	Pharma Companies	102	279.92
	Tyre Companies	112	246.53
	Total	508	
Using ERP solution improves my job performance.	Chemical Companies	93	281.92
	Bearing Companies	99	185.27
	Engineering Companies	102	291.84
	Pharma Companies	102	263.78
	Tyre Companies	112	250.47
	Total	508	
Using ERP solution enhances my effectiveness on the job.	Chemical Companies	93	295.02
	Bearing Companies	99	181.90
	Engineering Companies	102	284.59
	Pharma Companies	102	257.51
	Tyre Companies	112	254.88
	Total	508	
Using ERP solution makes it easier to do my job.	Chemical Companies	93	301.03
	Bearing Companies	99	205.63
	Engineering Companies	102	236.43
	Pharma Companies	102	257.54
	Tyre Companies	112	272.75
	Total	508	
I find ERP solution useful in my job.	Chemical Companies	93	303.06
	Bearing Companies	99	144.58
	Engineering Companies	102	289.26
	Pharma Companies	102	277.52
	Tyre Companies	112	258.71
	Total	508	
My interaction with ERP solution is clear and understandable.	Chemical Companies	93	282.86
	Bearing Companies	99	221.65
	Engineering Companies	102	220.36
	Pharma Companies	102	282.35

	Tyre Companies	112	265.72
	Total	508	
Interacting with ERP solution does not require a lot of my mental effort.	Chemical Companies	93	253.75
	Bearing Companies	99	211.74
	Engineering Companies	102	231.09
	Pharma Companies	102	300.68
	Tyre Companies	112	272.18
	Total	508	
I find ERP solution is easy to use.	Chemical Companies	93	256.83
	Bearing Companies	99	251.89
	Engineering Companies	102	241.71
	Pharma Companies	102	258.25
	Tyre Companies	112	263.11
	Total	508	
I find it easy to get ERP solution to do what I want it to do.	Chemical Companies	93	255.20
	Bearing Companies	99	253.10
	Engineering Companies	102	198.50
	Pharma Companies	102	261.64
	Tyre Companies	112	299.65
	Total	508	
Using ERP system is compatible with all aspects of my work.	Chemical Companies	93	245.91
	Bearing Companies	99	201.90
	Engineering Companies	102	260.97
	Pharma Companies	102	262.08
	Tyre Companies	112	295.33
	Total	508	
Using ERP system fits well with the way I like to work.	Chemical Companies	93	249.38
	Bearing Companies	99	215.61
	Engineering Companies	102	273.37
	Pharma Companies	102	267.70
	Tyre Companies	112	263.92
	Total	508	
Using ERP system fits into my work style.	Chemical Companies	93	256.25
	Bearing Companies	99	221.22
	Engineering Companies	102	241.54
	Pharma Companies	102	279.26
	Tyre Companies	112	271.71
	Total	508	
Using the ERP system is a good idea.	Chemical Companies	93	301.35
	Bearing Companies	99	195.08

	Engineering Companies	102	280.93
	Pharma Companies	102	247.76
	Tyre Companies	112	250.19
	Total	508	
I like the idea of using the ERP system to perform my job.	Chemical Companies	93	295.60
	Bearing Companies	99	206.86
	Engineering Companies	102	283.89
	Pharma Companies	102	258.48
	Tyre Companies	112	232.09
	Total	508	
I would rate the intensity of my job-related system use to be:	Chemical Companies	93	263.98
	Bearing Companies	99	174.19
	Engineering Companies	102	245.25
	Pharma Companies	102	284.99
	Tyre Companies	112	298.26
	Total	508	
Using most of the features of the ERP solution?	Chemical Companies	93	250.91
	Bearing Companies	99	214.99
	Engineering Companies	102	178.33
	Pharma Companies	102	309.35
	Tyre Companies	112	311.82
	Total	508	
Using more features than the other users of the ERP solution?	Chemical Companies	93	270.46
	Bearing Companies	99	195.79
	Engineering Companies	102	166.23
	Pharma Companies	102	313.17
	Tyre Companies	112	320.10
	Total	508	
Using more obscure aspects of the ERP solution?	Chemical Companies	93	244.80
	Bearing Companies	99	219.07
	Engineering Companies	102	159.89
	Pharma Companies	102	306.47
	Tyre Companies	112	332.71
	Total	508	



**TABLE 5.34 Non-Parametric Test: ERP Use and Sector**

	If there was no one around to tell me what to do as I go.	If I had only the software manuals or/and the build-in help for assistance.	If I could call someone for help if I got stuck.	If I had a lot of time to complete the job for which the software was provided.	If I hear about a new IT, I would look for ways to experiment with it.
Chi-Square	60.804	39.322	47.299	15.571	63.930
df	4	4	4	4	4
Asymp. Sig.	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.004</b>	<b>.000</b>

	Among my peers I am usually the first to try out new IT.	I like to experiment with new IT.	Working with a computer makes me nervous.	I get a sinking feeling when I think of trying to use a computer.	I feel comfortable working with a computer.
Chi-Square	18.694	28.491	10.534	30.716	57.633
df	4	4	4	4	4
Asymp. Sig.	<b>.001</b>	<b>.000</b>	<b>.032</b>	<b>.000</b>	<b>.000</b>

	The ERP system provides the precise information I need.	The information contents provided by the ERP system meet my needs.	The ERP system provides reports that seem to be exactly what I need.	The ERP system provides sufficient information to my needs.	The ERP system provides complete features I need.
Chi-Square	67.131	28.924	36.894	21.000	25.275
df	4	4	4	4	4
Asymp. Sig.	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>

	I am satisfied with the speed of interacting with the system.	It is easy to detect and correct possible errors in the ERP system.	It is easy to change the output format.	It is fast to search data in the ERP system.	The ERP system loads quickly.
Chi-Square	24.933	3.537	16.563	37.819	12.545
df	4	4	4	4	4
Asymp. Sig.	<b>.000</b>	.472	<b>.002</b>	<b>.000</b>	<b>.014</b>

	The system reliably handles my queries.	I was able to retrieve data quickly.	It is fast to create a new record (vendor, customer etc.) in this system.	The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	The ERP system is subject to frequent system problems and crashes.
Chi-Square	33.630	11.203	17.491	64.266	38.967
df	4	4	4	4	4
Asymp. Sig.	<b>.000</b>	<b>.024</b>	<b>.002</b>	<b>.000</b>	<b>.000</b>

	The description of the functions /commands displayed on screen is clear to me.	The function / commands names of the ERP system are easy to remember.	The exact definition of data fields relating to my tasks is easy to find out.	The content and index of the user manuals are useful.	The user manuals are current (up to date).
Chi-Square	9.210	26.501	24.279	15.254	16.697
df	4	4	4	4	4
Asymp. Sig.	.056	<b>.000</b>	<b>.000</b>	<b>.004</b>	<b>.002</b>

	The user manuals are complete.	The user manuals are easy to understand and follow.	My supervisor is very supportive of the use of the ERP system for my job.	The organization has supported the use of the ERP system.	People who influence my behaviour think that I should use the ERP system.
Chi-Square	13.389	9.299	82.730	44.269	12.012
df	4	4	4	4	4
Asymp. Sig.	<b>.010</b>	.054	<b>.000</b>	<b>.000</b>	<b>.017</b>

	People who are important to me think that I should use the ERP system.	The ERP solution fits well with the business needs of me.	The ERP solution fits well with the business need of my department.	The ERP system is satisfactory in meeting my needs.	I believe there are some important problems with the way the ERP system is managed
Chi-Square	12.554	45.396	14.053	31.930	44.843
df	4	4	4	4	4
Asymp. Sig.	<b>.014</b>	<b>.000</b>	<b>.007</b>	<b>.000</b>	<b>.000</b>

	The system maintenance and the way it is provided meet my need adequately.	There is not enough training for me on how to find, understand, access or use the ERP system.	I have received additional formal training for ERP since the conclusion of the above training.	I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	I feel that I need additional ERP training to complete my current job tasks.
Chi-Square	12.973	86.700	49.075	24.979	41.929
df	4	4	4	4	4
Asymp. Sig.	<b>.011</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>

	I do not know who to phone for support for this application.	The support people talk in terms that I do not understand.	I ask other users for help with this application rather than the support staff.	The support for this application is inadequate.	The ERP team does not provide feedback regarding users' requests to modify this application.
Chi-Square	7.578	29.685	86.759	64.838	50.439
df	4	4	4	4	4
Asymp. Sig.	.108	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>

	The ERP team did not inform me about the current situation of this application.	The ERP team did not explain how application modifications would impact my job.	Using ERP solution in my job enables me to accomplish tasks more quickly.	Using ERP solution improves my job performance.	Using ERP solution enhances my effectiveness on the job.
Chi-Square	67.892	57.292	60.105	35.509	39.398
df	4	4	4	4	4
Asymp. Sig.	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>

	Using ERP solution makes it easier to do my job.	I find ERP solution useful in my job.	My interaction with ERP solution is clear and understandable.	Interacting with ERP solution does not require a lot of my mental effort.	I find ERP solution is easy to use.
Chi-Square	26.086	81.412	20.347	24.288	1.418
df	4	4	4	4	4
Asymp. Sig.	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	.841

	I find it easy to get ERP solution to do what I want it to do.	Using ERP system is compatible with all aspects of my work.	Using ERP system fits well with the way I like to work.	Using ERP system fits into my work style.	Using the ERP system is a good idea.
Chi-Square	27.544	24.426	11.020	11.304	32.382
df	4	4	4	4	4
Asymp. Sig.	<b>.000</b>	<b>.000</b>	<b>.026</b>	<b>.023</b>	<b>.000</b>

	I like the idea of using the ERP system to perform my job.	I would rate the intensity of my job-related system use to be:	Using most of the features of the ERP solution?	Using more features than the other users of the ERP solution?	Using more obscure aspects of the ERP solution?
Chi-Square	27.132	47.538	69.768	97.535	96.838
df	4	4	4	4	4
Asymp. Sig.	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>

- a. Kruskal Wallis Test  
b. Grouping Variable: Sector

**Interpretation:-**

- **As p-value of all the statements** except “It is easy to detect and correct possible errors in the ERP system”, “The description of the functions / commands displayed on screen is clear to me”, “The user manuals are easy to understand and follow”, “I do not know who to phone for support for this application” and “I find ERP solution is easy to use” **is less than 0.05, so we reject Null Hypothesis at 5% level of significance and conclude that there is significant effect of Sector on all statements except those statements mentioned above.**
- As the mean rank of the statement “I could complete the job using ERP, if there was no one around to tell me what to do as I go” in case of users from Pharma Sector is 313.48 and users from Bearing Sector is 167.55, we can interpret that users from Pharma Sector could complete the job using ERP system, if there was no one around to tell them what to do as they go than those from Bearing Sector.
- As the mean rank of the statement “I could complete the job using ERP, if I had only the software manuals or/and the build-in help for assistance” in case of users from Chemical Sector is 292.08 and users from Bearing Sector is 177.38, we can interpret that users from Chemical Sector could complete the job using ERP system, if they had only the software manuals or/and the build-in help for assistance than those from Bearing Sector.
- As the mean rank of the statement “I could complete the job using ERP, if I could call someone for help if I got stuck” in case of users from Engg Sector is 300.51 and users from Bearing Sector is 180.58, we can interpret that users from Engg Sector could complete the job using ERP system, if they could call someone for help if they got stuck than those from Bearing Sector.
- As the mean rank of the statement “I could complete the job using ERP, if I had a lot of time to complete the job for which the software was provided” in case of users from Tyre Sector is 297.41 and users from Chemical Sector is 228.20, we can interpret that users from Tyre Sector could complete the job using ERP system, if they had a lot of time to complete the job for which the software was provided than those from Chemical Sector.
- As the mean rank of the statement “If I hear about a new IT, I would look for ways to experiment with it” in case of users from Chemical Sector is 300.44 and

users from Bearing Sector is 174.34, we can interpret that users from Chemical Sector would look for ways to experiment with IT, when they hear about a new IT than those from Bearing Sector.

- As the mean rank of the statement “Among my peers I am usually the first to try out new IT” in case of users from Pharma Sector is 288.31 and users from Bearing Sector is 224.66, we can interpret that users from Pharma Sector among their peers are usually the first to try out new IT than those from Bearing Sector.
- As the mean rank of the statement “I like to experiment with new IT” in case of users from Tyre Sector is 294.37 and users from Bearing Sector is 194.13, we can interpret that users from Tyre Sector like to experiment with new IT than those from Bearing Sector.
- As the mean rank of the statement “Working with a computer makes me nervous” in case of users from Bearing Sector is 277.82 and users from Chemical Sector is 221.96, we can interpret that users from Bearing Sector are becoming nervous while working with a computer than those from Chemical Sector.
- As the mean rank of the statement “I get a sinking feeling when I think of trying to use a computer” in case of users from Bearing Sector is 309.84 and users from Chemical Sector is 209.58, we can interpret that users from Bearing Sector get a sinking feeling when they think of trying to use a computer than those from Chemical Sector.
- As the mean rank of the statement “I feel comfortable working with a computer” in case of users from Chemical Sector is 331.87 and users from Bearing Sector is 193.88, we can interpret that users from Chemical Sector feel comfortable working with a computer than those from Bearing Sector.
- As the mean rank of the statement “The ERP system provides the precise information I need” in case of users from Pharma Sector is 285.70 and users from Bearing Sector is 152.07, we can interpret that users from Pharma Sector feel that the ERP system provides the precise information they need than those from Bearing Sector.
- As the mean rank of the statement “The information contents provided by the ERP system meet my needs” in case of users from Chemical Sector is 293.48 and users

from Bearing Sector is 191.80, we can interpret that users from Chemical Sector feel that the information contents provided by the ERP system meet their needs than those from Bearing Sector.

- As the mean rank of the statement “The ERP system provides reports that seem to be exactly what I need” in case of users from Engg Sector is 284.96 and users from Bearing Sector is 179.30, we can interpret that users from Engg Sector feel that the ERP system provides reports that seem to be exactly what they need than those from Bearing Sector.
- As the mean rank of the statement “The ERP system provides sufficient information to my needs” in case of users from Bearing Sector is 295.73 and users from Engg Sector is 219.09, we can interpret that users from Bearing Sector feel that the ERP system provides sufficient information to their needs than those from Engg Sector.
- As the mean rank of the statement “The ERP system provides complete features I need” in case of users from Tyre Sector is 289.76 and users from Engg Sector is 213.93, we can interpret that users from Tyre Sector feel that the ERP system provides complete features they need than those from Engg Sector.
- As the mean rank of the statement “I am satisfied with the speed of interacting with the system” in case of users from Chemical Sector is 303.06 and users from Bearing Sector is 204.35, we can interpret that users from Chemical Sector are satisfied with the speed of interacting with the ERP system than those from Bearing Sector.
- As the mean rank of the statement “It is easy to change the output format” in case of users from Tyre Sector is 290.93 and users from Chemical Sector is 220.19, we can interpret that users from Tyre Sector feel that it is easy to change the output format than those from Chemical Sector.
- As the mean rank of the statement “It is fast to search data in the ERP system” in case of users from Chemical Sector is 305.14 and users from Bearing Sector is 192.20, we can interpret that users from Chemical Sector feel that it is fast to search data in the ERP system than those from Bearing Sector.
- As the mean rank of the statement “The ERP system loads quickly” in case of

users from Pharma Sector is 282.92 and users from Bearing Sector is 218.64, we can interpret that users from Pharma Sector feel that the ERP system loads quickly than those from Bearing Sector.

- As the mean rank of the statement “The system reliably handles my queries” in case of users from Engg Sector is 305.75 and users from Bearing Sector is 197.77, we can interpret that users from Engg Sector feel that the ERP system reliably handles their queries than those from Bearing Sector.
- As the mean rank of the statement “I was able to retrieve data quickly” in case of users from Chemical Sector is 291.54 and users from Bearing Sector is 233.47, we can interpret that users from Chemical Sector were able to retrieve data quickly than those from Bearing Sector.
- As the mean rank of the statement “It is fast to create a new record (vendor, customer etc.) in this system” in case of users from Chemical Sector is 306.94 and users from Engg Sector is 229.48, we can interpret that users from Chemical Sector feel that it is fast to create a new record (vendor, customer etc.) in this system than those from Engg Sector.
- As the mean rank of the statement “The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work” in case of users from Chemical Sector is 327.98 and users from Tyre Sector is 186.39, we can interpret that users from Chemical Sector feel that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than those from Tyre Sector.
- As the mean rank of the statement “The ERP system is subject to frequent system problems and crashes” in case of users from Engg Sector is 313.46 and users from Tyre Sector is 194.96, we can interpret that users from Engg Sector feel that the ERP system is subject to frequent system problems and crashes than those from Tyre Sector.
- As the mean rank of the statement “The function / commands names of the ERP system are easy to remember” in case of users from Pharma Sector is 297.82 and users from Engg Sector is 208.21, we can interpret that users from Pharma Sector feel that the function / commands names of the ERP system are easy to remember than those from Engg Sector.



- As the mean rank of the statement “The exact definition of data fields relating to my tasks is easy to find out” in case of users from Pharma Sector is 292.12 and users from Engg Sector is 223.09, we can interpret that users from Pharma Sector feel that the exact definition of data fields relating to their tasks is easy to find out than those from Engg Sector.
- As the mean rank of the statement “The content and index of the user manuals are useful” in case of users from Engg Sector is 283.83 and users from Bearing Sector is 212.67, we can interpret that users from Engg Sector feel that the content and index of the user manuals are useful than those from Bearing Sector.
- As the mean rank of the statement “The user manuals are current (up to date)” in case of users from Engg Sector is 287.21 and users from Bearing Sector is 210.71, we can interpret that users from Engg Sector feel that the user manuals are current (up to date) than those from Bearing Sector.
- As the mean rank of the statement “The user manuals are complete” in case of users from Engg Sector is 280.54 and users from Bearing Sector is 221.98, we can interpret that users from Engg Sector feel that the user manuals are current (up to date) than those from Bearing Sector.
- As the mean rank of the statement “My supervisor is very supportive of the use of the ERP system for my job” in case of users from Chemical Sector is 310.17 and users from Bearing Sector is 146.39, we can interpret that users from Chemical Sector feel that their supervisor is very supportive of the use of the ERP system for their job than those from Bearing Sector.
- As the mean rank of the statement “The organization has supported the use of the ERP system” in case of users from Chemical Sector is 319.99 and users from Bearing Sector is 193.40, we can interpret that users from Chemical Sector feel that the organization has supported the use of the ERP system than those from Bearing Sector.
- As the mean rank of the statement “People who influence my behaviour think that I should use the ERP system” in case of users from Chemical Sector is 295.72 and users from Bearing Sector is 226.68, we can interpret that users from Chemical Sector feel that people who influence their behaviour think that they should use the ERP system than those from Bearing Sector.

- As the mean rank of the statement “People who are important to me think that I should use the ERP system” in case of users from Chemical is 279.41 and users from Pharma Sector is 217.69, we can interpret that users from Chemical Sector feel that people who are important to them think that they should use the ERP system than those from Pharma Sector.
- As the mean rank of the statement “The ERP solution fits well with the business needs of me” in case of users from Chemical Sector is 316.34 and users from Bearing Sector is 188.85, we can interpret that users from Chemical Sector feel that the ERP solution fits well with the their business needs than those from Bearing Sector.
- As the mean rank of the statement “The ERP solution fits well with the business need of my department” in case of users from Chemical Sector is 285.47 and users from Bearing Sector is 211.72, we can interpret that users from Chemical Sector feel that the ERP solution fits well with the business need of their department than those from Bearing Sector.
- As the mean rank of the statement “The ERP system is satisfactory in meeting my needs” in case of users from Chemical Sector is 321.70 and users from Engg Sector is 220.36, we can interpret that users from Chemical Sector feel that the ERP system is satisfactory in meeting their needs than those from Engg Sector.
- As the mean rank of the statement “I believe there are some important problems with the way the ERP system is managed and made available that make it harder to do my job” in case of users from Tyre Sector is 309.55 and users from Bearing Sector is 204.74, we can interpret that users from Tyre Sector believe that there are some important problems with the way the ERP system is managed and made available that make it harder to do their job than those from Bearing Sector.
- As the mean rank of the statement “The system maintenance and the way it is provided meet my need adequately” in case of users from Chemical Sector is 287.20 and users from Bearing is 222.50, we can interpret that users from Chemical Sector feel that the system maintenance and the way it is provided meet their need adequately than those from Bearing Sector.
- As the mean rank of the statement “There is not enough training for me on how to find, understand, access or use the ERP system” in case of users from Tyre Sector

is 355.65 and users from Bearing Sector is 175.64, we can interpret that users from Tyre Sector feel that there is not enough training for them on how to find, understand, access or use the ERP system than those from Bearing Sector.

- As the mean rank of the statement “I have received additional formal training for ERP since the conclusion of the above training” in case of users from Tyre Sector is 315.53 and users from Engg Sector is 179.00, we can interpret that users from Tyre Sector have received additional formal training for ERP since the conclusion of the above training than those from Engg Sector.
- As the mean rank of the statement “I have received informal training (e.g. half hour of support from a peer or training officer) for ERP” in case of users from Tyre Sector is 306.58 and users from Engg Sector is 212.75, we can interpret that users from Tyre Sector have received informal training (e.g. half hour of support from a peer or training officer) for ERP than those from Engg Sector.
- As the mean rank of the statement “I feel that I need additional ERP training to complete my current job tasks” in case of users from Tyre Sector is 309.11 and users from Pharma Sector is 189.43, we can interpret that users from Tyre Sector feel that they need additional ERP training to complete their current job tasks than those from Pharma Sector.
- As the mean rank of the statement “The support people talk in terms that I do not understand” in case of users from Bearing Sector is 308.55 and users from Tyre Sector is 203.35, we can interpret that users from Bearing Sector feel that the support people talk in terms that they do not understand than those from Tyre Sector.
- As the mean rank of the statement “I ask other users for help with this application rather than the support staff” in case of users from Engg Sector is 362.11 and users from Pharma Sector is 187.67, we can interpret that users from Engg Sector ask other users for help with this application rather than the support staff than those from Pharma Sector.
- As the mean rank of the statement “The support for this application is inadequate” in case of users from Engg Sector is 324.36 and users from Tyre Sector is 185.71 we can interpret that users from Engg Sector feel that the support for ERP application is inadequate than those from Tyre Sector.

- As the mean rank of the statement “The ERP team does not provide feedback regarding users’ requests to modify this application” in case of users from Engg Sector is 327.32 and users from Tyre Sector is 212.08, we can interpret that users from Engg Sector feel that the ERP team does not provide feedback regarding users’ requests to modify ERP application than those from Tyre Sector.
- As the mean rank of the statement “The ERP team did not inform me about the current situation of this application” in case of users from Engg Sector is 304.08 and users from Tyre Sector is 169.67, we can interpret that users from Engg Sector feel that the ERP team did not inform them about the current situation of ERP application than those from Tyre Sector.
- As the mean rank of the statement “The ERP team did not explain how application modifications would impact my job” in case of users from Engg Sector is 325.47 and users from Tyre Sector is 181.21, we can interpret that users from Engg Sector feel that the ERP team did not explain how application modifications would impact their job than those from Tyre Sector.
- As the mean rank of the statement “Using ERP solution in my job enables me to accomplish tasks more quickly” in case of users from Chemical Sector is 307.77 and users from Bearing Sector is 164.80, we can interpret that users from Chemical Sector feel that using ERP solution in their job enables them to accomplish tasks more quickly than those from Bearing Sector.
- As the mean rank of the statement “Using ERP solution improves my job performance” in case of users from Engg Sector is 291.84 and users from Bearing Sector is 185.27, we can interpret that users from Engg Sector feel that using ERP solution improves their job performance than those from Bearing Sector.
- As the mean rank of the statement “Using ERP solution enhances my effectiveness on the job” in case of users from Chemical Sector is 295.02 and users from Bearing is 181.90, we can interpret that users from Chemical Sector feel that using ERP solution enhances their effectiveness on the job than those from Bearing Sector.
- As the mean rank of the statement “Using ERP solution makes it easier to do my job” in case of users from Chemical Sector is 301.03 and users from Bearing Sector is 205.63, we can interpret that users from Chemical Sector feel that using

ERP solution makes it easier to do their job than those from Bearing Sector.

- As the mean rank of the statement “I find ERP solution useful in my job” in case of users from Chemical Sector is 303.06 and users from Bearing Sector is 144.58, we can interpret that users from Chemical Sector find ERP solution useful in their job than those from Bearing Sector.
- As the mean rank of the statement “My interaction with ERP solution is clear and understandable” in case of users from Chemical Sector is 282.86 and users from Engg Sector is 220.36, we can interpret that users from Chemical Sector feel that their interaction with ERP solution is clear and understandable than those from Engg Sector.
- As the mean rank of the statement “Interacting with ERP solution does not require a lot of my mental effort” in case of users from Pharma Sector is 300.68 and users from Bearing Sector is 211.74, we can interpret that users from Pharma Sector feel that interacting with ERP solution does not require a lot of their mental effort than those from Bearing Sector.
- As the mean rank of the statement “I find it easy to get ERP solution to do what I want it to do” in case of users from Tyre Sector is 299.65 and users from Engg Sector is 198.50, we can interpret that users from Tyre Sector find it easy to get ERP solution to do what they want it to do those from Engg Sector.
- As the mean rank of the statement “Using ERP system is compatible with all aspects of my work” in case of users from Tyre Sector is 295.33 and users from Bearing Sector is 201.90, we can interpret that users from Tyre Sector feel that using ERP system is compatible with all aspects of their work than those from Bearing Sector.
- As the mean rank of the statement “Using ERP system fits well with the way I like to work” in case of users from Engg Sector is 273.37 and users from Bearing Sector is 215.61, we can interpret that users from Engg Sector feel that using ERP system fits well with the way they like to work than those from Bearing Sector.
- As the mean rank of the statement “Using ERP system fits into my work style” in case of users from Pharma Sector is 279.26 and users from Bearing is 221.22, we can interpret that users from Pharma Sector feel that using ERP system fits into

their work style than those from Bearing Sector.

- As the mean rank of the statement “Using the ERP system is a good idea” in case of users from Chemical Sector is 301.35 and users from Bearing Sector is 195.08, we can interpret that users from Chemical Sector feel that using the ERP system is a good idea than those from Bearing Sector.
- As the mean rank of the statement “I like the idea of using the ERP system to perform my job” in case of users from Chemical Sector is 295.60 and users from Bearing Sector is 206.86, we can interpret that users from Chemical Sector like the idea of using the ERP system to perform their job than those from Bearing Sector.
- As the mean rank of the statement “I would rate the intensity of my job-related system use to be” in case of users from Tyre Sector is 298.26 and users from Bearing Sector is 174.19, we can interpret that users from Tyre Sector rate their intensity of their job-related system to be more than those from Bearing Sector.
- As the mean rank of the statement “Likelihood of you using most of the features of the ERP solution” in case of users from Tyre Sector is 311.82 and users from Engg Sector is 178.33, we can interpret that users from Tyre Sector have more likelihood of using most of the features of the ERP solution than those from Engg Sector.
- As the mean rank of the statement “Likelihood of you using more features than the other users of the ERP solution” in case of users from Tyre Sector is 332.71 and users from Engg Sector is 166.23, we can interpret that users from Tyre Sector have more likelihood of using more features than the other users of the ERP solution compared to the users from Engg Sector.
- As the mean rank of the statement “Likelihood of you using more obscure aspects of the ERP solution” in case of users from Tyre Sector is 332.71 and users from Engg Sector is 159.89, we can interpret that users from Tyre Sector have more likelihood of using more obscure aspects of the ERP solution compared to the users from Engg Sector.

### 5.4 Structural Equation Modeling (SEM)

SEM is a widely used multivariate statistical method in the area of research in social science. It is a popular term that represents a family of concepts and methods such as construct analysis, confirmatory factor analysis, path analysis and partial least square (PLS) etc. The major strength of SEM is its ability to use latent variables (constructs) in dependence models. SEM is mainly used to test the theoretical relationships among sets of constructs. The basic objective of research is to draw concrete conclusion, which has to be reliable and validated. SEM helps a researcher in providing justice to his/her research with proper care given to constructs. There are many fields where SEM is proving its credentials, e.g. sociology, psychology and marketing. It is a logical instrument used specifically for evaluating the relations among latent variables and testing theoretical models.

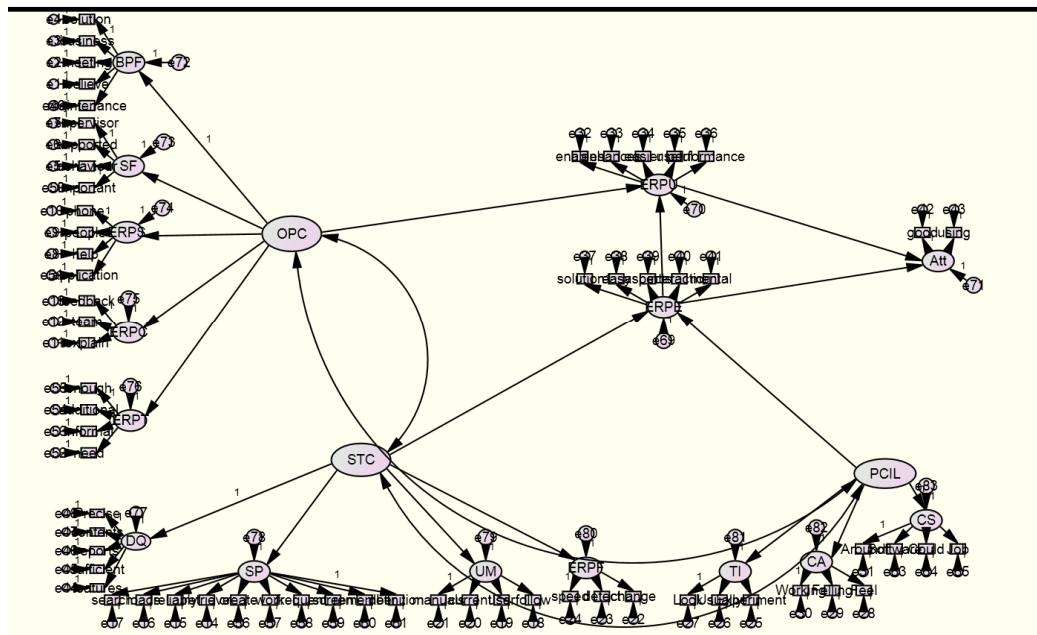


FIGURE 5.1 SEM Model

TABLE 5.35 Parameter summary (Group number 1)

	Weights	Covariances	Variances	Means	Intercepts	Total
Fixed	98	0	0	0	0	98
Labeled	0	0	0	0	0	0
Unlabeled	63	3	82	0	0	148
Total	161	3	82	0	0	246

**TABLE 5.36 Assessment of normality (Group number 1)**

Variable	min	max	skew	c.r.	kurtosis	c.r.
Job	1.000	7.000	-.640	-5.888	-.137	-.628
Could	1.000	7.000	-.904	-8.320	.581	2.675
Software	1.000	7.000	-.727	-6.685	-.074	-.340
definition	1.000	8.000	-.697	-6.412	.639	2.941
remember	1.000	8.000	-.824	-7.582	.662	3.046
screen	1.000	8.000	-.848	-7.807	.964	4.434
frequent	1.000	8.000	.874	8.038	.485	2.230
work	1.000	8.000	.705	6.486	-.133	-.613
create	1.000	8.000	-.955	-8.788	1.208	5.557
enough	1.000	8.000	-.111	-1.018	-1.241	-5.710
additional	1.000	8.000	-.463	-4.259	-.465	-2.139
informal	1.000	8.000	-.484	-4.450	-.622	-2.863
need	1.000	8.000	-.786	-7.234	-.070	-.321
application	1.000	8.000	.663	6.104	-.358	-1.646
important	1.000	8.000	-.819	-7.532	1.014	4.664
maintenance	1.000	8.000	-.787	-7.240	.729	3.355
Precise	1.000	8.000	-1.358	-12.496	1.431	6.582
contents	1.000	8.000	-1.185	-10.901	1.395	6.420
reports	1.000	8.000	-1.042	-9.590	1.775	8.168
sufficient	1.000	8.000	-.791	-7.278	1.017	4.677
features	1.000	8.000	-.963	-8.858	.852	3.922
using	1.000	8.000	-.806	-7.414	1.314	6.045
good	1.000	8.000	-1.297	-11.938	2.172	9.993
mental	1.000	8.000	-.760	-6.990	.603	2.776
interaction	1.000	8.000	-1.184	-10.894	1.788	8.228
aspects	1.000	8.000	-1.105	-10.169	1.617	7.438
easy	1.000	8.000	-.795	-7.316	.907	4.173
solution1	1.000	8.000	-.965	-8.877	1.498	6.891
performance	1.000	8.000	-1.125	-10.353	1.356	6.239
useful	1.000	8.000	-1.225	-11.272	.784	3.609
easier	1.000	8.000	-1.150	-10.578	2.192	10.086
enhances	1.000	8.000	-1.213	-11.161	1.853	8.523
enables	1.000	8.000	-1.126	-10.361	.654	3.007
Around	1.000	7.000	-.758	-6.978	-.105	-.483
Working	1.000	7.000	.942	8.671	-.132	-.606
Felling	1.000	7.000	.804	7.399	-.496	-2.282
Feel	1.000	7.000	-1.015	-9.344	.644	2.961
Look	1.000	7.000	-.601	-5.526	-.605	-2.782
Usually	1.000	7.000	-.544	-5.004	-.182	-.838
Experiment	1.000	7.000	-.529	-4.865	-.400	-1.842
speed	1.000	8.000	-.991	-9.116	.528	2.430
detect	1.000	8.000	-.801	-7.369	.685	3.151



Variable	min	max	skew	c.r.	kurtosis	c.r.
change	1.000	8.000	-.593	-5.456	.031	.143
manuals	1.000	8.000	-.945	-8.697	1.189	5.468
current	1.000	8.000	-.879	-8.085	1.506	6.928
user	1.000	8.000	-1.051	-9.674	1.750	8.052
follow	1.000	8.000	-1.087	-10.001	1.616	7.437
search	1.000	8.000	-.895	-8.235	.577	2.653
loads	1.000	8.000	-.954	-8.779	.863	3.972
reliably	1.000	8.000	-1.076	-9.901	1.433	6.594
retrieve	1.000	8.000	-1.054	-9.696	1.767	8.128
feedback	1.000	8.000	.788	7.247	-.078	-.358
team	1.000	8.000	.726	6.682	-.241	-1.107
explain	1.000	8.000	.625	5.754	-.330	-1.517
phone	1.000	8.000	.905	8.330	.031	.145
people	1.000	8.000	.750	6.901	-.256	-1.179
help	1.000	8.000	.173	1.588	-1.147	-5.277
supervisor	1.000	8.000	-1.084	-9.978	.582	2.680
supported	1.000	8.000	-1.107	-10.185	1.044	4.805
behaviour	1.000	8.000	-.937	-8.624	1.285	5.912
solution	1.000	8.000	-1.158	-10.653	1.179	5.424
business	1.000	8.000	-1.165	-10.724	1.513	6.959
meeting	1.000	8.000	-1.080	-9.937	1.221	5.616
believe	1.000	8.000	-.377	-3.471	-.471	-2.168
Multivariate					1065.020	130.582

**Notes for Model (Group number 1 - Default model)**

**The following covariance matrix is not positive definite (Group number 1 - Default model)**

**TABLE 5.37 Covariance Matrix**

	PCIL	STC	OPC
PCIL	.461		
STC	.680	1.001	
OPC	.590	.864	.802

**Estimates (Group number 1 - Default model)****Scalar Estimates (Group number 1 - Default model)****Maximum Likelihood Estimates****TABLE 5.38 Regression Weights: (Group number 1 - Default model)**

			Estimate	S.E.	C.R.	P	Label
ERPE	<---	STC	-11.501	75.040	-.153	.878	
ERPE	<---	PCIL	17.526	110.131	.159	.874	
ERPU	<---	OPC	1.447	.220	6.580	***	
ERPU	<---	ERPE	-.549	.390	-1.408	.159	
BPF	<---	OPC	1.000				
SF	<---	OPC	.890	.066	13.415	***	
ERPS	<---	OPC	-.366	.059	-6.160	***	
ERPC	<---	OPC	-.333	.073	-4.579	***	
ERPT	<---	OPC	.386	.090	4.304	***	
DQ	<---	STC	1.000				
SP	<---	STC	.435	.053	8.273	***	
UM	<---	STC	.613	.058	10.662	***	
ERPF	<---	STC	.970	.072	13.431	***	
TI	<---	PCIL	1.060	.128	8.271	***	
CA	<---	PCIL	-.600	.108	-5.536	***	
CS	<---	PCIL	1.000				
Att	<---	ERPU	.378	.089	4.244	***	
Att	<---	ERPE	.620	.221	2.804	.005	
believe	<---	BPF	.602	.083	7.237	***	
meeting	<---	BPF	.787	.069	11.381	***	
business	<---	BPF	.860	.069	12.535	***	
solution	<---	BPF	1.000				
behaviour	<---	SF	.851	.069	12.311	***	
supported	<---	SF	1.041	.069	15.146	***	
supervisor	<---	SF	1.000				
help	<---	ERPS	1.375	.131	10.530	***	
people	<---	ERPS	1.345	.120	11.205	***	
phone	<---	ERPS	1.000				
explain	<---	ERPC	1.043	.086	12.169	***	
team	<---	ERPC	1.204	.099	12.217	***	
feedback	<---	ERPC	1.000				
retrieve	<---	SP	1.143	.143	7.972	***	
reliably	<---	SP	1.304	.164	7.958	***	
loads	<---	SP	1.452	.173	8.379	***	

			Estimate	S.E.	C.R.	P	Label
search	<---	SP	1.564	.179	8.728	***	
follow	<---	UM	.678	.078	8.698	***	
user	<---	UM	.983	.080	12.345	***	
current	<---	UM	.857	.072	11.930	***	
manuals	<---	UM	1.000				
change	<---	ERPF	.553	.062	8.945	***	
detect	<---	ERPF	.705	.056	12.642	***	
speed	<---	ERPF	1.000				
Experiment	<---	TI	1.089	.085	12.828	***	
Usually	<---	TI	.854	.072	11.913	***	
Look	<---	TI	1.000				
Feel	<---	CA	-.601	.060	-10.000	***	
Felling	<---	CA	1.127	.096	11.793	***	
Working	<---	CA	1.000				
Around	<---	CS	1.000				
enables	<---	ERPU	1.000				
enhances	<---	ERPU	.725	.049	14.906	***	
easier	<---	ERPU	.569	.047	12.099	***	
useful	<---	ERPU	.988	.060	16.539	***	
performance	<---	ERPU	.802	.049	16.287	***	
solution1	<---	ERPE	1.000				
easy	<---	ERPE	1.181	.168	7.052	***	
aspects	<---	ERPE	1.460	.183	7.969	***	
interaction	<---	ERPE	1.329	.173	7.666	***	
mental	<---	ERPE	1.285	.179	7.166	***	
good	<---	Att	1.000				
using	<---	Att	.740	.076	9.751	***	
features	<---	DQ	.459	.057	8.083	***	
sufficient	<---	DQ	.485	.048	10.165	***	
reports	<---	DQ	.670	.049	13.592	***	
contents	<---	DQ	.813	.054	15.101	***	
Precise	<---	DQ	1.000				
maintenance	<---	BPF	.839	.067	12.501	***	
important	<---	SF	1.000				
application	<---	ERPS	1.350	.125	10.779	***	
need	<---	ERPT	.499	.159	3.137	.002	
informal	<---	ERPT	.182	.081	2.258	.024	
additional	<---	ERPT	.131	.073	1.790	.073	
enough	<---	ERPT	1.000				
create	<---	SP	1.106	.150	7.395	***	
work	<---	SP	-.386	.155	-2.495	.013	
frequent	<---	SP	-.706	.149	-4.732	***	

			Estimate	S.E.	C.R.	P	Label
screen	<---	SP	.926	.133	6.945	***	
remember	<---	SP	1.066	.147	7.259	***	
definition	<---	SP	1.000				
Software	<---	CS	1.060	.107	9.931	***	
Could	<---	CS	.899	.097	9.254	***	
Job	<---	CS	.650	.093	6.953	***	

**TABLE 5.39 Covariances: (Group number 1 - Default model)**

			Estimate	S.E.	C.R.	P	Label
OPC	<-->	STC	.864	.085	10.180	***	
OPC	<-->	PCIL	.590	.071	8.283	***	
STC	<-->	PCIL	.680	.081	8.420	***	

**TABLE 5.40 Variances: (Group number 1 - Default model)**

	Estimate	S.E.	C.R.	P	Label
OPC	.802	.099	8.107	***	
STC	1.001	.122	8.224	***	
PCIL	.461	.087	5.322	***	
e69	.510	2.855	.179	.858	
e70	.224	.048	4.717	***	
e71	.180	.067	2.698	.007	
e72	.119	.038	3.143	.002	
e73	.210	.039	5.317	***	
e74	.711	.113	6.289	***	
e75	1.330	.176	7.546	***	
e76	1.701	.579	2.937	.003	
e77	.336	.061	5.511	***	
e78	.132	.030	4.416	***	
e79	.406	.060	6.745	***	
e80	.406	.083	4.896	***	
e81	.706	.103	6.833	***	
e82	1.347	.168	8.024	***	
e83	.317	.068	4.668	***	
e1	2.424	.156	15.574	***	
e2	1.288	.087	14.753	***	
e3	1.133	.079	14.294	***	

	Estimate	S.E.	C.R.	P	Label
e4	.937	.072	13.091	***	
e5	1.182	.083	14.243	***	
e6	.876	.071	12.394	***	
e7	1.229	.089	13.866	***	
e8	2.010	.162	12.424	***	
e9	1.078	.111	9.686	***	
e10	1.590	.117	13.629	***	
e11	1.663	.148	11.211	***	
e12	1.211	.158	7.650	***	
e13	1.570	.138	11.354	***	
e14	.967	.067	14.385	***	
e15	1.274	.088	14.400	***	
e16	1.137	.082	13.802	***	
e17	.942	.073	12.942	***	
e18	1.385	.094	14.781	***	
e19	.823	.070	11.769	***	
e20	.753	.060	12.489	***	
e21	.815	.070	11.583	***	
e22	1.698	.113	14.992	***	
e23	1.007	.076	13.287	***	
e24	.803	.092	8.700	***	
e25	.990	.106	9.333	***	
e26	1.149	.092	12.428	***	
e27	1.382	.116	11.899	***	
e28	1.641	.112	14.589	***	
e29	.738	.150	4.930	***	
e30	1.124	.133	8.451	***	
e31	1.446	.112	12.970	***	
e32	.976	.074	13.121	***	
e33	.859	.060	14.277	***	
e34	.986	.066	15.048	***	
e35	1.093	.081	13.493	***	
e36	.765	.056	13.641	***	
e37	1.035	.069	14.925	***	
e38	1.330	.090	14.834	***	
e39	1.077	.078	13.746	***	
e40	1.124	.079	14.239	***	

	Estimate	S.E.	C.R.	P	Label
e41	1.467	.099	14.749	***	
e42	.971	.090	10.797	***	
e43	.783	.061	12.825	***	
e44	1.610	.104	15.420	***	
e45	1.037	.069	15.048	***	
e46	.872	.063	13.905	***	
e47	.879	.068	12.939	***	
e48	.930	.080	11.581	***	
e49	1.089	.076	14.310	***	
e50	1.262	.091	13.928	***	
e51	1.657	.140	11.794	***	
e52	1.971	.189	10.448	***	
e53	2.497	.159	15.662	***	
e54	2.495	.158	15.800	***	
e55	1.199	.570	2.103	.035	
e56	1.325	.089	14.874	***	
e57	2.992	.189	15.865	***	
e58	2.297	.147	15.676	***	
e59	1.210	.080	15.118	***	
e60	1.336	.089	14.957	***	
e61	1.299	.086	15.048	***	
e63	1.276	.105	12.112	***	
e64	1.322	.099	13.330	***	
e65	1.838	.123	14.972	***	

**Modification Indices (Group number 1 - Default model)**

**TABLE 5.41 Covariances: (Group number 1 - Default model)**

	M.I.	Par Change
e77 <--> PCIL	14.431	-.004
e77 <--> STC	12.680	.005
e77 <--> OPC	26.679	.095
e77 <--> e69	14.066	-.065
e77 <--> e70	30.086	.171
e71 <--> e77	4.417	.076
e83 <--> PCIL	5.912	-.002
e83 <--> STC	6.185	.004
e83 <--> e69	6.311	-.042

	M.I.	Par Change
e83 <--> e70	6.177	.075
e83 <--> e76	8.419	.187
e83 <--> e71	8.652	-.103
e82 <--> e76	16.002	.384
e82 <--> e71	7.254	-.141
e81 <--> PCIL	11.132	.004
e81 <--> STC	10.820	-.006
e81 <--> OPC	4.858	-.049
e81 <--> e69	10.523	.066
e81 <--> e77	12.496	-.152
e81 <--> e83	9.024	.126
e81 <--> e82	4.634	-.134
e80 <--> e70	4.691	-.076
e79 <--> OPC	7.209	-.047
e79 <--> e70	7.070	-.078
e79 <--> e77	16.181	-.136
e78 <--> PCIL	10.919	.002
e78 <--> STC	10.207	-.003
e78 <--> OPC	10.102	-.033
e78 <--> e69	10.797	.031
e78 <--> e70	10.439	-.055
e78 <--> e77	4.510	-.042
e78 <--> e81	8.496	.069
e78 <--> e79	38.205	.115
e75 <--> e70	6.327	.115
e75 <--> e71	23.622	.256
e75 <--> e83	16.011	-.206
e75 <--> e78	4.813	-.064
e74 <--> e77	4.037	-.079
e74 <--> e75	167.476	.739
e73 <--> PCIL	12.685	-.003
e73 <--> STC	12.901	.004
e73 <--> e69	12.362	-.050
e73 <--> e75	11.726	.150
e73 <--> e74	16.114	.130
e72 <--> e76	4.511	.114
e72 <--> e83	10.053	-.090
e72 <--> e82	4.069	.085
e72 <--> e80	5.469	.076
e72 <--> e79	4.501	-.058

	M.I.	Par Change
e72 <--> e73	10.422	.077
e65 <--> e76	8.392	.295
e65 <--> e77	4.593	-.119
e65 <--> e71	20.183	-.249
e65 <--> e83	14.897	.204
e65 <--> e82	5.539	.190
e65 <--> e80	5.085	-.141
e65 <--> e79	13.363	.190
e65 <--> e75	12.062	-.282
e65 <--> e73	6.635	-.119
e65 <--> e72	4.023	-.090
e64 <--> PCIL	7.349	-.004
e64 <--> STC	7.495	.006
e64 <--> e69	7.489	-.064
e64 <--> e76	7.188	.241
e64 <--> e74	4.273	.110
e64 <--> e73	11.737	.139
e63 <--> PCIL	4.749	-.003
e63 <--> STC	5.079	.005
e63 <--> e69	5.124	-.054
e63 <--> e77	4.894	.110
e63 <--> e79	4.774	-.102
e63 <--> e78	8.114	-.078
e63 <--> e72	4.057	-.081
e63 <--> e64	10.124	.212
e61 <--> PCIL	11.782	.004
e61 <--> STC	11.661	-.007
e61 <--> OPC	5.987	-.060
e61 <--> e69	11.629	.076
e61 <--> e70	15.309	-.158
e61 <--> e81	7.275	.149
e61 <--> e80	8.432	-.153
e61 <--> e79	5.162	.099
e61 <--> e75	11.944	-.236
e61 <--> e65	10.078	.228
e61 <--> e64	12.522	-.224
e60 <--> PCIL	9.642	.004
e60 <--> STC	9.634	-.006
e60 <--> OPC	5.257	-.057
e60 <--> e69	9.508	.070



	M.I.	Par Change
e60 <--> e70	14.772	-.158
e60 <--> e77	15.442	-.187
e60 <--> e71	5.138	-.107
e60 <--> e81	5.442	.131
e60 <--> e79	17.873	.188
e60 <--> e78	4.470	.054
e60 <--> e75	13.902	-.259
e60 <--> e73	6.269	.098
e60 <--> e61	27.345	.321
e59 <--> PCIL	21.038	.006
e59 <--> STC	20.487	-.008
e59 <--> OPC	13.268	-.086
e59 <--> e69	20.496	.097
e59 <--> e70	25.610	-.197
e59 <--> e76	4.446	.174
e59 <--> e82	13.790	.243
e59 <--> e81	17.192	.221
e59 <--> e74	5.546	.115
e59 <--> e61	25.109	.291
e59 <--> e60	35.935	.354
e58 <--> e70	10.600	.172
e58 <--> e77	5.485	.144
e58 <--> e71	4.026	.122
e58 <--> e83	10.735	-.195
e58 <--> e75	33.844	.520
e58 <--> e74	10.878	.218
e58 <--> e72	4.334	-.103
e58 <--> e65	5.334	-.217
e58 <--> e64	13.431	-.304
e58 <--> e60	4.801	-.176
e57 <--> OPC	25.178	.183
e57 <--> e70	25.031	.301
e57 <--> e77	9.569	.215
e57 <--> e83	22.412	-.321
e57 <--> e82	5.681	-.240
e57 <--> e81	4.013	-.165
e57 <--> e79	8.899	-.194
e57 <--> e78	5.275	-.088
e57 <--> e75	19.189	.445
e57 <--> e74	4.249	.155

	M.I.	Par Change
e57 <--> e65	9.871	-.335
e57 <--> e63	5.768	-.229
e57 <--> e60	23.246	-.440
e57 <--> e59	10.986	-.286
<b>e57 &lt;--&gt; e58</b>	<b>123.818</b>	<b>1.306</b>
e56 <--> PCIL	9.305	.004
e56 <--> STC	9.309	-.006
e56 <--> e69	9.030	.068
e56 <--> e70	4.003	-.082
e56 <--> e76	15.469	-.342
e56 <--> e77	7.170	-.127
e56 <--> e82	4.706	-.149
e56 <--> e80	6.754	.139
e56 <--> e75	13.027	.250
e56 <--> e63	10.085	.207
e55 <--> e83	4.921	.139
e55 <--> e82	16.834	.382
e55 <--> e65	4.023	.198
e55 <--> e64	6.218	.217
e55 <--> e59	12.466	.282
e55 <--> e58	7.919	-.305
e55 <--> e57	7.854	-.345
e55 <--> e56	16.953	-.347
e54 <--> PCIL	12.708	.006
e54 <--> STC	12.827	-.009
e54 <--> e69	12.170	.106
e54 <--> e81	22.968	.361
e54 <--> e79	4.022	-.119
e54 <--> e75	4.851	-.204
e54 <--> e61	18.511	.353
e53 <--> e71	6.518	.162
e53 <--> e83	10.131	-.197
e53 <--> e81	6.329	.190
e53 <--> e74	7.609	-.189
e53 <--> e61	15.753	.326
e53 <--> e54	43.047	.732
e52 <--> e83	5.215	.131
e52 <--> e65	4.618	.194
e52 <--> e63	6.715	.209
e52 <--> e59	6.229	-.182

	M.I.	Par Change
e52 <--> e53	4.642	-.222
e51 <--> e77	9.537	-.178
e51 <--> e79	7.459	.147
e51 <--> e75	44.191	.558
e51 <--> e73	14.785	.183
e51 <--> e64	5.567	.184
e51 <--> e59	7.930	-.201
e51 <--> e56	15.252	.294
e50 <--> PCIL	12.673	.005
e50 <--> STC	12.989	-.007
e50 <--> OPC	12.250	-.087
e50 <--> e69	12.839	.082
e50 <--> e70	10.742	-.135
e50 <--> e77	5.268	-.110
e50 <--> e75	4.815	.153
e50 <--> e73	4.412	-.078
e50 <--> e58	6.507	.206
e50 <--> e54	7.644	.232
e50 <--> e53	18.349	.360
e50 <--> e51	9.767	.237
e49 <--> OPC	4.500	-.048
e49 <--> e77	10.696	-.143
e49 <--> e80	20.031	.219
e49 <--> e61	5.441	-.131
e49 <--> e56	5.682	.136
e49 <--> e52	7.721	.197
e48 <--> PCIL	7.299	-.003
e48 <--> STC	6.509	.005
e48 <--> OPC	11.455	.077
e48 <--> e69	7.753	-.058
e48 <--> e70	41.489	.243
e48 <--> e83	12.511	.151
e48 <--> e82	5.513	-.149
e48 <--> e81	4.540	-.110
e48 <--> e80	5.513	-.115
e48 <--> e79	5.659	-.097
e48 <--> e78	9.176	-.073
e48 <--> e74	4.217	-.097
e48 <--> e72	16.742	-.144
e48 <--> e65	4.762	-.147

	M.I.	Par Change
e48 <--> e63	15.031	.233
e48 <--> e60	9.820	-.180
e48 <--> e58	4.726	.161
e48 <--> e54	4.283	-.159
e48 <--> e51	22.303	-.327
e48 <--> e50	6.428	-.146
e48 <--> e49	41.812	-.341
e47 <--> PCIL	4.763	-.002
e47 <--> STC	4.618	.004
e47 <--> e69	4.480	-.041
e47 <--> e80	4.415	.096
e47 <--> e60	12.768	-.192
e47 <--> e56	16.292	-.216
e47 <--> e48	17.805	.203
e46 <--> e81	4.275	-.097
e46 <--> e78	6.093	.054
e46 <--> e61	6.397	-.129
e46 <--> e58	5.060	.150
e46 <--> e47	4.097	-.089
e45 <--> e72	8.947	.101
e45 <--> e61	5.650	.128
e45 <--> e56	9.143	.166
e45 <--> e55	5.616	-.176
e45 <--> e53	13.271	.268
e45 <--> e49	7.529	.138
e45 <--> e48	11.240	-.168
e44 <--> e70	10.696	-.146
e44 <--> e77	5.430	-.119
e44 <--> e80	6.520	.148
e44 <--> e72	10.488	.135
e44 <--> e65	5.995	.194
e44 <--> e64	22.997	-.335
e44 <--> e61	9.469	.205
e44 <--> e58	5.369	-.202
e44 <--> e56	11.878	.233
e44 <--> e53	17.461	.379
e44 <--> e51	20.167	.367
e44 <--> e49	17.744	.262
e44 <--> e48	26.272	-.318
e44 <--> e47	4.635	-.125

	M.I.	Par Change
e44 <--> e45	48.524	.415
e43 <--> e83	14.577	-.140
e43 <--> e75	9.591	.171
e43 <--> e72	12.846	.109
e43 <--> e65	4.272	-.120
e43 <--> e63	8.410	-.150
e43 <--> e59	4.168	-.096
e43 <--> e57	12.938	.260
e43 <--> e56	14.342	.187
e43 <--> e55	4.245	-.138
e43 <--> e51	4.321	.124
e43 <--> e48	10.383	-.147
e42 <--> e77	11.996	.150
e42 <--> e82	5.952	-.153
e42 <--> e79	7.345	-.110
e42 <--> e75	10.335	.204
e42 <--> e65	13.309	-.243
e42 <--> e63	6.805	.155
e42 <--> e60	15.539	-.224
e42 <--> e59	11.863	.186
e42 <--> e58	6.251	.183
e42 <--> e53	5.047	.171
e42 <--> e50	6.203	.142
e42 <--> e48	17.922	.222
e42 <--> e47	5.209	.112
e41 <--> OPC	5.205	-.060
e41 <--> e71	5.765	-.119
e41 <--> e83	4.426	.102
e41 <--> e78	14.590	.105
e41 <--> e72	9.152	-.122
e41 <--> e65	4.531	.163
e41 <--> e61	5.140	.146
e41 <--> e60	4.687	.142
e41 <--> e56	13.127	.237
e41 <--> e54	4.506	.186
e41 <--> e49	7.006	-.159
e41 <--> e48	15.366	.237
e41 <--> e47	12.386	-.198
e40 <--> OPC	7.002	.061
e40 <--> e77	4.688	-.096

	M.I.	Par Change
e40 <--> e79	11.309	-.139
e40 <--> e72	11.388	.120
e40 <--> e63	9.218	-.184
e40 <--> e61	6.164	-.142
e40 <--> e59	11.363	.186
e40 <--> e51	15.376	-.275
e40 <--> e45	5.528	-.120
e40 <--> e44	8.814	-.187
e39 <--> e77	11.861	.151
e39 <--> e71	5.607	.103
e39 <--> e78	4.771	-.053
e39 <--> e73	8.118	-.103
e39 <--> e64	12.575	-.211
e39 <--> e58	5.835	-.179
e39 <--> e55	4.189	.159
e39 <--> e40	10.394	-.172
e38 <--> PCIL	15.069	.005
e38 <--> STC	13.832	-.007
e38 <--> OPC	22.698	-.118
e38 <--> e69	14.890	.083
e38 <--> e70	10.224	-.131
e38 <--> e76	5.481	-.203
e38 <--> e77	10.694	-.156
e38 <--> e81	13.056	.203
e38 <--> e80	6.955	.141
e38 <--> e79	10.445	.144
e38 <--> e78	5.463	.061
e38 <--> e73	4.434	-.083
e38 <--> e60	18.411	.267
e38 <--> e56	12.695	.222
e38 <--> e55	4.611	-.181
e38 <--> e54	4.723	.181
e38 <--> e53	4.855	.184
e38 <--> e51	4.367	.157
e38 <--> e50	7.674	.173
e38 <--> e49	5.657	.136
e38 <--> e48	19.087	-.251
e38 <--> e47	6.244	-.134
e38 <--> e44	17.205	.281
e38 <--> e42	4.543	-.121

	M.I.	Par Change
e38 <--> e39	5.257	.131
e37 <--> e77	26.062	-.214
e37 <--> e82	4.030	.122
e37 <--> e81	22.761	.236
e37 <--> e80	10.652	-.153
e37 <--> e65	4.454	.136
e37 <--> e61	20.984	.247
e37 <--> e55	7.592	-.204
e37 <--> e48	9.719	-.157
e37 <--> e47	17.835	-.199
e37 <--> e45	6.540	.123
e37 <--> e40	6.609	.131
e37 <--> e39	6.932	-.133
e37 <--> e38	10.885	.181
e36 <--> e83	5.693	.087
e36 <--> e79	12.599	-.124
e36 <--> e65	6.340	.145
e36 <--> e63	6.552	.132
e36 <--> e60	12.722	-.175
e36 <--> e53	10.197	-.210
e36 <--> e52	5.924	.148
e36 <--> e48	12.344	.159
e36 <--> e47	5.647	.100
e36 <--> e46	12.990	-.148
e36 <--> e44	9.860	-.167
e36 <--> e43	7.058	-.104
e36 <--> e40	9.025	.138
e36 <--> e38	9.782	-.154
e35 <--> e77	16.308	.182
e35 <--> e71	12.929	.160
e35 <--> e80	16.379	-.204
e35 <--> e79	5.347	-.097
e35 <--> e75	5.461	-.154
e35 <--> e73	5.410	.086
e35 <--> e72	4.194	-.074
e35 <--> e65	5.155	-.157
e35 <--> e64	6.828	.159
e35 <--> e60	4.295	-.122
e35 <--> e57	11.127	.288
e35 <--> e56	17.992	-.250

	M.I.	Par Change
e35 <--> e55	5.863	.193
e35 <--> e50	8.717	-.175
e35 <--> e49	20.944	-.248
e35 <--> e48	28.906	.292
e35 <--> e46	7.954	.139
e35 <--> e45	8.446	-.151
e35 <--> e44	4.771	-.140
e35 <--> e42	14.988	.208
e35 <--> e38	12.827	-.211
e35 <--> e37	4.626	-.112
e34 <--> PCIL	16.400	.004
e34 <--> STC	15.982	-.007
e34 <--> OPC	5.412	-.050
e34 <--> e69	17.239	.080
e34 <--> e70	8.151	-.099
e34 <--> e76	8.015	-.211
e34 <--> e83	7.763	-.111
e34 <--> e75	6.759	.155
e34 <--> e72	4.071	.066
e34 <--> e65	5.790	-.151
e34 <--> e59	11.590	-.173
e34 <--> e56	35.910	.321
e34 <--> e55	14.233	-.273
e34 <--> e53	12.213	.251
e34 <--> e50	5.614	.128
e34 <--> e45	9.529	.146
e34 <--> e43	10.264	.136
e34 <--> e38	25.986	.273
e34 <--> e35	7.884	-.142
e33 <--> e77	5.733	-.093
e33 <--> e79	7.929	.103
e33 <--> e59	10.640	-.158
e33 <--> e54	13.570	-.252
e33 <--> e47	27.315	-.230
e33 <--> e46	8.005	.120
e33 <--> e44	4.784	.121
e33 <--> e42	6.732	-.121
e33 <--> e38	7.690	.142
e33 <--> e37	12.649	.160
e33 <--> e34	14.576	.167



	M.I.	Par Change
e32 <--> e77	10.982	.143
e32 <--> e83	8.059	.119
e32 <--> e78	9.360	-.072
e32 <--> e65	10.539	.214
e32 <--> e64	4.384	-.122
e32 <--> e61	6.754	-.144
e32 <--> e58	6.813	.190
e32 <--> e56	4.051	-.113
e32 <--> e53	7.832	-.211
e32 <--> e50	11.665	-.194
e32 <--> e47	9.536	.150
e32 <--> e40	5.310	-.121
e32 <--> e38	10.259	-.181
e32 <--> e34	29.694	-.263
e31 <--> e70	9.540	.138
e31 <--> e83	8.585	-.136
e31 <--> e80	6.179	-.145
e31 <--> e78	4.192	.058
e31 <--> e75	16.850	-.311
e31 <--> e74	9.816	-.175
e31 <--> e73	17.831	-.181
e31 <--> e65	13.483	.291
e31 <--> e64	31.174	-.388
e31 <--> e59	6.816	.168
e31 <--> e56	4.423	-.143
e31 <--> e54	11.153	-.303
e31 <--> e51	11.686	-.281
e31 <--> e50	8.586	-.200
e31 <--> e40	4.804	.139
e31 <--> e34	7.759	-.163
e31 <--> e33	4.037	.112
e31 <--> e32	13.820	.229
e30 <--> e71	8.133	-.139
e30 <--> e75	4.034	-.144
e30 <--> e56	12.610	-.228
e30 <--> e43	13.399	-.187
e30 <--> e38	4.100	-.130
e30 <--> e36	5.772	.122
e30 <--> e35	5.581	.144
e30 <--> e34	24.289	-.273

	M.I.	Par Change
e30 <--> e33	7.311	-.143
e30 <--> e32	15.355	.228
e30 <--> e31	6.308	.176
e29 <--> PCIL	8.333	.004
e29 <--> STC	8.604	-.006
e29 <--> e69	8.669	.067
e29 <--> e70	10.293	-.133
e29 <--> e76	9.640	.272
e29 <--> e72	11.901	.133
e29 <--> e63	5.222	-.150
e29 <--> e55	10.473	.275
e29 <--> e53	4.993	-.188
e29 <--> e48	10.880	-.191
e29 <--> e46	5.159	.119
e29 <--> e43	19.454	.220
e29 <--> e42	5.324	-.132
e29 <--> e37	9.692	.172
e29 <--> e36	10.512	-.161
e29 <--> e35	7.026	-.158
e29 <--> e34	10.023	.171
e29 <--> e32	6.892	-.149
e28 <--> e72	8.875	.127
e28 <--> e65	8.389	-.236
e28 <--> e63	5.408	-.169
e28 <--> e57	4.353	.212
e28 <--> e55	5.281	-.216
e28 <--> e53	4.323	-.194
e28 <--> e52	11.353	.290
e28 <--> e51	9.706	.262
e28 <--> e50	16.409	-.283
e28 <--> e46	13.193	.211
e28 <--> e43	17.298	.230
e27 <--> e80	8.748	-.174
e27 <--> e73	6.410	-.109
e27 <--> e63	7.385	-.195
e27 <--> e61	12.416	-.238
e27 <--> e59	21.561	.302
e27 <--> e56	15.561	-.270
e27 <--> e55	6.127	.230
e27 <--> e54	4.006	-.183

	M.I.	Par Change
e27 <--> e51	11.412	-.280
e27 <--> e50	19.221	-.302
e27 <--> e42	6.853	.164
e27 <--> e40	16.240	.257
e27 <--> e32	5.160	.141
e27 <--> e31	47.685	.516
e26 <--> PCIL	5.776	.003
e26 <--> STC	5.081	-.004
e26 <--> OPC	9.980	-.078
e26 <--> e69	5.694	.053
e26 <--> e70	9.525	-.126
e26 <--> e77	4.332	-.098
e26 <--> e82	4.316	-.142
e26 <--> e80	6.356	.133
e26 <--> e78	6.716	.067
e26 <--> e58	5.383	-.184
e26 <--> e56	7.206	.165
e26 <--> e54	16.310	.333
e26 <--> e51	7.904	.209
e26 <--> e48	5.064	-.128
e26 <--> e47	10.638	.173
e26 <--> e46	7.455	-.140
e26 <--> e44	4.668	-.145
e26 <--> e43	7.420	.133
e26 <--> e42	13.905	-.210
e26 <--> e34	4.284	.110
e26 <--> e33	11.820	-.174
e25 <--> e77	5.888	-.117
e25 <--> e73	4.581	.085
e25 <--> e72	14.781	-.149
e25 <--> e65	10.808	.242
e25 <--> e63	5.085	.149
e25 <--> e61	24.670	.308
e25 <--> e54	11.395	.284
e25 <--> e53	11.237	.283
e25 <--> e51	5.419	.177
e25 <--> e50	5.754	.152
e25 <--> e47	26.316	-.278
e25 <--> e45	4.372	.116
e25 <--> e44	5.727	.164

	M.I.	Par Change
e25 <--> e43	6.653	-.129
e25 <--> e40	21.162	-.270
e25 <--> e38	11.703	.215
e25 <--> e37	32.733	.317
e25 <--> e31	9.314	-.209
e24 <--> e76	8.533	-.233
e24 <--> e77	11.979	.151
e24 <--> e82	6.357	-.159
e24 <--> e78	4.453	-.050
e24 <--> e75	4.166	.130
e24 <--> e73	8.750	.107
e24 <--> e65	17.696	-.282
e24 <--> e63	23.583	.291
e24 <--> e61	4.901	-.125
e24 <--> e58	5.799	.177
e24 <--> e55	7.378	-.210
e24 <--> e50	7.770	.160
e24 <--> e48	7.197	.141
e24 <--> e47	6.943	.129
e24 <--> e39	4.654	-.114
e24 <--> e37	7.124	-.134
e24 <--> e35	8.072	-.154
e24 <--> e32	4.419	.109
e24 <--> e31	10.736	-.204
e24 <--> e29	5.131	-.131
e24 <--> e27	5.837	-.152
e24 <--> e26	4.288	.117
e23 <--> e77	6.428	-.109
e23 <--> e81	4.847	-.112
e23 <--> e80	5.057	.102
e23 <--> e72	10.520	.113
e23 <--> e58	4.905	-.161
e23 <--> e56	12.256	.198
e23 <--> e53	7.845	-.212
e23 <--> e49	16.666	.212
e23 <--> e48	17.004	-.214
e23 <--> e45	4.905	.110
e23 <--> e44	8.118	.175
e23 <--> e38	13.044	.204
e23 <--> e32	7.391	-.139

	M.I.	Par Change
e23 <--> e28	5.258	-.145
e22 <--> e76	7.351	.265
e22 <--> e77	7.298	-.145
e22 <--> e71	20.800	-.243
e22 <--> e82	6.784	.202
e22 <--> e79	16.839	.206
e22 <--> e78	8.944	.088
e22 <--> e65	14.675	.315
e22 <--> e63	18.872	-.319
e22 <--> e57	5.786	-.247
e22 <--> e56	7.997	-.198
e22 <--> e55	12.628	.337
e22 <--> e49	6.968	.170
e22 <--> e48	25.224	-.325
e22 <--> e46	4.129	.119
e22 <--> e43	7.068	-.148
e22 <--> e42	10.414	-.207
e22 <--> e32	12.114	.221
e22 <--> e31	5.865	.185
e22 <--> e24	16.315	-.257
e22 <--> e23	11.078	.211
e21 <--> PCIL	10.219	.004
e21 <--> STC	10.471	-.005
e21 <--> e69	10.233	.062
e21 <--> e73	15.379	.132
e21 <--> e72	4.893	-.073
e21 <--> e60	15.709	.211
e21 <--> e57	5.791	-.188
e21 <--> e52	4.678	-.143
e21 <--> e51	6.569	.165
e21 <--> e45	16.363	-.190
e21 <--> e41	8.677	.165
e21 <--> e39	12.877	.176
e21 <--> e35	4.240	.104
e21 <--> e34	11.681	-.157
e20 <--> e77	6.567	-.098
e20 <--> e83	8.521	-.108
e20 <--> e81	4.530	-.096
e20 <--> e80	5.463	.100
e20 <--> e72	11.955	.106

	M.I.	Par Change
e20 <--> e64	4.029	.104
e20 <--> e63	27.450	-.274
e20 <--> e58	6.055	-.158
e20 <--> e54	4.390	-.140
e20 <--> e49	12.742	.164
e20 <--> e48	16.896	-.189
e20 <--> e45	4.839	.097
e20 <--> e43	8.449	.115
e20 <--> e42	15.957	-.182
e20 <--> e41	7.422	-.143
e20 <--> e37	6.957	-.116
e20 <--> e35	10.098	-.150
e20 <--> e33	7.532	.112
e20 <--> e29	5.782	.121
e20 <--> e27	4.509	-.117
e20 <--> e23	8.626	.133
e20 <--> e22	16.790	.230
e19 <--> PCIL	5.327	-.003
e19 <--> STC	6.125	.004
e19 <--> OPC	4.334	-.044
e19 <--> e69	5.829	-.047
e19 <--> e83	9.322	.121
e19 <--> e78	16.608	.091
e19 <--> e72	13.147	-.119
e19 <--> e65	11.087	.208
e19 <--> e61	4.694	.114
e19 <--> e60	5.871	.129
e19 <--> e56	7.219	-.143
e19 <--> e49	4.173	-.100
e19 <--> e40	8.316	-.143
e19 <--> e39	11.954	-.170
e19 <--> e33	5.415	.102
e19 <--> e23	6.375	-.122
e19 <--> e20	4.078	.084
e18 <--> PCIL	23.119	.006
e18 <--> STC	21.671	-.009
e18 <--> OPC	16.423	-.104

	M.I.	Par Change
e18 <--> e69	22.261	.109
e18 <--> e70	8.555	-.123
e18 <--> e76	5.324	-.205
e18 <--> e82	7.776	-.196
e18 <--> e81	5.970	.141
e18 <--> e74	6.999	-.139
e18 <--> e73	8.268	-.116
e18 <--> e63	19.848	.297
e18 <--> e56	42.196	.413
e18 <--> e55	19.020	-.376
e18 <--> e53	9.662	.265
e18 <--> e52	6.140	.195
e18 <--> e50	5.121	.145
e18 <--> e46	10.154	-.169
e18 <--> e45	11.038	.186
e18 <--> e44	8.892	.206
e18 <--> e39	4.382	.123
e18 <--> e38	22.756	.304
e18 <--> e35	12.231	-.211
e18 <--> e34	75.727	.477
e18 <--> e32	23.134	-.277
e18 <--> e31	4.980	-.155
e18 <--> e30	16.106	-.264
e18 <--> e26	5.194	.144
e18 <--> e24	5.810	.141
e18 <--> e22	14.430	-.273
e18 <--> e21	6.636	-.139
e17 <--> PCIL	8.410	-.003
e17 <--> STC	8.411	.005
e17 <--> e69	8.523	-.059
e17 <--> e70	5.861	.088
e17 <--> e65	5.901	-.158
e17 <--> e61	5.073	-.122
e17 <--> e57	14.393	.307
e17 <--> e50	5.820	-.134
e17 <--> e46	7.323	.125
e17 <--> e41	4.014	.117

	M.I.	Par Change
e17 <--> e38	4.413	-.116
e17 <--> e36	7.063	-.116
e17 <--> e35	8.258	.151
e17 <--> e34	4.097	-.096
e17 <--> e32	17.043	.207
e17 <--> e31	5.899	.147
e17 <--> e30	17.063	.236
e17 <--> e29	8.138	-.159
e17 <--> e27	4.987	.136
e17 <--> e23	7.011	-.133
e17 <--> e22	8.907	.186
e17 <--> e19	12.192	.165
e17 <--> e18	10.860	-.187
e16 <--> e77	23.106	.218
e16 <--> e81	6.218	-.134
e16 <--> e73	21.176	-.172
e16 <--> e63	4.533	-.132
e16 <--> e61	4.930	.129
e16 <--> e51	4.319	-.149
e16 <--> e48	22.575	.260
e16 <--> e39	8.069	.156
e16 <--> e37	5.678	-.125
e16 <--> e36	6.092	.116
e16 <--> e34	9.982	.161
e16 <--> e32	6.011	-.132
e16 <--> e31	6.035	.159
e16 <--> e30	4.089	-.124
e16 <--> e29	8.917	.179
e16 <--> e26	12.437	.207
e16 <--> e25	27.163	-.313
e16 <--> e21	4.066	-.102
e16 <--> e18	11.401	.205
e16 <--> e17	4.066	.105
e15 <--> PCIL	9.510	-.004
e15 <--> STC	10.365	.006
e15 <--> e69	9.950	-.071
e15 <--> e70	11.865	.141



	M.I.	Par Change
e15 <--> e80	6.946	.140
e15 <--> e79	16.777	.181
e15 <--> e74	5.912	.124
e15 <--> e72	8.549	-.111
e15 <--> e65	8.111	.206
e15 <--> e61	4.286	-.126
e15 <--> e60	6.102	-.152
e15 <--> e59	4.407	-.123
e15 <--> e58	4.291	.165
e15 <--> e52	4.825	.168
e15 <--> e51	5.438	.174
e15 <--> e49	16.082	.228
e15 <--> e48	5.034	-.128
e15 <--> e39	6.274	-.143
e15 <--> e34	4.776	-.116
e15 <--> e33	8.595	.149
e15 <--> e29	8.239	-.179
e15 <--> e26	12.935	-.220
e15 <--> e25	14.087	.234
e15 <--> e22	21.104	.320
e15 <--> e20	7.884	.139
e15 <--> e19	6.451	.134
e15 <--> e18	11.308	-.213
e15 <--> e17	7.807	.152
e15 <--> e16	6.831	-.153
e14 <--> e83	12.521	-.142
e14 <--> e75	7.324	.162
e14 <--> e72	6.302	.083
e14 <--> e65	5.646	-.150
e14 <--> e61	14.332	-.200
e14 <--> e60	6.995	-.142
e14 <--> e48	13.820	-.184
e14 <--> e47	8.236	.133
e14 <--> e46	4.521	.095
e14 <--> e44	9.399	-.179
e14 <--> e41	14.780	-.218
e14 <--> e40	23.603	.244

	M.I.	Par Change
e14 <--> e34	11.521	.157
e14 <--> e32	17.450	-.204
e14 <--> e31	10.472	-.190
e14 <--> e25	5.902	-.132
e14 <--> e23	4.812	.107
e14 <--> e22	5.623	.144
e14 <--> e20	4.201	.089
e14 <--> e15	4.698	.115
e13 <--> PCIL	16.437	-.006
e13 <--> STC	16.436	.009
e13 <--> OPC	16.182	.119
e13 <--> e69	15.864	-.106
e13 <--> e70	44.365	.323
e13 <--> e77	20.289	.253
e13 <--> e81	7.710	-.185
e13 <--> e78	10.244	-.099
e13 <--> e74	9.790	.189
e13 <--> e61	27.785	-.382
e13 <--> e60	49.207	-.516
e13 <--> e59	7.063	-.185
e13 <--> e58	12.413	.334
e13 <--> e57	8.819	.319
e13 <--> e56	7.095	-.196
e13 <--> e55	7.610	.274
e13 <--> e54	7.414	-.268
e13 <--> e53	4.794	.216
e13 <--> e52	4.675	-.197
e13 <--> e49	9.286	-.206
e13 <--> e48	18.500	.291
e13 <--> e47	12.485	.223
e13 <--> e45	7.828	-.181
e13 <--> e44	5.979	-.195
e13 <--> e43	10.700	-.191
e13 <--> e42	20.772	.306
e13 <--> e38	8.934	-.220
e13 <--> e37	19.132	-.283
e13 <--> e35	9.901	.219
e13 <--> e32	7.428	.181
e13 <--> e27	8.178	.231

	M.I.	Par Change
e13 <--> e26	27.773	-.383
e13 <--> e22	6.640	.213
e13 <--> e18	7.084	-.200
e13 <--> e17	5.620	.155
e13 <--> e15	4.114	.148
e13 <--> e14	19.480	.281
e12 <--> PCIL	9.647	.005
e12 <--> STC	9.187	-.007
e12 <--> OPC	16.363	-.118
e12 <--> e69	9.649	.082
e12 <--> e76	17.525	-.426
e12 <--> e80	6.477	.159
e12 <--> e74	12.204	.210
e12 <--> e56	34.103	.425
e12 <--> e55	23.301	-.476
e12 <--> e53	4.881	-.216
e12 <--> e51	13.685	.326
e12 <--> e49	6.756	.174
e12 <--> e47	5.877	-.152
e12 <--> e43	6.975	.153
e12 <--> e38	17.389	.304
e12 <--> e35	7.233	-.186
e12 <--> e34	13.164	.227
e12 <--> e30	12.664	-.268
e12 <--> e29	5.751	.176
e12 <--> e27	8.318	-.231
e12 <--> e26	11.457	.244
e12 <--> e24	10.052	.212
e12 <--> e18	38.457	.462
e12 <--> e17	5.218	-.148
e11 <--> OPC	5.224	.070
e11 <--> e76	5.168	.241
e11 <--> e77	5.204	-.132
e11 <--> e71	4.445	.121
e11 <--> e83	5.689	-.135
e11 <--> e74	39.491	.393
e11 <--> e73	16.768	.196
e11 <--> e72	12.195	.163
e11 <--> e59	4.044	.145
e11 <--> e55	5.012	.230

	M.I.	Par Change
e11 <--> e51	10.914	.303
e11 <--> e48	10.695	-.229
e11 <--> e45	5.298	.154
e11 <--> e43	10.985	.200
e11 <--> e41	12.329	-.281
e11 <--> e38	10.887	-.251
e11 <--> e37	6.369	.169
e11 <--> e35	5.454	-.168
e11 <--> e34	4.622	-.140
e11 <--> e31	9.835	-.260
e11 <--> e28	7.861	.238
e11 <--> e21	7.861	.182
e11 <--> e18	12.444	-.274
e11 <--> e16	6.395	-.183
e10 <--> e76	7.133	.262
e10 <--> e71	20.072	-.239
e10 <--> e83	8.192	.150
e10 <--> e79	5.003	-.112
e10 <--> e65	10.794	.270
e10 <--> e61	4.131	-.141
e10 <--> e59	17.169	.276
e10 <--> e58	9.548	.280
e10 <--> e57	7.260	.277
e10 <--> e55	23.335	.459
e10 <--> e52	12.132	-.303
e10 <--> e51	15.719	-.332
e10 <--> e48	9.370	.198
e10 <--> e45	7.368	-.168
e10 <--> e44	14.208	-.288
e10 <--> e43	11.391	-.188
e10 <--> e42	6.355	-.162
e10 <--> e41	16.035	.296
e10 <--> e40	29.804	.358
e10 <--> e39	8.340	-.187
e10 <--> e35	6.029	.163
e10 <--> e34	6.123	-.150
e10 <--> e32	10.792	.209
e10 <--> e31	10.308	.246

	M.I.	Par Change
e10 <--> e27	8.185	.221
e10 <--> e24	4.354	-.135
e10 <--> e22	4.844	.174
e10 <--> e18	11.680	-.246
e10 <--> e17	5.011	.140
e10 <--> e13	12.918	.298
e10 <--> e12	7.111	-.219
e9 <--> e70	10.661	-.140
e9 <--> e76	4.073	-.183
e9 <--> e83	7.550	-.133
e9 <--> e82	6.082	.177
e9 <--> e78	11.858	.094
e9 <--> e72	12.891	.143
e9 <--> e64	8.084	-.191
e9 <--> e61	5.601	.151
e9 <--> e59	14.491	.234
e9 <--> e57	4.032	-.191
e9 <--> e52	13.357	-.293
e9 <--> e44	4.339	.147
e9 <--> e34	11.615	.190
e9 <--> e32	12.632	-.209
e9 <--> e21	6.878	-.146
e9 <--> e13	4.618	-.165
e9 <--> e12	8.811	.226
e9 <--> e10	12.626	.254
e8 <--> PCIL	10.803	-.006
e8 <--> STC	9.865	.008
e8 <--> OPC	15.827	.130
e8 <--> e69	10.649	-.097
e8 <--> e70	32.547	.307
e8 <--> e77	5.423	.145
e8 <--> e71	9.316	.189
e8 <--> e81	6.497	-.188
e8 <--> e78	14.696	-.131
e8 <--> e75	39.253	.569
e8 <--> e73	4.229	.106
e8 <--> e72	5.791	-.121

	M.I.	Par Change
e8 <--> e64	6.194	.210
e8 <--> e63	4.666	.184
e8 <--> e61	10.610	-.262
e8 <--> e60	23.284	-.394
e8 <--> e59	6.016	-.190
e8 <--> e56	8.999	-.244
e8 <--> e54	6.860	-.286
e8 <--> e53	13.973	-.409
e8 <--> e52	28.138	.535
e8 <--> e51	14.614	.368
e8 <--> e48	6.086	.185
e8 <--> e47	5.105	.158
e8 <--> e44	28.729	-.475
e8 <--> e42	7.473	.203
e8 <--> e40	4.561	-.162
e8 <--> e38	10.458	-.264
e8 <--> e36	20.198	.289
e8 <--> e34	5.312	-.162
e8 <--> e33	6.593	.172
e8 <--> e32	4.533	.157
e8 <--> e31	8.377	-.257
e8 <--> e28	4.729	.198
e8 <--> e25	5.213	-.188
e8 <--> e23	7.263	-.199
e8 <--> e22	4.025	.184
e8 <--> e18	10.122	-.265
e8 <--> e15	7.551	.222
e8 <--> e13	16.468	.391
e8 <--> e11	16.859	.408
e8 <--> e9	10.092	-.260
e7 <--> PCIL	18.698	-.006
e7 <--> STC	19.380	.009
e7 <--> OPC	16.265	.100
e7 <--> e69	18.961	-.098
e7 <--> e70	20.703	.186
e7 <--> e77	29.466	.257
e7 <--> e78	11.889	-.089

	M.I.	Par Change
e7 <--> e74	4.059	.103
e7 <--> e65	5.886	-.176
e7 <--> e61	4.182	-.125
e7 <--> e56	10.852	-.204
e7 <--> e54	7.955	-.233
e7 <--> e53	10.846	-.273
e7 <--> e50	34.278	-.362
e7 <--> e48	12.171	.199
e7 <--> e46	17.923	.218
e7 <--> e41	5.789	-.157
e7 <--> e38	19.480	-.273
e7 <--> e37	4.003	-.109
e7 <--> e35	20.440	.265
e7 <--> e34	16.412	-.216
e7 <--> e32	12.596	.199
e7 <--> e30	21.048	.294
e7 <--> e28	15.664	.274
e7 <--> e27	13.769	.253
e7 <--> e26	7.055	-.163
e7 <--> e18	10.298	-.203
e7 <--> e16	11.006	-.196
e7 <--> e14	4.561	-.114
e7 <--> e11	4.465	.160
e7 <--> e8	9.850	.254
e6 <--> PCIL	8.741	-.003
e6 <--> STC	9.072	.005
e6 <--> e69	8.322	-.057
e6 <--> e83	5.120	-.091
e6 <--> e80	6.499	.118
e6 <--> e79	4.204	.079
e6 <--> e64	6.791	.146
e6 <--> e63	7.670	-.157
e6 <--> e60	6.775	.141
e6 <--> e56	4.855	.119
e6 <--> e51	4.790	.143
e6 <--> e45	4.007	.095
e6 <--> e40	6.044	-.124

	M.I.	Par Change
e6 <--> e39	12.630	-.177
e6 <--> e31	6.387	-.149
e6 <--> e27	9.554	-.184
e6 <--> e24	5.477	.116
e6 <--> e21	21.366	.214
e6 <--> e18	20.644	-.251
e6 <--> e16	12.627	-.183
e6 <--> e7	10.554	.172
e5 <--> e80	5.145	-.116
e5 <--> e72	4.180	.075
e5 <--> e65	6.275	-.175
e5 <--> e64	14.478	.235
e5 <--> e60	4.875	.132
e5 <--> e56	4.115	.121
e5 <--> e53	10.698	.262
e5 <--> e50	6.129	.148
e5 <--> e47	6.778	-.134
e5 <--> e39	12.579	-.196
e5 <--> e31	5.327	-.150
e5 <--> e26	8.649	-.174
e5 <--> e21	4.082	-.103
e5 <--> e18	4.434	.129
e5 <--> e15	11.425	-.200
e5 <--> e14	10.407	.167
e4 <--> e76	4.514	.162
e4 <--> e77	6.354	.105
e4 <--> e71	5.161	.094
e4 <--> e79	4.103	-.079
e4 <--> e78	11.655	-.078
e4 <--> e75	4.726	-.132
e4 <--> e60	10.521	-.177
e4 <--> e57	8.088	.227
e4 <--> e56	5.266	-.125
e4 <--> e55	9.132	.223
e4 <--> e52	4.799	-.148
e4 <--> e49	14.825	-.192
e4 <--> e47	16.634	.192



	M.I.	Par Change
e4 <--> e41	9.351	-.176
e4 <--> e40	10.387	.164
e4 <--> e39	7.963	.142
e4 <--> e38	11.762	-.187
e4 <--> e33	18.711	-.194
e4 <--> e25	13.057	-.200
e4 <--> e22	4.974	-.137
e4 <--> e15	27.368	-.284
e4 <--> e12	20.804	-.292
e4 <--> e8	4.629	-.154
e3 <--> OPC	8.684	.068
e3 <--> e83	11.843	-.149
e3 <--> e80	6.892	-.131
e3 <--> e79	5.602	-.099
e3 <--> e78	9.329	.075
e3 <--> e73	22.216	.173
e3 <--> e65	10.073	-.217
e3 <--> e61	13.278	.209
e3 <--> e60	4.923	.130
e3 <--> e59	5.394	.129
e3 <--> e39	12.504	-.190
e3 <--> e38	9.781	-.183
e3 <--> e37	19.038	.224
e3 <--> e36	12.649	.164
e3 <--> e34	4.011	-.101
e3 <--> e29	7.458	.161
e3 <--> e28	45.534	.440
e3 <--> e27	4.735	-.140
e3 <--> e18	9.292	-.182
e3 <--> e13	12.393	-.243
e3 <--> e11	30.135	.391
e3 <--> e10	6.193	-.164
e3 <--> e7	17.604	.244
e3 <--> e6	5.441	.118
e2 <--> e83	8.894	-.136
e2 <--> e81	19.384	-.245
e2 <--> e72	5.164	.082

	M.I.	Par Change
e2 <--> e65	5.322	-.166
e2 <--> e58	9.944	-.250
e2 <--> e53	8.135	.235
e2 <--> e51	4.510	-.158
e2 <--> e49	5.624	.134
e2 <--> e48	4.123	-.115
e2 <--> e45	9.198	.164
e2 <--> e44	7.897	.188
e2 <--> e43	8.570	.143
e2 <--> e39	10.025	.180
e2 <--> e37	7.793	-.151
e2 <--> e36	9.863	-.152
e2 <--> e34	13.207	.192
e2 <--> e30	7.311	-.172
e2 <--> e28	5.240	-.157
e2 <--> e27	4.183	.139
e2 <--> e25	29.301	-.337
e2 <--> e21	7.879	-.148
e2 <--> e20	8.360	.143
e2 <--> e16	6.488	.149
e2 <--> e14	11.077	.177
e2 <--> e10	6.442	-.176
e2 <--> e9	7.705	.178
e2 <--> e6	9.326	-.163
e2 <--> e5	6.715	.153
e2 <--> e4	6.946	.142
e2 <--> e3	4.220	-.118
e1 <--> PCIL	5.761	.004
e1 <--> STC	5.218	-.006
e1 <--> OPC	7.725	-.092
e1 <--> e69	5.268	.069
e1 <--> e70	6.741	-.142
e1 <--> e76	9.996	.365
e1 <--> e77	5.135	-.143
e1 <--> e71	6.535	-.160
e1 <--> e83	4.875	.136
e1 <--> e81	5.861	.181
e1 <--> e80	6.752	.184

	M.I.	Par Change
e1 <--> e64	14.750	.328
e1 <--> e58	5.185	-.242
e1 <--> e56	14.657	.316
e1 <--> e55	11.431	.378
e1 <--> e54	14.658	.423
e1 <--> e53	11.744	.380
e1 <--> e52	7.087	-.272
e1 <--> e47	7.900	-.200
e1 <--> e44	14.182	.338
e1 <--> e42	4.377	-.158
e1 <--> e41	20.843	.397
e1 <--> e39	9.694	-.237
e1 <--> e38	18.393	.354
e1 <--> e36	4.138	-.133
e1 <--> e31	5.386	-.209
e1 <--> e30	5.788	-.206
e1 <--> e28	13.085	-.334
e1 <--> e25	8.958	.250
e1 <--> e23	12.154	.261
e1 <--> e19	5.583	-.167
e1 <--> e18	11.963	.292
e1 <--> e16	14.799	-.303
e1 <--> e12	5.414	.225
e1 <--> e11	13.519	-.371
e1 <--> e10	12.278	.327
e1 <--> e9	4.193	.176
e1 <--> e8	31.350	-.606
e1 <--> e7	4.416	-.173
e1 <--> e6	4.244	-.148
e1 <--> e5	6.521	.203
e1 <--> e3	4.033	-.155

**Variances: (Group number 1 - Default model)**

	M.I.	Par Change
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**TABLE 5.42 Regression Weights: (Group number 1 - Default model)**

	M.I.	Par Change
ERPT <--- CA	13.137	.240
DQ <--- TI	4.485	-.087

			M.I.	Par Change
DQ	<---	UM	6.148	-.127
Att	<---	CA	5.608	-.085
Att	<---	ERPC	22.248	.179
CS	<---	ERPT	6.751	.093
CS	<---	TI	4.056	.080
CS	<---	ERPC	13.675	-.137
CA	<---	ERPT	14.735	.205
UM	<---	SP	10.334	.235
SP	<---	UM	14.397	.107
SP	<---	ERPC	4.398	-.044
<b>ERPC</b>	<---	<b>ERPS</b>	<b>138.378</b>	<b>.859</b>
<b>ERPS</b>	<---	<b>ERPC</b>	<b>153.485</b>	<b>.509</b>
SF	<---	ERPC	10.747	.103
SF	<---	ERPS	13.321	.151
BPF	<---	ERPT	4.048	.060
BPF	<---	CA	4.202	.060
Job	<---	PCIL	4.841	-.209
Job	<---	STC	4.757	-.141
Job	<---	OPC	5.384	-.167
Job	<---	ERPE	6.705	-.356
Job	<---	ERPU	4.100	-.114
Job	<---	ERPT	4.147	.115
Job	<---	DQ	7.259	-.156
Job	<---	Att	11.710	-.294
Job	<---	CA	8.713	.164
Job	<---	ERPF	7.788	-.165
Job	<---	ERPC	7.270	-.158
Job	<---	SF	8.810	-.218
Job	<---	BPF	6.734	-.179
Job	<---	definition	4.113	.098
Job	<---	work	8.417	-.102
Job	<---	enough	4.570	.076
Job	<---	need	6.591	.102
Job	<---	Precise	9.868	-.129
Job	<---	contents	7.734	-.129
Job	<---	reports	5.701	-.121
Job	<---	using	10.842	-.189
Job	<---	good	19.928	-.214
Job	<---	useful	8.055	-.113
Job	<---	easier	9.072	-.156

		M.I.	Par Change
Job	<--- Around	7.653	.114
Job	<--- Working	5.257	.087
Job	<--- Felling	5.281	.087
Job	<--- Feel	14.148	-.157
Job	<--- speed	16.862	-.172
Job	<--- change	5.044	.095
Job	<--- user	6.414	.124
Job	<--- search	7.778	-.131
Job	<--- loads	5.235	-.105
Job	<--- retrieve	8.018	-.148
Job	<--- feedback	5.729	-.085
Job	<--- team	5.562	-.080
Job	<--- explain	6.335	-.087
Job	<--- phone	7.353	.108
Job	<--- supervisor	12.181	-.149
Job	<--- supported	4.655	-.099
Job	<--- behaviour	12.454	-.162
Job	<--- solution	5.147	-.103
Job	<--- business	15.085	-.178
Job	<--- meeting	10.239	-.145
Could	<--- ERPT	6.257	.125
Could	<--- Software	5.123	.084
Could	<--- definition	9.376	-.131
Could	<--- frequent	12.537	-.123
Could	<--- enough	6.964	.083
Could	<--- application	7.373	.083
Could	<--- features	20.341	-.178
Could	<--- aspects	10.154	-.137
Could	<--- solution1	4.021	-.096
Could	<--- Around	17.932	-.154
Could	<--- current	4.090	.095
Could	<--- help	8.054	.082
Could	<--- supported	5.437	.095
Could	<--- behaviour	12.284	.142
Could	<--- believe	12.004	.113
Software	<--- SP	4.799	-.235
Software	<--- Could	6.220	.098
Software	<--- work	4.539	-.067
Software	<--- need	5.997	.087
Software	<--- Precise	4.771	.080

		M.I.	Par Change
Software	<--- using	7.934	-.144
Software	<--- interaction	11.625	-.150
Software	<--- easy	5.665	-.101
Software	<--- speed	5.679	.089
Software	<--- change	14.756	-.146
Software	<--- current	22.776	-.228
Software	<--- follow	9.334	.127
Software	<--- search	5.039	-.094
Software	<--- loads	7.862	-.115
Software	<--- reliably	6.186	-.102
Software	<--- retrieve	5.067	-.105
Software	<--- help	6.080	.072
Software	<--- supported	5.225	-.094
Software	<--- meeting	5.713	-.097
definition	<--- ERPC	9.643	-.153
definition	<--- Job	5.891	.085
definition	<--- Could	11.327	-.125
definition	<--- remember	20.468	.180
definition	<--- screen	19.652	.188
definition	<--- additional	17.993	.138
definition	<--- informal	14.987	.125
definition	<--- maintenance	4.204	-.081
definition	<--- reports	6.006	-.105
definition	<--- features	5.922	.092
definition	<--- interaction	4.153	-.084
definition	<--- solution1	15.995	.183
definition	<--- easier	5.288	-.100
definition	<--- enhances	6.346	-.104
definition	<--- enables	8.421	-.099
definition	<--- Experiment	10.786	.109
definition	<--- speed	6.128	-.087
definition	<--- retrieve	9.250	-.134
definition	<--- feedback	28.256	-.159
definition	<--- team	4.965	-.064
definition	<--- phone	4.354	-.070
definition	<--- help	8.044	-.078
definition	<--- supervisor	4.200	-.074
definition	<--- business	6.152	.095
remember	<--- ERPU	5.250	-.111
remember	<--- DQ	6.789	-.129

		M.I.	Par Change
remember	<--- Att	4.684	-.159
remember	<--- CA	5.941	.116
remember	<--- ERPC	10.468	-.162
remember	<--- definition	20.992	.190
remember	<--- screen	28.131	.229
remember	<--- frequent	4.434	-.071
remember	<--- work	22.817	-.144
remember	<--- Precise	13.085	-.127
remember	<--- contents	16.175	-.159
remember	<--- good	15.736	-.163
remember	<--- easy	12.211	.142
remember	<--- performance	14.931	-.160
remember	<--- useful	8.402	-.099
remember	<--- Working	6.307	.081
remember	<--- Felling	4.259	.067
remember	<--- change	5.495	-.085
remember	<--- manuals	12.188	.145
remember	<--- user	6.374	.106
remember	<--- retrieve	4.517	-.095
remember	<--- feedback	42.605	-.199
remember	<--- help	13.364	-.102
remember	<--- solution	9.709	-.120
screen	<--- ERPU	4.801	-.100
screen	<--- CA	15.211	.175
screen	<--- ERPS	5.902	.151
screen	<--- definition	19.267	.172
screen	<--- remember	26.891	.198
screen	<--- work	10.783	-.094
screen	<--- enough	6.912	.075
screen	<--- interaction	7.742	.111
screen	<--- performance	6.467	-.100
screen	<--- easier	15.291	-.164
screen	<--- enhances	13.651	-.148
screen	<--- enables	4.627	-.071
screen	<--- Working	13.623	.113
screen	<--- Felling	13.250	.111
screen	<--- Look	17.527	.129
screen	<--- feedback	4.842	-.064
screen	<--- phone	19.654	.143
screen	<--- people	13.824	.116

			M.I.	Par Change
frequent	<---	ERPC	30.334	.354
frequent	<---	ERPS	8.462	.246
frequent	<---	Job	6.506	-.117
frequent	<---	Could	12.396	-.171
<b>frequent</b>	<b>&lt;---</b>	<b>work</b>	<b>121.521</b>	<b>.428</b>
frequent	<---	enough	5.245	-.089
frequent	<---	important	4.750	.102
frequent	<---	reports	4.858	.123
frequent	<---	good	6.210	.131
frequent	<---	enables	5.215	.102
frequent	<---	current	4.139	-.120
frequent	<---	feedback	31.863	.221
frequent	<---	team	21.631	.174
frequent	<---	explain	14.475	.144
frequent	<---	phone	15.003	.169
frequent	<---	help	8.389	.104
frequent	<---	meeting	6.914	-.131
frequent	<---	believe	4.696	-.088
work	<---	ERPE	4.574	.367
work	<---	ERPU	8.844	.210
work	<---	DQ	5.763	.173
work	<---	Att	9.274	.326
work	<---	CA	7.810	-.194
work	<---	ERPC	13.576	.269
work	<---	SF	5.032	.205
work	<---	BPF	4.129	.175
work	<---	Job	9.629	-.162
work	<---	Software	4.556	-.112
work	<---	remember	17.359	-.246
work	<---	screen	8.582	-.185
<b>work</b>	<b>&lt;---</b>	<b>frequent</b>	<b>114.288</b>	<b>.525</b>
work	<---	Precise	5.894	.124
work	<---	contents	5.586	.137
work	<---	sufficient	5.786	.159
work	<---	using	18.424	.307
work	<---	interaction	4.531	.131
work	<---	useful	17.378	.207
work	<---	easier	6.512	.165
work	<---	enhances	5.706	.147
work	<---	enables	10.258	.162



			M.I.	Par Change
work	<---	Felling	7.842	-.132
work	<---	Feel	9.066	.157
work	<---	search	6.668	.151
work	<---	feedback	17.424	.186
work	<---	team	11.660	.145
work	<---	phone	7.049	.132
work	<---	supervisor	6.392	.135
work	<---	supported	4.287	.119
work	<---	solution	10.318	.181
work	<---	meeting	4.652	.122
create	<---	ERPT	11.155	-.161
create	<---	CA	5.181	-.108
create	<---	ERPC	9.692	.155
create	<---	Software	8.317	.103
create	<---	enough	14.921	-.117
create	<---	application	6.778	.077
create	<---	important	5.945	.088
create	<---	maintenance	6.805	.104
create	<---	contents	6.899	-.104
create	<---	sufficient	6.685	.117
create	<---	features	9.835	.120
create	<---	using	12.792	.175
create	<---	mental	14.927	.148
create	<---	easy	14.597	.155
create	<---	solution1	4.447	.098
create	<---	useful	5.371	-.079
create	<---	easier	26.399	.227
create	<---	Working	12.706	-.115
create	<---	Look	5.190	-.074
create	<---	Usually	4.598	.079
create	<---	speed	4.633	.077
create	<---	detect	13.143	.147
create	<---	follow	36.109	.239
create	<---	team	25.064	.146
create	<---	help	4.029	-.056
create	<---	supported	6.599	.101
create	<---	behaviour	6.393	.099
create	<---	believe	16.085	.127
enough	<---	CA	15.354	.251
enough	<---	Job	4.255	.100

			M.I.	Par Change
enough	<---	Could	5.302	.117
enough	<---	screen	7.837	.163
enough	<---	frequent	6.316	-.114
enough	<---	work	7.197	-.109
enough	<---	create	15.011	-.210
enough	<---	sufficient	4.476	-.129
enough	<---	using	4.305	-.137
enough	<---	easy	4.783	-.120
enough	<---	solution1	7.445	-.171
enough	<---	easier	11.773	-.205
enough	<---	Working	4.045	.088
enough	<---	Felling	17.912	.185
enough	<---	Feel	13.655	-.178
enough	<---	change	8.614	.144
enough	<---	follow	14.428	-.205
enough	<---	team	7.648	-.109
enough	<---	phone	19.771	.204
enough	<---	believe	9.375	.131
additional	<---	ERPE	6.484	.400
additional	<---	TI	17.322	.298
additional	<---	ERPC	6.998	-.177
additional	<---	ERPS	6.721	-.227
additional	<---	BPF	4.410	.165
additional	<---	definition	20.203	.248
additional	<---	informal	41.672	.284
additional	<---	important	8.375	.140
additional	<---	mental	8.362	.148
additional	<---	easy	8.548	.159
additional	<---	solution1	7.463	.169
additional	<---	Around	4.167	-.096
additional	<---	Usually	27.210	.257
additional	<---	Experiment	21.520	.209
additional	<---	feedback	11.428	-.137
additional	<---	explain	5.336	-.091
additional	<---	help	11.001	-.124
additional	<---	business	7.140	.139
additional	<---	believe	17.940	.179
informal	<---	PCIL	16.069	.436
informal	<---	STC	16.229	.299
informal	<---	OPC	17.265	.342

			M.I.	Par Change
informal	<---	ERPE	16.988	.649
informal	<---	ERPU	13.145	.234
informal	<---	DQ	16.775	.271
informal	<---	Att	19.298	.431
informal	<---	CA	6.055	-.156
informal	<---	TI	20.161	.322
informal	<---	ERPF	8.578	.198
informal	<---	UM	10.176	.287
informal	<---	SP	11.246	.461
informal	<---	ERPS	17.070	-.363
informal	<---	SF	19.215	.368
informal	<---	BPF	18.470	.339
informal	<---	definition	23.282	.267
informal	<---	additional	42.327	.289
informal	<---	important	32.079	.275
informal	<---	Precise	4.981	.104
informal	<---	contents	10.919	.175
informal	<---	sufficient	24.363	.299
informal	<---	features	27.652	.270
informal	<---	using	8.543	.192
informal	<---	good	16.209	.221
informal	<---	easy	12.908	.196
informal	<---	useful	14.053	.171
informal	<---	easier	22.382	.280
informal	<---	enhances	4.240	.116
informal	<---	Felling	7.477	-.118
informal	<---	Usually	7.819	.138
informal	<---	Experiment	23.534	.219
informal	<---	speed	5.523	.113
informal	<---	current	4.669	.132
informal	<---	user	4.169	.115
informal	<---	follow	15.797	.212
informal	<---	search	5.619	.127
informal	<---	team	4.745	-.085
informal	<---	phone	11.472	-.154
informal	<---	people	5.803	-.106
informal	<---	help	24.864	-.186
informal	<---	supported	5.559	.124
informal	<---	behaviour	23.804	.257
informal	<---	solution	11.595	.176

			M.I.	Par Change
informal	<---	business	4.012	.105
informal	<---	meeting	20.406	.234
informal	<---	believe	20.924	.194
need	<---	Job	4.457	.093
need	<---	Software	4.440	.093
need	<---	screen	6.931	-.140
need	<---	informal	4.497	-.086
need	<---	Feel	8.192	.126
need	<---	change	4.130	-.091
need	<---	manuals	4.369	-.108
need	<---	phone	6.420	-.106
need	<---	help	14.443	.131
need	<---	supported	4.228	-.100
need	<---	behaviour	4.451	-.102
need	<---	believe	7.505	-.107
application	<---	ERPC	39.427	.379
application	<---	screen	6.096	-.129
application	<---	create	11.281	.163
application	<---	important	10.166	.140
application	<---	Precise	10.393	-.136
application	<---	features	14.531	.176
application	<---	interaction	9.641	-.158
application	<---	Around	5.705	-.102
application	<---	Feel	9.463	.132
application	<---	Usually	7.396	.121
application	<---	Experiment	4.641	.088
application	<---	manuals	7.974	.142
application	<---	feedback	11.018	.122
application	<---	team	38.359	.218
application	<---	explain	35.739	.212
application	<---	phone	9.512	-.126
application	<---	help	7.223	.091
application	<---	supported	5.838	.115
important	<---	PCIL	23.884	-.399
important	<---	STC	20.766	-.254
important	<---	OPC	19.156	-.270
important	<---	ERPE	10.982	-.391
important	<---	ERPU	26.034	-.248
important	<---	DQ	23.705	-.242
important	<---	Att	14.689	-.282

			M.I.	Par Change
important	<---	CS	20.117	-.310
important	<---	TI	13.648	-.199
important	<---	ERPF	11.665	-.173
important	<---	UM	6.248	-.169
important	<---	SP	18.691	-.446
important	<---	ERPC	10.803	.165
important	<---	ERPS	12.275	.231
important	<---	SF	21.802	-.290
important	<---	BPF	14.839	-.228
important	<---	Could	7.752	-.105
important	<---	remember	8.814	-.120
important	<---	screen	8.651	-.128
important	<---	frequent	11.903	.116
important	<---	additional	6.803	.087
important	<---	informal	16.245	.133
important	<---	application	17.451	.125
important	<---	Precise	23.811	-.171
important	<---	contents	5.825	-.096
important	<---	reports	17.617	-.183
important	<---	using	7.075	-.131
important	<---	performance	11.226	-.139
important	<---	useful	29.259	-.185
important	<---	enhances	13.805	-.157
important	<---	enables	32.547	-.199
important	<---	Around	20.258	-.160
important	<---	Feel	11.927	-.124
important	<---	Look	26.313	-.168
important	<---	detect	5.529	-.096
important	<---	change	7.249	-.098
important	<---	user	4.081	-.085
important	<---	search	18.326	-.172
important	<---	loads	8.373	-.114
important	<---	team	7.477	.080
important	<---	explain	10.891	.097
important	<---	people	4.830	.073
important	<---	help	4.686	.061
important	<---	supervisor	49.479	-.258
important	<---	supported	8.952	-.118
important	<---	solution	6.116	-.096
important	<---	business	5.412	-.091

		M.I.	Par Change
maintenance <---	ERPF	4.514	.098
maintenance <---	create	6.495	.094
maintenance <---	need	5.512	.073
maintenance <---	Precise	17.461	-.134
maintenance <---	sufficient	4.094	.084
maintenance <---	features	12.782	.126
maintenance <---	mental	4.479	-.075
maintenance <---	easy	4.908	.083
maintenance <---	useful	8.684	-.092
maintenance <---	detect	17.346	.155
maintenance <---	change	9.967	.105
maintenance <---	current	8.270	.121
maintenance <---	reliably	14.504	.136
maintenance <---	feedback	4.299	-.058
maintenance <---	people	4.574	.065
maintenance <---	solution	6.576	-.091
Precise <---	CA	4.699	-.095
Precise <---	Software	13.205	.120
Precise <---	remember	12.021	-.129
Precise <---	frequent	6.286	.077
Precise <---	create	5.797	-.089
Precise <---	additional	4.168	-.062
Precise <---	application	17.472	-.114
Precise <---	maintenance	29.445	-.199
Precise <---	contents	7.872	.102
Precise <---	sufficient	8.362	-.120
Precise <---	features	21.966	-.165
Precise <---	good	12.447	.133
Precise <---	mental	9.226	.107
Precise <---	easy	16.873	-.154
Precise <---	solution1	9.246	-.130
Precise <---	performance	11.668	.130
Precise <---	useful	20.784	.143
Precise <---	enables	5.617	.076
Precise <---	Felling	8.485	-.087
Precise <---	Usually	5.734	-.081
Precise <---	detect	13.306	-.136
Precise <---	change	23.632	-.162
Precise <---	current	14.507	-.160
Precise <---	loads	6.513	.092

			M.I.	Par Change
Precise	<---	reliably	7.294	-.097
Precise	<---	retrieve	15.071	-.160
Precise	<---	feedback	9.023	.084
Precise	<---	people	5.218	-.069
Precise	<---	supervisor	6.057	.083
Precise	<---	meeting	4.442	-.075
contents	<---	remember	13.805	-.129
contents	<---	create	16.785	-.141
contents	<---	Precise	5.995	.074
contents	<---	mental	11.960	-.114
contents	<---	easy	6.711	-.090
contents	<---	solution1	16.895	-.164
contents	<---	enhances	15.223	-.141
contents	<---	Experiment	12.043	-.100
contents	<---	feedback	5.027	.059
contents	<---	behaviour	6.315	-.085
contents	<---	solution	5.086	.075
contents	<---	believe	8.008	-.077
reports	<---	remember	4.839	.074
reports	<---	useful	5.779	.068
reports	<---	enhances	6.625	.090
reports	<---	Feel	5.801	.071
reports	<---	Usually	6.319	-.077
reports	<---	follow	9.004	-.100
reports	<---	search	7.898	.094
reports	<---	retrieve	6.224	.093
reports	<---	supervisor	13.585	.112
sufficient	<---	definition	4.773	.079
sufficient	<---	create	7.267	.095
sufficient	<---	informal	12.550	.103
sufficient	<---	maintenance	7.319	.095
sufficient	<---	features	40.264	.214
sufficient	<---	solution1	6.043	.100
sufficient	<---	easier	6.525	.099
sufficient	<---	detect	4.498	.076
sufficient	<---	manuals	5.124	-.083
sufficient	<---	follow	9.480	.108
sufficient	<---	phone	6.571	-.076
sufficient	<---	meeting	9.078	.102
features	<---	Job	5.641	.092

			M.I.	Par Change
features	<---	Could	11.976	-.142
features	<---	definition	10.060	.142
features	<---	frequent	6.254	-.091
features	<---	create	11.964	.151
features	<---	informal	18.074	.152
features	<---	application	4.415	.068
features	<---	maintenance	16.829	.178
features	<---	Precise	8.487	-.111
features	<---	sufficient	35.571	.293
features	<---	easy	17.450	.184
features	<---	performance	4.065	-.090
features	<---	detect	9.501	.136
features	<---	follow	7.983	.122
features	<---	phone	12.893	-.132
features	<---	help	20.036	-.136
features	<---	meeting	9.541	.129
features	<---	believe	16.101	.138
using	<---	CS	5.269	-.125
using	<---	ERPC	9.090	.120
using	<---	Job	6.950	-.075
using	<---	Software	10.924	-.094
using	<---	work	13.093	.087
using	<---	create	9.155	.096
using	<---	Precise	5.959	-.068
using	<---	easier	5.802	.084
using	<---	Working	6.381	-.065
using	<---	Feel	14.366	.107
using	<---	Experiment	5.769	-.064
using	<---	change	6.384	-.073
using	<---	team	11.504	.078
using	<---	explain	15.857	.093
using	<---	phone	4.511	-.057
using	<---	meeting	6.810	.080
good	<---	CA	5.211	-.099
good	<---	ERPC	9.683	.142
good	<---	Job	10.976	-.108
good	<---	remember	12.318	-.129
good	<---	screen	8.690	.116
good	<---	frequent	6.047	.075
good	<---	informal	4.966	.067



			M.I.	Par Change
good	<---	Precise	10.538	.103
good	<---	contents	5.137	.082
good	<---	easy	4.190	-.076
good	<---	useful	7.114	.083
good	<---	Felling	6.893	-.077
good	<---	Look	4.855	.065
good	<---	Usually	4.377	-.070
good	<---	change	9.703	-.103
good	<---	current	13.862	-.155
good	<---	feedback	23.582	.135
good	<---	help	6.959	.067
good	<---	believe	4.151	-.059
mental	<---	SP	6.780	.281
mental	<---	Job	6.095	.093
mental	<---	definition	9.203	.132
mental	<---	remember	8.777	.126
mental	<---	create	17.831	.178
mental	<---	additional	4.559	.074
mental	<---	maintenance	4.422	-.088
mental	<---	Precise	7.176	.098
mental	<---	Around	4.167	.076
mental	<---	manuals	7.309	.118
mental	<---	search	8.719	.124
mental	<---	loads	5.570	.097
mental	<---	explain	6.865	-.081
mental	<---	phone	7.605	.098
mental	<---	solution	4.541	-.087
mental	<---	believe	17.535	.140
interaction	<---	Software	4.024	-.067
interaction	<---	screen	10.136	.128
interaction	<---	application	5.813	-.067
interaction	<---	sufficient	5.158	-.096
interaction	<---	features	8.468	-.104
interaction	<---	aspects	6.380	-.098
interaction	<---	solution1	5.065	.097
interaction	<---	performance	5.633	.091
interaction	<---	Look	7.846	.085
interaction	<---	Experiment	5.120	-.071
interaction	<---	manuals	4.676	-.084
interaction	<---	user	9.251	-.119

			M.I.	Par Change
interaction	<---	retrieve	17.279	.173
interaction	<---	phone	18.575	.136
interaction	<---	solution	7.409	.098
aspects	<---	Could	7.793	-.097
aspects	<---	frequent	4.544	-.066
aspects	<---	contents	5.240	.084
aspects	<---	reports	4.968	.089
aspects	<---	interaction	6.992	-.103
aspects	<---	solution1	5.379	-.099
aspects	<---	manuals	9.531	.118
aspects	<---	follow	5.444	.086
aspects	<---	reliably	5.848	-.087
aspects	<---	phone	7.119	-.083
aspects	<---	supported	7.390	-.099
aspects	<---	behaviour	9.783	-.113
aspects	<---	solution	4.726	.077
aspects	<---	business	5.830	-.087
aspects	<---	meeting	7.828	.100
aspects	<---	believe	7.513	-.080
easy	<---	ERPT	5.813	-.117
easy	<---	Software	4.678	-.078
easy	<---	remember	16.289	.163
easy	<---	create	11.445	.136
easy	<---	enough	5.920	-.074
easy	<---	need	4.545	-.072
easy	<---	Precise	13.089	-.126
easy	<---	contents	7.178	-.106
easy	<---	features	10.250	.122
easy	<---	good	4.256	-.084
easy	<---	solution1	8.390	.134
easy	<---	performance	9.528	-.127
easy	<---	useful	11.199	-.114
easy	<---	easier	11.080	.147
easy	<---	enables	9.266	-.105
easy	<---	Usually	4.065	.074
easy	<---	Experiment	9.155	.102
easy	<---	detect	8.547	.119
easy	<---	follow	22.728	.190
easy	<---	feedback	6.395	-.077
easy	<---	explain	7.367	-.080

			M.I.	Par Change
easy	<---	help	6.801	-.073
easy	<---	supervisor	15.584	-.144
easy	<---	solution	7.989	-.109
easy	<---	business	8.147	-.111
easy	<---	believe	13.751	.117
solution1	<---	DQ	6.032	-.107
solution1	<---	CA	4.693	.090
solution1	<---	TI	6.713	.122
solution1	<---	definition	16.642	.148
solution1	<---	enough	4.697	-.058
solution1	<---	Precise	12.267	-.108
solution1	<---	contents	18.896	-.152
solution1	<---	reports	6.298	-.096
solution1	<---	interaction	4.467	.078
solution1	<---	aspects	4.140	-.074
solution1	<---	easy	8.283	.103
solution1	<---	enhances	5.996	.091
solution1	<---	Felling	8.075	.081
solution1	<---	Experiment	23.086	.142
solution1	<---	speed	7.356	-.086
solution1	<---	detect	5.076	-.081
solution1	<---	feedback	9.030	-.080
solution1	<---	business	10.500	.111
solution1	<---	meeting	5.355	-.079
performance	<---	UM	5.895	-.128
performance	<---	Job	6.454	.072
performance	<---	Software	5.038	.063
performance	<---	remember	13.087	-.115
performance	<---	informal	10.619	-.085
performance	<---	Precise	4.751	.060
performance	<---	reports	6.086	-.084
performance	<---	features	7.635	-.083
performance	<---	using	4.677	-.083
performance	<---	interaction	5.474	.078
performance	<---	easy	7.857	-.090
performance	<---	manuals	7.257	-.088
performance	<---	user	6.912	-.087
performance	<---	search	6.698	-.082
performance	<---	help	11.936	.076
performance	<---	business	6.876	.081

		M.I.	Par Change
performance	<--- meeting	6.772	-.079
useful	<--- ERPC	5.077	-.107
useful	<--- Could	5.816	.086
useful	<--- work	10.990	.095
useful	<--- create	13.430	-.139
useful	<--- enough	4.851	.063
useful	<--- informal	4.607	.067
useful	<--- maintenance	13.366	-.138
useful	<--- Precise	16.877	.136
useful	<--- reports	8.632	.121
useful	<--- good	10.403	.125
useful	<--- easy	10.230	-.123
useful	<--- easier	5.261	-.096
useful	<--- speed	6.113	-.084
useful	<--- change	5.093	-.077
useful	<--- current	8.818	-.128
useful	<--- follow	12.724	-.135
useful	<--- team	8.298	-.079
useful	<--- explain	8.323	-.080
useful	<--- supervisor	14.154	.130
easier	<--- ERPE	4.754	.220
easier	<--- ERPT	5.502	-.098
easier	<--- ERPC	4.800	.094
easier	<--- Job	6.020	-.075
easier	<--- screen	5.405	-.086
easier	<--- create	34.571	.203
easier	<--- enough	9.563	-.080
easier	<--- informal	9.908	.089
easier	<--- important	4.629	.067
easier	<--- maintenance	4.483	.073
easier	<--- sufficient	8.942	.116
easier	<--- using	9.233	.128
easier	<--- interaction	5.697	.086
easier	<--- easy	28.193	.185
easier	<--- enhances	7.323	.098
easier	<--- enables	10.770	-.098
easier	<--- Around	6.385	-.077
easier	<--- Working	13.037	-.101
easier	<--- follow	65.537	.277
easier	<--- loads	11.110	.112

			M.I.	Par Change
easier	<---	retrieve	12.925	.138
easier	<---	team	10.827	.082
easier	<---	phone	4.282	-.060
easier	<---	supervisor	6.303	-.079
easier	<---	meeting	13.463	.122
enhances	<---	screen	9.945	-.112
enhances	<---	additional	14.392	-.103
enhances	<---	contents	18.715	-.141
enhances	<---	easy	5.564	.079
enhances	<---	solution1	9.437	.117
enhances	<---	easier	9.683	.113
enhances	<---	Usually	9.781	-.094
enhances	<---	current	6.815	.098
enhances	<---	user	5.122	.078
enhances	<---	reliably	4.044	.064
enhances	<---	help	5.092	.052
enhances	<---	solution	11.264	-.106
enables	<---	Job	12.368	.114
enables	<---	definition	7.776	-.104
enables	<---	frequent	7.855	.085
enables	<---	create	5.162	-.083
enables	<---	informal	6.871	-.078
enables	<---	important	6.777	-.085
enables	<---	Precise	4.668	.068
enables	<---	contents	8.931	.107
enables	<---	interaction	5.037	-.085
enables	<---	easy	9.566	-.114
enables	<---	easier	19.828	-.178
enables	<---	Around	13.636	.118
enables	<---	Working	5.955	.072
enables	<---	change	11.779	.112
enables	<---	follow	17.040	-.149
enables	<---	search	4.123	.074
enables	<---	loads	6.447	-.090
enables	<---	retrieve	15.878	-.161
enables	<---	phone	6.257	.077
enables	<---	supervisor	6.061	.081
Around	<---	OPC	4.485	.142
Around	<---	ERPE	6.887	.336
Around	<---	ERPU	6.938	.139

			M.I.	Par Change
Around	<---	DQ	4.702	.117
Around	<---	Att	5.881	.194
Around	<---	TI	4.925	.129
Around	<---	SP	6.612	.288
Around	<---	ERPC	20.281	-.245
Around	<---	ERPS	13.514	-.263
Around	<---	Job	10.996	.129
Around	<---	Could	19.056	-.179
Around	<---	screen	10.953	.156
Around	<---	work	4.316	-.068
Around	<---	additional	11.238	-.121
Around	<---	application	20.017	-.145
Around	<---	maintenance	5.838	.105
Around	<---	Precise	4.968	.085
Around	<---	features	5.947	.102
Around	<---	mental	6.137	.104
Around	<---	interaction	9.197	.139
Around	<---	useful	8.542	.108
Around	<---	enhances	9.538	.142
Around	<---	enables	16.940	.155
Around	<---	Look	34.661	.209
Around	<---	change	5.755	.095
Around	<---	search	10.384	.141
Around	<---	loads	10.623	.139
Around	<---	feedback	5.031	-.074
Around	<---	team	15.513	-.125
Around	<---	explain	22.856	-.153
Around	<---	people	5.727	-.086
Around	<---	help	17.140	-.126
Working	<---	PCIL	7.311	.227
Working	<---	STC	6.581	.147
Working	<---	OPC	5.926	.154
Working	<---	ERPU	7.377	.135
Working	<---	DQ	7.687	.142
Working	<---	CS	8.296	.205
Working	<---	ERPF	4.766	.114

		M.I.	Par Change
Working	<--- SP	6.344	.267
Working	<--- ERPC	6.666	-.133
Working	<--- SF	5.718	.155
Working	<--- BPF	5.098	.137
Working	<--- remember	5.510	.098
Working	<--- screen	6.672	.115
Working	<--- Precise	5.167	.082
Working	<--- contents	6.205	.102
Working	<--- reports	5.491	.105
Working	<--- using	4.384	-.106
Working	<--- aspects	4.076	.087
Working	<--- performance	11.609	.145
Working	<--- useful	11.402	.119
Working	<--- easier	6.727	-.118
Working	<--- enables	18.443	.154
Working	<--- Around	11.310	.123
Working	<--- change	5.871	.091
Working	<--- follow	8.643	-.121
Working	<--- search	18.907	.180
Working	<--- reliably	4.633	.087
Working	<--- team	12.470	-.106
Working	<--- supervisor	22.280	.178
Working	<--- solution	5.950	.097
Working	<--- business	7.320	.109
Felling	<--- ERPT	8.309	.141
Felling	<--- Software	5.663	-.086
Felling	<--- enough	10.221	.098
Felling	<--- Precise	5.752	-.085
Felling	<--- using	11.357	.166
Felling	<--- solution1	8.988	.140
Felling	<--- performance	8.507	-.121
Felling	<--- useful	6.318	-.086
Felling	<--- enables	5.969	-.085
Felling	<--- loads	6.042	.097

		M.I.	Par Change
Felling	<--- reliably	4.428	-.083
Felling	<--- team	4.200	.060
Felling	<--- business	5.404	.092
Feel	<--- PCIL	11.444	.306
Feel	<--- STC	12.348	.217
Feel	<--- OPC	13.733	.254
Feel	<--- ERPE	15.911	.523
Feel	<--- ERPU	9.562	.167
Feel	<--- DQ	11.004	.183
Feel	<--- Att	14.818	.315
Feel	<--- TI	13.507	.220
Feel	<--- ERPF	5.712	.134
Feel	<--- UM	6.665	.193
Feel	<--- SP	14.787	.440
Feel	<--- SF	13.362	.255
Feel	<--- BPF	16.839	.270
Feel	<--- Could	4.314	.087
Feel	<--- screen	4.007	.096
Feel	<--- informal	4.064	-.074
Feel	<--- need	8.977	.113
Feel	<--- application	5.000	.074
Feel	<--- maintenance	14.259	.168
Feel	<--- reports	21.121	.222
Feel	<--- sufficient	4.253	.104
Feel	<--- using	26.270	.280
Feel	<--- interaction	6.178	.117
Feel	<--- solution1	8.738	.153
Feel	<--- useful	4.896	.084
Feel	<--- enables	6.908	.102
Feel	<--- Look	11.714	.124
Feel	<--- Usually	11.539	.140
Feel	<--- Experiment	4.040	.076
Feel	<--- manuals	5.916	.113
Feel	<--- search	13.106	.162



			M.I.	Par Change
Feel	<---	loads	10.204	.139
Feel	<---	retrieve	7.438	.136
Feel	<---	supervisor	25.011	.204
Feel	<---	supported	10.388	.141
Feel	<---	solution	8.452	.125
Feel	<---	business	55.524	.325
Feel	<---	believe	4.125	-.072
Look	<---	definition	8.187	-.130
Look	<---	screen	18.651	.205
Look	<---	create	9.808	-.138
Look	<---	enough	4.747	.073
Look	<---	application	4.832	-.072
Look	<---	important	10.347	-.128
Look	<---	good	6.738	.117
Look	<---	interaction	14.826	.178
Look	<---	enables	4.438	.080
Look	<---	Around	34.460	.228
Look	<---	team	4.010	-.064
Look	<---	phone	4.831	.082
Look	<---	supervisor	7.143	.107
Look	<---	meeting	5.111	.096
Usually	<---	CA	4.024	-.094
Usually	<---	remember	5.967	.097
Usually	<---	frequent	6.908	-.087
Usually	<---	create	9.250	.121
Usually	<---	additional	15.172	.128
Usually	<---	reports	4.692	-.093
Usually	<---	features	4.302	-.078
Usually	<---	good	8.075	-.115
Usually	<---	enhances	7.805	-.116
Usually	<---	Working	4.364	-.067
Usually	<---	Feel	5.848	.085
Usually	<---	speed	4.123	.072
Usually	<---	follow	5.732	.094
Usually	<---	loads	12.908	.139
Usually	<---	reliably	4.131	-.078

			M.I.	Par Change
Usually	<---	feedback	12.199	-.105
Usually	<---	phone	4.046	-.067
Usually	<---	supervisor	4.478	-.076
Usually	<---	behaviour	6.042	-.096
Experiment	<---	Job	8.889	.108
Experiment	<---	definition	18.798	.181
Experiment	<---	additional	11.494	.113
Experiment	<---	informal	11.273	.112
Experiment	<---	contents	17.897	-.169
Experiment	<---	using	5.058	-.111
Experiment	<---	interaction	16.353	-.172
Experiment	<---	easy	7.341	.111
Experiment	<---	solution1	22.700	.223
Experiment	<---	Around	5.105	-.080
Experiment	<---	loads	15.308	-.154
Experiment	<---	reliably	9.012	.118
Experiment	<---	solution	10.339	-.125
Experiment	<---	meeting	25.197	-.196
Experiment	<---	believe	5.627	.076
speed	<---	ERPT	7.298	-.120
speed	<---	CA	6.479	-.111
speed	<---	Job	13.413	-.120
speed	<---	Software	13.081	.119
speed	<---	definition	5.011	-.085
speed	<---	frequent	6.181	.077
speed	<---	enough	8.179	-.079
speed	<---	important	7.394	.090
speed	<---	Precise	7.037	.085
speed	<---	contents	7.606	.100
speed	<---	solution1	6.157	-.106
speed	<---	Around	5.149	-.073
speed	<---	Felling	7.902	-.083
speed	<---	change	12.805	-.119
speed	<---	follow	5.097	.083
speed	<---	team	8.195	.076
speed	<---	supported	5.113	.082
detect	<---	TI	5.317	-.112
detect	<---	frequent	4.069	-.061
detect	<---	create	7.751	.101
detect	<---	informal	7.461	-.081

			M.I.	Par Change
detect	<---	maintenance	9.170	.110
detect	<---	Precise	13.127	-.115
detect	<---	easy	10.030	.117
detect	<---	enables	6.325	-.079
detect	<---	Felling	4.087	.059
detect	<---	Feel	7.386	-.088
detect	<---	Look	5.573	-.070
detect	<---	Experiment	5.992	-.075
detect	<---	change	8.559	.096
detect	<---	user	5.560	-.089
detect	<---	search	4.384	-.076
detect	<---	help	4.313	-.053
detect	<---	believe	10.222	.092
change	<---	ERPT	7.652	.151
change	<---	CA	4.874	.118
change	<---	UM	9.169	.229
change	<---	SP	4.448	.244
change	<---	Job	14.015	.151
change	<---	Software	6.595	-.104
change	<---	work	6.878	-.089
change	<---	enough	10.634	.111
change	<---	maintenance	5.222	.103
change	<---	Precise	9.451	-.121
change	<---	using	5.585	-.130
change	<---	good	6.760	-.120
change	<---	enables	6.501	.099
change	<---	Around	5.130	.090
change	<---	Working	6.317	.092
change	<---	Feel	4.145	-.082
change	<---	speed	4.237	-.083
change	<---	detect	5.854	.111
change	<---	manuals	8.692	.138
change	<---	current	21.046	.236
change	<---	user	8.626	.138
change	<---	follow	4.292	-.093
change	<---	search	11.011	.150
change	<---	reliably	22.438	.208
change	<---	retrieve	8.709	.148
manuals	<---	ERPE	7.135	.268
manuals	<---	SF	9.496	.165

			M.I.	Par Change
manuals	<---	remember	17.968	.146
manuals	<---	screen	4.212	.076
manuals	<---	work	6.784	-.067
manuals	<---	application	5.091	.057
manuals	<---	important	5.557	.073
manuals	<---	sufficient	9.550	-.120
manuals	<---	mental	13.328	.120
manuals	<---	aspects	17.355	.148
manuals	<---	solution1	7.080	.106
manuals	<---	useful	5.331	.067
manuals	<---	easier	4.088	-.076
manuals	<---	enables	4.330	.062
manuals	<---	change	4.750	.068
manuals	<---	follow	5.052	-.077
manuals	<---	reliably	5.608	.079
manuals	<---	supervisor	9.078	.094
manuals	<---	supported	24.534	.167
current	<---	CS	4.106	-.112
current	<---	Software	23.028	-.138
current	<---	frequent	5.900	-.065
current	<---	additional	4.464	-.056
current	<---	maintenance	6.723	.083
current	<---	Precise	12.500	-.099
current	<---	good	12.559	-.116
current	<---	mental	6.910	-.081
current	<---	solution1	6.672	-.096
current	<---	useful	8.252	-.078
current	<---	Look	6.721	-.068
current	<---	detect	4.753	.071
current	<---	change	13.147	.105
current	<---	reliably	5.737	.075
current	<---	meeting	4.966	.069
user	<---	OPC	4.008	-.105
user	<---	ERPE	8.828	-.298
user	<---	Att	5.098	-.141
user	<---	SF	5.010	-.120
user	<---	BPF	6.684	-.130
user	<---	Job	9.703	.095
user	<---	definition	5.145	.080
user	<---	remember	6.156	.086

			M.I.	Par Change
user	<---	maintenance	9.125	-.103
user	<---	reports	4.567	-.079
user	<---	interaction	14.145	-.135
user	<---	aspects	17.798	-.150
user	<---	performance	4.581	-.076
user	<---	detect	8.005	-.098
user	<---	search	8.644	.101
user	<---	reliably	6.244	.083
user	<---	supervisor	4.013	-.063
user	<---	solution	5.926	-.080
user	<---	business	8.286	-.096
user	<---	believe	9.191	-.082
follow	<---	CA	8.011	-.137
follow	<---	TI	4.549	.117
follow	<---	ERPS	8.245	-.193
follow	<---	Software	12.977	.132
follow	<---	definition	4.963	.094
follow	<---	create	37.464	.251
follow	<---	enough	9.108	-.093
follow	<---	informal	8.023	.095
follow	<---	sufficient	12.502	.164
follow	<---	features	10.685	.128
follow	<---	aspects	6.509	.108
follow	<---	easy	23.694	.202
follow	<---	useful	4.297	-.072
follow	<---	easier	51.468	.324
follow	<---	enables	7.554	-.097
follow	<---	Working	17.680	-.139
follow	<---	Usually	7.935	.106
follow	<---	Experiment	5.144	.078
follow	<---	change	8.725	-.109
follow	<---	loads	10.589	.130
follow	<---	reliably	4.193	-.082
follow	<---	team	12.934	.107
follow	<---	phone	16.853	-.142
follow	<---	help	14.950	-.110
follow	<---	supervisor	5.074	-.084
follow	<---	supported	7.880	-.113
follow	<---	believe	12.893	.116
search	<---	work	14.133	.101

		M.I.	Par Change
search	<--- reports	5.839	.093
search	<--- useful	6.496	.077
search	<--- enables	10.466	.100
search	<--- Around	4.450	.066
search	<--- Working	4.097	.058
search	<--- change	7.108	.086
search	<--- user	6.371	.094
search	<--- follow	7.181	-.095
search	<--- reliably	5.114	.078
loads	<--- TI	4.248	-.105
loads	<--- Software	4.641	-.074
loads	<--- Precise	12.979	.120
loads	<--- contents	4.326	.079
loads	<--- aspects	5.291	.091
loads	<--- solution1	4.069	-.089
loads	<--- easier	6.036	.103
loads	<--- Experiment	17.406	-.134
loads	<--- follow	6.462	.096
loads	<--- reliably	4.454	-.078
loads	<--- explain	4.625	-.060
loads	<--- supervisor	12.343	-.122
loads	<--- supported	12.262	-.131
loads	<--- believe	13.286	-.110
reliably	<--- CA	4.783	-.103
reliably	<--- ERPF	4.121	.101
reliably	<--- UM	11.341	.224
reliably	<--- Job	9.562	.110
reliably	<--- remember	4.576	-.086
reliably	<--- application	7.279	.079
reliably	<--- maintenance	9.829	.124
reliably	<--- aspects	4.573	-.088
reliably	<--- useful	4.811	.074
reliably	<--- enhances	10.376	.135
reliably	<--- enables	5.448	.080
reliably	<--- Felling	7.647	-.088
reliably	<--- Experiment	9.116	.101
reliably	<--- change	23.340	.174
reliably	<--- manuals	10.252	.132
reliably	<--- current	15.189	.176
reliably	<--- user	13.750	.154

			M.I.	Par Change
reliably	<---	feedback	5.257	.069
reliably	<---	help	9.100	.083
reliably	<---	behaviour	5.500	-.091
reliably	<---	solution	11.269	-.129
retrieve	<---	ERPC	5.552	.102
retrieve	<---	Job	6.257	-.077
retrieve	<---	definition	11.020	-.119
retrieve	<---	remember	5.246	-.080
retrieve	<---	contents	4.847	.075
retrieve	<---	features	6.802	-.086
retrieve	<---	mental	7.721	-.092
retrieve	<---	interaction	20.681	.165
retrieve	<---	easier	9.885	.120
retrieve	<---	Around	8.874	-.091
retrieve	<---	detect	5.588	.083
retrieve	<---	change	6.861	.082
retrieve	<---	feedback	18.510	.113
retrieve	<---	behaviour	9.474	.105
retrieve	<---	meeting	11.238	.112
feedback	<---	PCIL	17.647	.402
feedback	<---	STC	14.587	.250
feedback	<---	OPC	13.516	.266
feedback	<---	ERPE	8.029	.393
feedback	<---	ERPU	28.089	.302
feedback	<---	ERPT	7.294	.154
feedback	<---	DQ	24.792	.290
feedback	<---	Att	20.753	.394
feedback	<---	CS	10.354	.261
feedback	<---	ERPF	13.211	.216
feedback	<---	UM	6.569	.203
feedback	<---	SF	10.957	.245
feedback	<---	BPF	10.062	.221
feedback	<---	definition	16.342	-.197
feedback	<---	remember	29.901	-.260
feedback	<---	frequent	9.350	.121
feedback	<---	work	7.735	.099
feedback	<---	enough	8.281	.103
feedback	<---	additional	6.041	-.096
feedback	<---	informal	6.194	.097
feedback	<---	Precise	35.484	.246

			M.I.	Par Change
feedback	<---	contents	30.730	.259
feedback	<---	reports	11.156	.171
feedback	<---	good	32.874	.277
feedback	<---	mental	5.285	.104
feedback	<---	aspects	4.413	.103
feedback	<---	solution1	7.360	-.149
feedback	<---	performance	21.083	.224
feedback	<---	useful	32.125	.227
feedback	<---	easier	10.146	.166
feedback	<---	enhances	18.590	.214
feedback	<---	enables	29.511	.222
feedback	<---	Around	4.976	.093
feedback	<---	Look	6.407	.097
feedback	<---	Usually	8.922	-.130
feedback	<---	speed	4.050	.085
feedback	<---	detect	7.800	.134
feedback	<---	change	13.707	.158
feedback	<---	current	4.364	.113
feedback	<---	search	6.135	.117
feedback	<---	reliably	5.436	.107
feedback	<---	retrieve	18.006	.224
feedback	<---	phone	12.133	.139
feedback	<---	help	13.047	.119
feedback	<---	supervisor	7.040	.114
feedback	<---	behaviour	6.043	.114
feedback	<---	solution	8.624	.134
feedback	<---	meeting	6.382	.115
team	<---	PCIL	8.707	-.280
team	<---	STC	7.017	-.172
team	<---	OPC	7.198	-.193
team	<---	ERPU	9.653	-.175
team	<---	ERPT	22.861	-.271
team	<---	DQ	8.456	-.168
team	<---	Att	4.856	-.189
team	<---	CS	8.581	-.236
team	<---	ERPS	17.844	.324
team	<---	SF	6.511	-.187
team	<---	BPF	8.447	-.200
team	<---	create	18.350	.201
team	<---	enough	25.706	-.180



			M.I.	Par Change
team	<---	informal	7.651	-.106
team	<---	application	24.918	.173
team	<---	Precise	5.604	-.097
team	<---	contents	12.055	-.161
team	<---	reports	4.004	-.102
team	<---	easy	7.834	.133
team	<---	performance	4.494	-.102
team	<---	useful	14.857	-.153
team	<---	enhances	8.537	-.144
team	<---	enables	10.792	-.133
team	<---	Around	7.357	-.112
team	<---	Look	7.109	-.102
team	<---	change	4.535	-.090
team	<---	manuals	6.023	-.120
team	<---	follow	20.996	.214
team	<---	search	6.502	-.119
team	<---	people	19.992	.172
team	<---	supervisor	8.069	-.121
team	<---	solution	24.217	-.222
team	<---	business	7.787	-.128
explain	<---	ERPT	4.106	.120
explain	<---	ERPS	34.509	.469
explain	<---	enough	4.981	.082
explain	<---	application	32.965	.208
explain	<---	important	4.116	.090
explain	<---	Precise	8.410	-.124
explain	<---	using	6.785	.155
explain	<---	mental	9.032	-.141
explain	<---	easy	8.128	-.141
explain	<---	solution1	4.929	.126
explain	<---	useful	4.435	-.087
explain	<---	easier	4.949	-.120
explain	<---	Around	10.610	-.140
explain	<---	Feel	5.282	.100
explain	<---	manuals	4.190	.104
explain	<---	follow	8.322	-.140
explain	<---	loads	5.378	-.110
explain	<---	phone	4.242	.085
explain	<---	people	18.376	.172
explain	<---	help	39.175	.213

			M.I.	Par Change
explain	<---	supervisor	4.446	.094
explain	<---	business	18.446	.204
explain	<---	believe	11.139	-.129
phone	<---	ERPT	7.483	.149
phone	<---	Job	12.922	.145
phone	<---	remember	5.141	.103
phone	<---	screen	17.984	.207
phone	<---	frequent	6.892	.099
phone	<---	work	6.253	.085
phone	<---	enough	14.379	.130
phone	<---	need	4.231	-.078
phone	<---	application	6.880	-.088
phone	<---	Precise	4.197	.081
phone	<---	sufficient	4.513	-.108
phone	<---	features	10.712	-.141
phone	<---	using	7.978	-.156
phone	<---	mental	13.385	.158
phone	<---	interaction	22.034	.223
phone	<---	useful	5.309	.088
phone	<---	enables	7.558	.107
phone	<---	Around	11.403	.134
phone	<---	Look	4.716	.080
phone	<---	follow	10.977	-.149
phone	<---	search	5.904	.110
phone	<---	team	4.029	-.066
phone	<---	believe	11.334	.120
people	<---	ERPU	4.149	-.102
people	<---	ERPT	5.037	-.113
people	<---	CS	6.065	-.176
people	<---	CA	7.664	.137
people	<---	ERPC	4.620	.112
people	<---	Job	5.467	-.087
people	<---	Could	11.636	-.134
people	<---	definition	5.740	.103
people	<---	screen	13.530	.165
people	<---	work	4.329	-.065
people	<---	need	15.533	-.139

			M.I.	Par Change
people	<---	Precise	4.338	-.076
people	<---	performance	6.785	-.112
people	<---	useful	6.331	-.089
people	<---	enables	12.883	-.129
people	<---	Felling	7.272	.091
people	<---	Feel	6.923	-.098
people	<---	manuals	6.970	-.114
people	<---	team	8.658	.089
people	<---	phone	7.801	.099
people	<---	help	5.152	-.066
people	<---	meeting	4.152	.082
help	<---	ERPU	4.058	.127
help	<---	ERPC	34.558	.384
help	<---	Could	5.609	.117
help	<---	Software	4.059	.095
help	<---	definition	12.548	-.192
help	<---	remember	23.903	-.258
help	<---	screen	8.047	-.160
help	<---	frequent	4.270	.091
help	<---	create	10.929	-.174
help	<---	additional	6.091	-.107
help	<---	informal	12.247	-.151
help	<---	need	25.870	.225
help	<---	application	6.504	.099
help	<---	Precise	4.776	.100
help	<---	contents	4.821	.114
help	<---	reports	4.191	.116
help	<---	features	20.100	-.224
help	<---	good	9.148	.162
help	<---	easy	7.982	-.150
help	<---	performance	18.233	.231
help	<---	enhances	9.557	.170
help	<---	enables	7.396	.123
help	<---	Feel	4.833	.102
help	<---	Experiment	4.256	-.091
help	<---	detect	4.825	-.117
help	<---	follow	7.419	-.142

			M.I.	Par Change
help	<---	feedback	38.666	.248
help	<---	team	12.266	.133
help	<---	explain	39.045	.240
help	<---	supervisor	8.457	.139
help	<---	believe	27.098	-.216
supervisor	<---	PCIL	38.568	.501
supervisor	<---	STC	33.782	.320
supervisor	<---	OPC	30.819	.338
supervisor	<---	ERPE	17.756	.492
supervisor	<---	ERPU	43.207	.315
supervisor	<---	ERPT	7.983	.136
supervisor	<---	DQ	50.163	.348
supervisor	<---	Att	28.146	.386
supervisor	<---	CS	33.693	.397
supervisor	<---	TI	16.595	.217
supervisor	<---	ERPF	23.108	.241
supervisor	<---	UM	16.830	.274
supervisor	<---	SP	8.369	.295
supervisor	<---	SF	21.276	.283
supervisor	<---	BPF	31.572	.329
supervisor	<---	Could	6.808	.098
supervisor	<---	Software	21.078	.164
supervisor	<---	enough	5.202	.069
supervisor	<---	additional	6.469	-.084
supervisor	<---	informal	8.353	-.094
supervisor	<---	need	6.182	.083
supervisor	<---	maintenance	6.445	.101
supervisor	<---	Precise	48.795	.243
supervisor	<---	contents	21.370	.182
supervisor	<---	reports	52.542	.312
supervisor	<---	sufficient	5.439	.105
supervisor	<---	features	11.808	.131
supervisor	<---	using	9.443	.149
supervisor	<---	good	5.307	.094
supervisor	<---	interaction	4.993	.093
supervisor	<---	aspects	10.365	.133
supervisor	<---	easy	4.433	-.085

		M.I.	Par Change
supervisor	<--- performance	18.089	.175
supervisor	<--- useful	55.060	.251
supervisor	<--- enhances	29.075	.226
supervisor	<--- enables	46.785	.235
supervisor	<--- Around	15.539	.138
supervisor	<--- Feel	16.389	.143
supervisor	<--- Look	24.190	.159
supervisor	<--- Experiment	4.172	.068
supervisor	<--- speed	12.302	.125
supervisor	<--- manuals	13.042	.149
supervisor	<--- current	8.331	.131
supervisor	<--- search	8.273	.114
supervisor	<--- reliably	7.425	.106
supervisor	<--- supported	26.476	.201
supervisor	<--- behaviour	6.795	.102
supervisor	<--- solution	17.683	.161
supervisor	<--- business	40.752	.248
supervisor	<--- meeting	5.826	.093
supported	<--- Software	6.700	-.081
supported	<--- remember	4.916	.078
supported	<--- application	4.062	.052
supported	<--- interaction	6.671	-.094
supported	<--- aspects	11.513	-.122
supported	<--- Around	6.224	-.076
supported	<--- Look	5.484	-.066
supported	<--- manuals	12.565	.128
supported	<--- follow	12.561	-.123
supported	<--- loads	7.287	-.092
supported	<--- supervisor	5.692	.076
supported	<--- meeting	7.943	-.094
supported	<--- believe	4.557	-.059
behaviour	<--- Job	5.079	-.077
behaviour	<--- Could	8.678	.106
behaviour	<--- remember	4.603	.083
behaviour	<--- informal	9.579	.098
behaviour	<--- contents	4.570	-.081
behaviour	<--- aspects	9.716	-.124

			M.I.	Par Change
behaviour	<---	Usually	6.213	-.088
behaviour	<---	reliably	5.927	-.091
behaviour	<---	retrieve	8.230	.123
behaviour	<---	phone	4.761	.071
behaviour	<---	meeting	4.242	.076
behaviour	<---	believe	5.527	.071
solution	<---	ERPT	4.014	.085
solution	<---	ERPC	4.301	-.091
solution	<---	remember	13.240	-.129
solution	<---	work	9.264	.081
solution	<---	create	7.972	-.099
solution	<---	enough	6.528	.068
solution	<---	maintenance	8.651	-.103
solution	<---	contents	9.409	.107
solution	<---	mental	6.015	-.083
solution	<---	interaction	7.973	.104
solution	<---	aspects	5.808	.088
solution	<---	easy	7.867	-.100
solution	<---	enhances	9.837	-.116
solution	<---	Experiment	5.818	-.071
solution	<---	manuals	4.623	-.079
solution	<---	reliably	26.955	-.178
solution	<---	team	13.390	-.093
solution	<---	help	4.904	-.054
solution	<---	meeting	4.577	.072
business	<---	Job	12.067	-.116
business	<---	Could	5.722	-.084
business	<---	definition	13.881	.144
business	<---	remember	6.129	.094
business	<---	screen	6.613	.104
business	<---	aspects	6.325	-.098
business	<---	easy	6.378	-.096
business	<---	solution1	16.033	.174
business	<---	performance	5.758	.093
business	<---	Felling	4.273	.063
business	<---	Feel	25.551	.169
business	<---	user	4.985	-.088

			M.I.	Par Change
business	<---	follow	11.005	-.124
business	<---	feedback	4.741	-.062
business	<---	explain	13.253	.100
business	<---	supervisor	15.823	.136
business	<---	supported	6.414	.093
meeting	<---	CS	4.035	-.136
meeting	<---	TI	11.934	-.183
meeting	<---	Job	7.594	-.097
meeting	<---	Could	4.624	-.080
meeting	<---	Software	6.302	-.089
meeting	<---	frequent	9.720	-.103
meeting	<---	informal	8.114	.093
meeting	<---	application	4.771	-.064
meeting	<---	sufficient	5.462	.104
meeting	<---	features	5.531	.089
meeting	<---	using	5.358	.112
meeting	<---	aspects	6.940	.108
meeting	<---	solution1	5.355	-.106
meeting	<---	performance	6.676	-.105
meeting	<---	easier	6.385	.110
meeting	<---	Usually	7.527	-.100
meeting	<---	Experiment	27.389	-.174
meeting	<---	loads	4.476	.082
meeting	<---	retrieve	8.171	.126
meeting	<---	phone	6.880	-.088
meeting	<---	supported	5.285	-.089
believe	<---	ERPT	9.285	.196
believe	<---	Could	12.167	.174
believe	<---	frequent	4.799	-.098
believe	<---	create	10.736	.174
believe	<---	enough	11.306	.135
believe	<---	additional	16.562	.179
believe	<---	informal	14.057	.164
believe	<---	contents	4.820	-.115
believe	<---	features	10.417	.164
believe	<---	mental	16.284	.205
believe	<---	aspects	5.197	-.125

		M.I.	Par Change
believe	<--- easy	14.667	.206
believe	<--- Feel	10.921	-.156
believe	<--- Experiment	7.319	.121
believe	<--- detect	10.361	.174
believe	<--- follow	10.078	.168
believe	<--- loads	8.235	-.149
believe	<--- explain	5.434	-.091
believe	<--- phone	7.895	.126
believe	<--- help	13.752	-.137
believe	<--- behaviour	4.045	.105

### 5.4.1 Analysis of SEM

A hypothesized Technology Acceptance Model was tested using structural equation modeling using AMOS 18 software.

#### Our hypotheses were:

H1: ERP ease of use positively and directly affects ERP usefulness.

H2: ERP ease of use positively and directly affects attitude toward the ERP system.

H3: ERP usefulness positively and directly affects attitude toward the ERP system.

H4: ERP ease of use is affected by PCIL.

H5: ERP ease of use is affected by STC.

H6: ERP usefulness is affected by OPC.

**TABLE 5.43 Hypotheses and its P-Value**

Relation Between Constructs	Estimate	P Value	Hypothesis
System Technological Characteristics → ERP Ease of Use	-11.501	.878	Fail to Reject
Personal Characteristics and Information Literacy → ERP Ease of Use	17.526	.874	Fail to Reject
Organizational Process Characteristics → ERP Ease of Use	1.447	***	Reject
ERP Ease of Use → ERP Usefulness	-.549	.159	Fail to Reject
ERP Usefulness → Attitude to ERP System	.378	***	Reject
ERP Ease of Use → Attitude to ERP System	.620	.005	Reject

**Examination of the path coefficients and the significance level between the constructs** in the model were used to test the hypotheses. The analysis in above table



shows that Organizational Process Characteristics dimension has a positive significant relationship ERP Ease of Use. ERP Usefulness has a positive significant relationship with Attitude to ERP System. ERP Ease of Use has a positive significant relationship with Attitude to ERP System. H2, H3 and H6 are supported while H1, H4 and H5 are not supported in base model.

### Model Fit Summary

TABLE 5.44 CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	148	7832.933	1932	.000	4.054
Saturated model	2080	.000	0		
Independence model	64	16099.423	2016	.000	7.986

Focusing on the first set of fit statistics, we see the labels NPAR (number of parameters), CMIN (minimum discrepancy), DF (degrees of freedom), P (probability value), and CMIN/DF. The value of **7832.933**, under CMIN, represents the discrepancy between the unrestricted sample covariance matrix  $S$ , and the restricted covariance matrix  $\Sigma(\theta)$ , and, in essence, represents the Likelihood Ratio Test statistic, most commonly expressed as a  $\chi^2$  statistic. In general,  $H_0: \Sigma = \Sigma(\theta)$  is equivalent to the hypothesis that  $\Sigma - \Sigma(\theta) = 0$ ; the  $\chi^2$  test, then, simultaneously tests the extent to which all residuals in  $\Sigma - \Sigma(\theta)$  are zero. (Bollen, 1989a). The test of our  $H_0$ , Technology Acceptance Model fits the data, yielded a  $\chi^2$  value of **7832.933**, with **1932** degrees of freedom and a probability of less than **.000** ( $p < .0001$ ), thereby suggesting that the fit of the data to the hypothesized model is not entirely adequate. Because the  $\chi^2$  statistic equals  $(N-1) F_{min}$ , this value tends to be substantial when the model does *not* hold and when sample size is large (Joreskog & Sorbom, 1993). Yet, the analysis of covariance structures is grounded in large sample theory. As such, large samples are critical to the obtaining of precise parameter estimates, as well as to the tenability of asymptotic distributional approximations (MacCallum et al., 1996). Thus, findings of well-fitting hypothesized models, where the  $\chi^2$  value approximates the degrees of freedom, have proven to be unrealistic in most SEM empirical research. One of the first fit statistics to address this problem was the  $\chi^2/\text{degrees of freedom}$  ratio (Wheaton, Muthen, Alwin, & Summers, 1977), which appears as CMIN/DF, and is presented in first cluster of statistics which is **4.054** (Std.Recommended Value  $\leq 5$ ).

**TABLE 5.45 RMR, GFI**

Model	RMR	GFI	AGFI	PGFI
Default model	.185	.646	.619	.600
Saturated model	.000	1.000		
Independence model	.431	.249	.225	.241

Turning now to the next group of statistics, we see the labels *RMR*, *GFI*, *AGFI*, and *PGFI*. The root mean square residual (RMR) represents the average residual value derived from the fitting of the variance–covariance matrix for the hypothesized model  $\Sigma(\theta)$  to the variance–covariance matrix of the sample data (*S*). However, because these residuals are relative to the sizes of the observed variances and covariances, they are difficult to interpret. Thus, they are best interpreted in the metric of the correlation matrix (Hu & Bentler, 1995; Joreskog & Sorbom, 1989). The standardized RMR, then, represents the average value across all standardized residuals, and ranges from zero to 1.00; in a well-fitting model, this value will be small (say, .05 or less). The value of **0.185** shown in above table represents the unstandardized residual value.

The Goodness-of-Fit Index (GFI) is a measure of the relative amount of variance and covariance in *S* that is jointly explained by  $\Sigma$ . The Adjusted Goodness-of-Fit Index (AGFI) differs from the GFI only in the fact that it adjusts for the number of degrees of freedom in the specified model. As such, it also addresses the issue of parsimony by incorporating a penalty for the inclusion of additional parameters. The GFI and AGFI can be classified as absolute indices of fit because they basically compare the hypothesized model with no model at all (see Hu & Bentler, 1995). Although both indices range from zero to 1.00, with values close to 1.00 being indicative of good fit. In our model GFI = **0.646** and AGFI = **0.619** which is considered to be moderate fit.

**TABLE 5.46 Baseline Comparisons**

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	.513	.492	.583	.563	.581
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

We turn now to the next set of goodness-of-fit statistics (baseline comparisons), which can be classified as incremental or comparative indices of fit (Hu & Bentler,

1995; Marsh et al., 1988). As with the GFI and AGFI, incremental indices of fit are based on a comparison of the hypothesized model against some standard. However, whereas this standard represents no model at all for the GFI and AGFI, it represents a baseline model typically, the independence or null model noted above for the incremental indices). We now review these incremental indices. For the better part of a decade, Bentler and Bonett's (1980) Normed Fit Index (NFI) has been the practical criterion of choice, as evidenced in large part by the current "classic" status of its original paper (see Bentler, 1992; Bentler & Bonett, 1987). However, addressing evidence that the NFI has shown a tendency to underestimate fit in small samples, Bentler (1990) revised the NFI to take sample size into account and proposed the Comparative Fit Index (CFI; see last column). Values for both the NFI and CFI range from zero to 1.00 and are derived from the comparison of a hypothesized model with the independence (or null) model, as described earlier. As such, each provides a measure of complete covariation in the data. Although a value  $> .90$  was originally considered representative of a well-fitting model (see Bentler, 1992), a revised cut-off value close to  $.95$  has recently been advised (Hu & Bentler, 1999). Based on the NFI and CFI values reported in above table (**0.513 and 0.581**, respectively), we can once again conclude that our hypothesized model fits the sample data moderately.

The Relative Fit Index (RFI; Bollen, 1986) represents a derivative of the NFI; as with both the NFI and CFI, the RFI coefficient values range from zero to 1.00, with values close to  $.95$  indicating superior fit (see Hu & Bentler, 1999). The Incremental Index of Fit (IFI) was developed by Bollen (1989b) to address the issues of parsimony and sample size which were known to be associated with the NFI. As such, its computation is basically the same as that of the NFI, with the exception that degrees of freedom are taken into account. Thus, it is not surprising that our finding of IFI of **.583** is consistent with that of the CFI in reflecting a well-fitting model. Finally, the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), consistent with the other indices noted here, yields values ranging from zero to 1.00, with values close to  $.95$  (for large samples) being indicative of good fit (see Hu & Bentler, 1999). **Our model has RFI = 0.492, IFI = 0.583 and TLI = 0.563 which again shows that our model fits moderately.**

**TABLE 5.47 Parsimony-Adjusted Measures**

Model	PRATIO	PNFI	PCFI
Default model	.958	.492	.557
Saturated model	.000	.000	.000
Independence model	1.000	.000	.000

The next cluster of fit indices relates to the issue of model parsimony. The first fit index (PRATIO) relates to the initial parsimony ratio proposed by James et al. (1982). More appropriately, however, the index has subsequently been tied to other goodness-of-fit indices (see, e.g., the PGFI noted earlier). Here, it is computed relative to the NFI and CFI. In both cases, as was true for PGFI, the complexity of the model is taken into account in the assessment of model fit (see James et al.; Mulaik et al., 1989). Again, a PNFI of **0.492** and PCFI of **0.557** fall in the range of expected values

**TABLE 5.48 NCP**

Model	NCP	LO 90	HI 90
Default model	5900.933	5631.753	6176.948
Saturated model	.000	.000	.000
Independence model	14083.423	13682.578	14490.826

The next set of fit statistics provides us with the Non-Centrality Parameter (NCP) estimate. In our initial discussion of the  $\chi^2$  statistic, we focused on the extent to which the model was tenable and could not be rejected. Now, however, let's look a little more closely at what happens when the hypothesized model is incorrect [i.e.,  $\Sigma \neq \Sigma(\theta)$ ]. In this circumstance, the  $\chi^2$  statistic has a non-central  $\chi^2$  distribution, with a noncentrality parameter,  $\lambda$ , that is a fixed parameter with associated degrees of freedom, and can be denoted as  $\chi^2$  (df,  $\lambda$ ) (Bollen, 1989a; Hu & Bentler, 1995; Satorra & Saris, 1985). Turning to above table, we find that our hypothesized model yielded a noncentrality parameter of **5900.933**. This value represents the  $\chi^2$  value minus its degrees of freedom (**7832.933 – 1932**). The confidence interval indicates that we can be 90% confident that the population value of the non-centrality parameter ( $\lambda$ ) lies between **5631.753 and 6176.948**.

**TABLE 5.49 FMIN**

Model	FMIN	F0	LO 90	HI 90
Default model	15.450	11.639	11.108	12.183
Saturated model	.000	.000	.000	.000
Independence model	31.754	27.778	26.987	28.582

**TABLE 5.50 RMSEA**

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.078	.076	.079	.000
Independence model	.117	.116	.119	.000

The next set of fit statistics focuses on the root mean square error of approximation (RMSEA) also called Badness of Fit Index. Although this index, and the conceptual framework within which it is embedded, was first proposed by Steiger and Lind in 1980, it has only recently been recognized as one of the most informative criteria in covariance structure modelling. This discrepancy, as measured by the RMSEA, is expressed per degree of freedom, thus making it sensitive to the number of estimated parameters in the model (i.e., the complexity of the model); values less than .05 indicate good fit, and values as high as .08 represent reasonable errors of approximation in the population (Browne & Cudeck, 1993). MacCallum et al. (1996) have recently elaborated on these cut-points and noted that RMSEA values ranging from .08 to .10 indicate mediocre fit, and those greater than .10 indicate poor fit. Although Hu and Bentler (1999) have suggested a value of .06 to be indicative of good fit between the hypothesized model and the observed data. Our model is having RMSEA is **0.078** which suggests mediocre fit. **The 90 percent confidence interval for the RMSEA is between a LO of .076 and a HI of 0.079. Thus, even the upper bound is close to .08.** In addition to reporting a confidence interval around the RMSEA value, AMOS tests for the closeness of fit (PCLOSE). That is, it tests the hypothesis that the RMSEA is “good” in the population (specifically, that it is  $< .05$ ). Joreskog and Sorbom (1996a) have suggested that the p-value for this test should be  $> .50$ . In our case it is **0.000**  $< 0.05$  which is not good.

**TABLE 5.51 AIC**

Model	AIC	BCC	BIC	CAIC
Default model	8128.933	8172.462	8755.044	8903.044
Saturated model	4160.000	4771.765	12959.401	15039.401
Independence model	16227.423	16246.246	16498.174	16562.174

The first of these is Akaike's (1987) Information Criterion (AIC), with Bozdogan's (1987) consistent version of the AIC (CAIC) shown at the end of the row. Both criteria address the issue of parsimony in the assessment of model fit; as such, statistical goodness-of-fit as well as the number of estimated parameters are taken into account.

**TABLE 5.52 ECVI**

Model	ECVI	LO 90	HI 90	MECVI
Default model	16.033	15.502	16.578	16.119
Saturated model	8.205	8.205	8.205	9.412
Independence model	32.007	31.216	32.810	32.044

The Expected Cross-Validation Index (ECVI) is central to the next cluster of fit statistics. The ECVI was proposed, initially, as a means of assessing, in a single sample, the likelihood that the model cross-validates across similar-sized samples from the same population (Browne & Cudeck, 1989).

**TABLE 5.53 HOELTER**

Model	HOELTER .05	HOELTER .01
Default model	132	135
Independence model	67	69

## CHAPTER – 6

### FINDINGS

#### 6.1 General Findings

Out of 508 respondents,

- 77% are male and 23% are female.
- 5.1% belong to 20-29 years, 34.6% belong to 30-39 years, 39.6% belong to 40-49 years, 17.1% belong to 50-59 years and 3.5% belong to above 60 years.
- 3.5% did High School, 55.9% were Graduates, 34.8% were Post-Graduates, 3.1% were Doctorates and 2.6% were others.
- 18.3% belong to Chemical companies, 19.5% belong to Bearing companies, 20.1% belong to Engineering companies, 20.1% belong to Pharma companies & 22% belong to Tyre companies.
- 10% each belong to ABC Bearing, Apollo Tyres, Aventis Pharma, L&T, Linde Engg and Zydus Pharma. 12% belong to CEAT Tyres, 11.8% belong to GSFC Ltd, 6.5% belong to GNFC Ltd. & 9.4% belong to FAG Bearings.
- 92.3% has less than 12 years experience, 6.3% has experience between 13 to 24 years and 1.4% has more than 24 years experience in the company.
- 96.3% has less than 12 years experience, 2.4% has experience between 13 to 24 years and 1.4% has more than 24 years experience in their current job.
- 44.7% has less than or equal to 4 years experience, 51.8% has experience between 5 to 9 years and 3.5% has more than 10 years experience in the ERP system.
- 36% belong to Worker category, 40.6% belong to Lower management, 20.5% belong to Middle management and 3% belong to Top management in their respective companies.

- 25.2% had average experience, 25.4% had far a bit experience, 22.8% had quite a bit experience and 13.2% had some experience in using computers before they started using ERP system at work.

## 6.2 Cross Tabulations Findings

Out of 508 respondents,

### 1) Company & Gender of the respondent:

- 10.4% are male in CEAT Tyres & 8.5% were male in GSFC Ltd.
- 17% are female in GSFC Ltd. & 6% are female in GNFC Ltd.

### 2) Company & Age of the respondent:

- 5.7% in Zydus Pharma, 14.4% in Aventis and 13.9% in CEAT Tyres are in age group of 40-49 years.
- 0.2% in GNFC Ltd., 0.4% in GSFC Ltd. and 0.6% in FAG Bearing are above 60 years of age.

### 3) Company & Education of the respondent:

- 7.3% in Aventis, 6.1% each in CEAT Tyres and Aventis are Doctorates.
- 6.1% in ABC Bearing, 5.9% in Apollo Tyres, 5.7% each in CEAT Tyres, Zydus Pharma & FAG Bearings are Post-Graduates.
- 0.2% each in Apollo Tyres, CEAT Tyres, L&T & GNFC Ltd. are Graduates

### 4) Company & Working Experience of the respondent:

- 11.6% in CEAT Tyres, 9.8% in ABC Bearing, 9.6% in Zydus Pharma, 9.4% each in Apollo Tyres & Linde Engg has worked with the company with less than or equal to 12 years.
- 0.2% each in ABC Bearing & GNFC Ltd, 0.4% each in CEAT Tyres & Zydus Pharma has worked with the company for more than 12 years & less than 24 years.
- 1.2% in GSFC Ltd. and 0.2% in GNFC Ltd. has worked with the company more than 24 years.



**5) Company & Current Job Experience of the respondent:**

- 12% in CEAT Tyres, 10% each in ABC Bearing, Apollo Tyres, Aventis, Linde Engg & Zydus Pharma has worked in their current job less than or equal to 12 years.
- 1.6% in GSFC Ltd., 0.6% in L&T and 0.2% in FAG Bearing has worked in their current job for more than 12 years & less than 24 years.
- 1% in GSFC Ltd. and 0.4% in L&T has worked in their current job for more than 24 years.

**6) Company & ERP Experience of the respondent:**

- 6.7% in GSFC Ltd., 4.9% in Linde Engg, 4.5% in Apollo Tyres and 4.3% in GNFC Ltd. has worked with the ERP system less than or equal to 4 years.
- 8.3% in CEAT Tyres, 6.1% in ABC Bearing, 5.9% in Zydus Pharma and 5.5% in Apollo Tyres has worked with the ERP system between 5 to 9 years.
- 1% in L&T, 0.6% each in Aventis & GSFC Ltd., 0.4% each in Linde Engg, GNFC Ltd. & FAG Bearing has worked with the ERP system for more than 10 years.

**6.3 Inferential Statistics Findings****1) Effect of Gender of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**

- Males feel more comfortable working with a computer than females.
- Males feel that the ERP system provides reports that seem to be exactly what they need than females.
- Males feel that interacting with ERP solution does not require a lot of their mental effort than females.

**2) Effect of Age of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**

- Age group of 20-29 years requires more support of software manuals than age group above 60 years.
- Age group of 20-29 years will look for ways to experiment with new IT than age group above 60 years.
- Age group of 20-29 years feels more comfortable working with a computer than age group of 30-39 years.
- Age group of 20-29 years feels that ERP system provides sufficient information to their needs than age group above 60 years.
- Age group of 20-29 years feels that ERP system provides complete features they need than age group above 60 years.
- Age group of 20-29 years is more satisfied with the speed of interacting with the system than age group above 60 years.
- Age group of 50-59 years feels that it is easy to change the output format than age group of 20-29 years.
- Age group of 20-29 years feels that it is fast to search data in the ERP system than age group above 60 years.
- Age group above 60 years is able to retrieve data quickly than age group of 30-39 years.
- Age group of 20-29 years feels that ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than age group of 40-49 years.
- Age group of 20-29 years feels that their supervisor is very supportive of the use of ERP system for their job than age group above 60 years.
- Age group of 20-29 years says that the ERP solution fits well with the business needs of them than age group above 60 years.
- Age group of 30-39 years has received additional formal training for ERP since the conclusion of the above training than age group above 60 years.
- Age group of 40-49 years has received informal training for ERP than age group above 60 years.

- Age group of 50-59 years feels that they need additional training to complete their current job tasks than age group of 40-49 years.
  - Age group above 60 years ask other users for help with ERP application rather than the support staff compared to age group of 40-49 years.
  - Age group of 20-29 years requires more support of software manuals than age group above 60 years.
  - Age group of 20-29 years feels that using ERP solution improves their job performance than age group above 60 years.
  - Age group of 20-29 years feels that using ERP solution enhances their effectiveness on the job than age group above 60 years.
  - Age group of 20-29 years finds ERP solution useful in their job than age group of 30-39 years.
  - Age group of 20-29 years feels that using the ERP system is a good idea than age group above 60 years.
  - Age group of 20-29 years like the idea of using the ERP system to perform their job than age group above 60 years.
- 3) Effect of Education of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**
- Graduate like to experiment with new IT than Post-Graduate.
  - Graduate is less nervous working with a computer than Post-Graduate.
  - Graduate gets precise information that they need from ERP system than Post-Graduate.
  - Graduate is satisfied with the speed of interacting with the ERP system than Post-Graduate.
  - Graduate feels that the ERP system loads quickly than Post-Graduate.
  - Graduate feels that exact definition of data fields relating to their tasks is easy to find out than Post-Graduate.

- Graduate feels that the content and index of the user manuals are useful than Post-Graduate.
- Graduate feels that user manuals are current (up-to-date) than Post-Graduate.
- Graduate feels that people who influence their behaviour think that they should use the ERP system than Post-Graduate.
- Graduate feels that people who are important to them think that they should use the ERP system than Post-Graduate.
- Post-Graduate believe that there are some important problems with the way the ERP system is managed than Graduate.
- Post-Graduate have received additional formal training for ERP since the conclusion of the above training than Graduate.
- Graduate have received informal training (e.g. half hour of support from a peer or training officer) for ERP than Post-Graduate.
- Post-Graduate do not know who to phone for support for this application than Graduate.
- Post-Graduate feels that the support people talk in terms that they do not understand than Graduate.
- Post-Graduate ask other users for help with this application rather than the support staff compared to Graduate.
- Post-Graduate feels that the support for this application is inadequate than Graduate.
- Post-Graduate feels that the ERP team does not provide feedback regarding users' requests to modify this application than Graduate.
- Post-Graduate feels that the ERP team did not explain how application modifications would impact their job Graduate.
- Graduate feels that using ERP solution in their job enables them to accomplish tasks more quickly than Post-Graduate.
- Graduate & Post-Graduate both feels that using ERP solution makes it easier to do their job.

- Graduate finds ERP solution useful in their job than Post-Graduate.
  - Post-Graduate feels that interacting with ERP solution does not require a lot of their mental effort than Graduate.
  - Post-Graduate find it easy to get ERP solution to do what they want it to do than Graduate.
  - Graduate feels that using the ERP system is a good idea than Post-Graduate.
  - Graduate would rate the intensity of their job-related system use to be than Post-Graduate.
  - Likelihood of using most of the features of the ERP solution in case of Graduate is more than Post-Graduate.
  - Likelihood of using more features than the other users of the ERP solution in case of Graduate is more than Post-Graduate.
  - Likelihood of using more obscure aspects of the ERP solution in case of Graduate is more than Post-Graduate.
- 4) Effect of Working Place of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**
- Workers would work for ways to experiment with new IT when they hear about it than Lower Management.
  - Lower Management feels that among their peers, they are usually the first to try out new IT than Workers.
  - Lower Management like to experiment with new IT than Workers.
  - Workers feel more nervous while working with a computer than Middle Management.
  - Workers get more sinking feeling when they think of trying to use a computer than Middle Management.
  - Middle Management feels more comfortable working with a computer than Lower Management.

- Middle Management feels that it is fast to search data in the ERP system than Lower Management.
  - Middle Management feels that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than Lower Management.
  - Middle Management feels that the ERP system is subject to frequent system problems and crashes than Lower Management.
  - Workers feel that the content and index of the user manuals are useful than Middle Management.
  - Workers feel that the user manuals are easy to understand and follow than Middle Management.
  - Middle Management feels that the organization has supported the use of the ERP system than Workers.
  - Lower Management believes there are some important problems with the way the ERP system is managed than Middle Management.
  - Middle Management asks other users for help with this application rather than the support staff than Lower Management.
  - Middle Management feels that using ERP solution improves their job performance Workers.
  - Middle Management feels that using the ERP system is a good idea than Lower Management.
  - Middle Management like the idea of using the ERP system to perform their job than Workers.
- 5) Effect of Company Experience of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**
- Users with company experience between 13 to 23 years had lot of time to complete the job for which the software was provided than those with company experience less than or equal to 12 years.

- Users with company experience between 13 to 23 years when they hear about a new IT, they would look for ways to experiment with it than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years are usually the first to try out new IT among their peers than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years like to experiment with new IT than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years feel more comfortable working with a computer than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years feel that ERP system provides the precise information they need than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years feel that the information contents provided by the ERP system meet their needs than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years feels that it is fast to search data in the ERP system than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years were able to retrieve data quickly than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years feels that it is fast to create a new record (vendor, customer etc.) in ERP system than those with company experience less than or equal to 12 years.
- Users with company experience between 13 to 23 years feels that their organization has supported the use of the ERP system than those with company experience less than or equal to 12 years.

- Users with company experience between 13 to 23 years feels that the ERP solution fits well with the business needs of them than those with company experience less than or equal to 12 years.
  - Users with company experience between 13 to 23 years feels that the ERP solution fits well with the business need of their department than those with company experience less than or equal to 12 years.
  - Users with company experience between 13 to 23 years feels that the ERP system is satisfactory in meeting their needs than those with company experience less than or equal to 12 years.
  - Users with company experience between 13 to 23 years feels that using ERP solution in their job enables them to accomplish tasks more quickly than those with company experience less than or equal to 12 years.
  - Users with company experience between 13 to 23 years feels that using ERP solution makes it easier to do their job than those with company experience less than or equal to 12 years.
  - Users with company experience between 13 to 23 years find ERP solution useful in their job than those with company experience less than or equal to 12 years.
  - Users with company experience between 13 to 23 years find it easy to get ERP solution to do what they want it to do than those with company experience less than or equal to 12 years.
  - Users with company experience between 13 to 23 years feels that using a ERP system is a good idea than those with company experience less than or equal to 12 years.
  - Users with company experience between 13 to 23 years like the idea of using the ERP system to perform their job than those with company experience less than or equal to 12 years.
- 6) Effect of Current Job Experience of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**



- Users with current job experience between 13 to 23 years could complete the job using ERP system, if there was no one around to tell them what to do as they go than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years could complete the job using ERP system, if they had only the software manuals or/and the build-in help for assistance than those with current job experience less than or equal to 12 years.
- Users with current job experience less than or equal to 12 years could complete the job using ERP system, if they had a lot of time to complete the job for which the software was provided than those with current job experience between 13 to 23 years.
- Users with current job experience between, 13 to 23 when they hear about a new IT, would look for ways to experiment with it than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years like to experiment with new IT than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feel comfortable working with a computer than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that the information contents provided by the ERP system meet their needs than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that the system provides sufficient information to their needs than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that it is easy to detect and correct possible errors in the ERP system than those with current job experience less than or equal to 12 years.
- Users with current job experience less than or equal to 12 years feels that it is easy to change the output format than those with current job experience

between 13 to 23 years.

- Users with current job experience between 13 to 23 years feels that it is fast to search data in the ERP system than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years were able to retrieve data quickly than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that it is fast to create a new record (vendor, customer etc.) in ERP system than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that the description of the functions/commands displayed on screen is clear to them than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that their supervisor is very supportive of the use of the ERP system for their job than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that their organization has supported the use of the ERP system than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that the ERP solution fits well with their business needs than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that the ERP solution fits well with the business need of their department than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 feels that the ERP system

is satisfactory in meeting their needs than those with current job experience less than or equal to 12 years.

- Users with current job experience between 13 to 23 years feels that the system maintenance and the way it is provided meet their need adequately than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that using ERP solution improves their job performance than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that using ERP solution enhances their effectiveness on the job than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that using ERP solution makes it easier to do their job than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years finds ERP solution useful in their job than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that their interaction with ERP solution is clear and understandable than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years find it easy to get ERP solution to do what they want it do to than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years feels that using the ERP system is a good idea than those with current job experience less than or equal to 12 years.
- Users with current job experience between 13 to 23 years like the idea of using the ERP system to perform their job than those with current job experience less than or equal to 12 years.

**7) Effect of ERP Experience of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**

- Users with ERP experience between 5 to 9 years could complete the job using ERP system, if they had a lot of time to complete the job for which the software was provided than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years and those with ERP experience less than or equal to 4 years, both would look for ways to experiment with IT, if they hear about a new IT.
- Users with ERP experience between 5 to 9 years would be usually the first to try out new IT among their peers than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years like to experiment with new IT than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years are more nervous while working with a computer than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years get a sinking feeling when they think of trying to use a computer than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years are less comfortable working with a computer than those with ERP experience less than or equal to 4 years.
- Users with ERP experience less than or equal to 4 years feels that the ERP system provides the precise information they need than those with ERP experience between 5 to 9 years.
- Users with ERP experience between 5 to 9 years feels that the information contents provided by the ERP system meet their needs than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that the ERP system

provides sufficient information to their needs than those with ERP experience less than or equal to 4 years.

- Users with ERP experience between 5 to 9 years feels that it is easy to detect and correct possible errors in the ERP system than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that it is easy to change the output format than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that the ERP system loads quickly than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that the system reliably handles their queries than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years were able to retrieve data quickly than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that it is fast to create a new record (vendor, customer etc.) in ERP system than those with ERP experience less than or equal to 4 years.
- Users with ERP experience less than or equal to 4 years feels that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than those with ERP experience between 5 to 9 years.
- Users with ERP experience less than or equal to 4 years feels that the ERP system is subject to frequent system problems and crashes than those with ERP experience between 5 to 9 years.
- Users with ERP experience less than or equal to 4 years could complete the job using ERP than those with ERP experience between 5 to 9 years.
- Users with ERP experience between 5 to 9 years feels that the user manuals are current (up-to-date) than those with ERP experience less than or equal to 4 years.
- Users with ERP experience less than or equal to 4 years feels that the user manuals are easy to understand and follow than those with ERP experience

between 5 to 9 years.

- Users with ERP experience less than or equal to 4 years feels that their supervisor is very supportive of the use of the ERP system for their job than those with ERP experience between 5 to 9 years.
- Users with ERP experience between 5 to 9 years feels that their organization has supported the use of the ERP system than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that the people who are important to them think that they should use the ERP system than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that the ERP solution fits well with their business needs than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years believe that there are some important problems with the way the ERP system is managed than those with ERP experience less than or equal to 4 years.
- Users with ERP experience less than or equal to 4 years feels that there is not enough training for them on how to find, understand, access or use the ERP system than those with ERP experience between 5 to 9 years.
- Users with ERP experience between 5 to 9 years have received informal training (e.g. half hour of support from a peer or training officer) for ERP than those with ERP experience less than or equal to 4 years.
- Users with ERP experience less than or equal to 4 years do not know who to phone for support for this application than those with ERP experience between 5 to 9 years.
- Users with ERP experience less than or equal to 4 years feels that the support people talk in terms that they do not understand than those with ERP experience between 5 to 9 years.
- Users with ERP experience less than or equal to 4 years feels that the ERP team did not explain how application modifications would impact their job

than those with ERP experience between 5 to 9 years.

- Users with ERP experience between 5 to 9 years feels that using ERP solution enhances their effectiveness on the job than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that using ERP solution makes it easier to do their job than those with ERP experience less than or equal to 4 years.
- Users with ERP experience less than or equal to 4 years find ERP solution useful in their job than those with ERP experience between 5 to 9 years.
- Users with ERP experience between 5 to 9 years feels that their interaction with ERP solution is clear and understandable than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that interacting with ERP solution does not require a lot of their mental effort than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years find ERP solution is easy to use than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years find it easy to get ERP solution to do what they want it to do than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that using ERP system is compatible with all aspects of their work than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that using ERP system fits well with the way they like to work than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that using ERP system fits into their work style than those with ERP experience less than or equal to 4 years.
- Users with ERP experience between 5 to 9 years feels that using the ERP

system is a good idea than those with ERP experience less than or equal to 4 years.

- Users with ERP experience between 5 to 9 years like the idea of using the ERP system to perform their job than those with ERP experience less than or equal to 4 years.

**8) Effect of Company of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**

- Users from Zydus Pharma could complete the job using ERP system, if there was no one around to tell them what to do as they go than those from ABC Bearing.
- Users from Aventis could complete the job using ERP system, if they had only the software manuals or/and the build-in help for assistance than those from ABC Bearing.
- Users from L&T could complete the job using ERP system, if they could call someone for help if they got stuck than those from ABC Bearing.
- Users from CEAT could complete the job using ERP system, if they had a lot of time to complete the job for which the software was provided than those from GNFC.
- Users from GSFC would look for ways to experiment with IT, when they hear about a new IT than those from ABC Bearing.
- Users from Zydus Pharma among their peers are usually the first to try out new IT than those from Linde Engg.
- Users from Apollo Tyres like to experiment with new IT than those from ABC Bearing.
- Users from ABC Bearing get a sinking feeling when they think of trying to use a computer than those from L&T.
- Users from GNFC feel comfortable working with a computer than those from ABC Bearing.



- Users from L&T feel that the ERP system provides the precise information they need than those from ABC Bearing.
- Users from L&T feel that the information contents provided by the ERP system meet their needs than those from ABC Bearing.
- Users from L&T feel that the ERP system provides reports that seem to be exactly what they need than those from ABC Bearing.
- Users from GSFC feel that the ERP system provides sufficient information to their needs than those from Linde Engg.
- Users from CEAT Tyres feel that the ERP system provides complete features they need than those from ABC Bearing.
- Users from L&T are satisfied with the speed of interacting with the ERP system than those from ABC Bearing.
- Users from L&T feel that is easy to detect and correct possible errors in the ERP system than those from ABC Bearing.
- Users from Apollo Tyres feel that it is easy to change the output format than those from ABC Bearing.
- Users from GSFC feel that it is fast to search data in the ERP system than those from ABC Bearing.
- Users from Apollo Tyres feel that the ERP system loads quickly than those from Linde Engg.
- Users from Linde Engg feel that the ERP system reliably handles their queries than those from ABC Bearing.
- Users from GSFC were able to retrieve data quickly than those from ABC Bearing.
- Users from GSFC feel that it is fast to create a new record (vendor, customer etc.) in this system than those from Linde Engg.
- Users from L&T feel that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than those from CEAT Tyres.

- Users from L&T feel that the ERP system is subject to frequent system problems and crashes than those from Apollo Tyres.
- Users from Aventis feel that the description of the functions /commands displayed on screen is clear to them than those from ABC Bearing.
- Users from Aventis feel that the function / commands names of the ERP system are easy to remember than those from L&T.
- Users from Apollo Tyres feel that the exact definition of data fields relating to their tasks is easy to find out than those from FAG Bearing.
- Users from Aventis feel that the content and index of the user manuals are useful than those from ABC Bearing.
- Users from L&T feel that the user manuals are current (up to date) than those from ABC Bearing.
- Users from L&T feel that the user manuals are current (up to date) than those from ABC Bearing.
- Users from L&T feel that the user manuals are easy to understand and follow than those from ABC Bearing.
- Users from GNFC feel that their supervisor is very supportive of the use of the ERP system for their job than those from ABC Bearing.
- Users from GNFC feel that the organization has supported the use of the ERP system than those from ABC Bearing.
- Users from GSFC feel that people who influence their behaviour think that they should use the ERP system than those from ABC Bearing.
- Users from L&T feel that people who are important to them think that they should use the ERP system than those from ABC Bearing.
- Users from GSFC feel that the ERP solution fits well with the their business needs than those from ABC Bearing.
- Users from GNFC feel that the ERP solution fits well with the business need of their department than those from ABC Bearing.
- Users from GSFC feel that the ERP system is satisfactory in meeting their

needs than those from L&T.

- Users from Aventis believe that there are some important problems with the way the ERP system is managed and made available that make it harder to do their job than those from ABC Bearing.
- Users from GSFC feel that the system maintenance and the way it is provided meet their need adequately than those from ABC Bearing.
- Users from Apollo Tyres feel that there is not enough training for them on how to find, understand, access or use the ERP system than those from ABC Bearing.
- Users from CEAT Tyres have received additional formal training for ERP since the conclusion of the above training than those from Linde Engg.
- Users from Apollo Tyres have received informal training (e.g. half hour of support from a peer or training officer) for ERP than those from Linde Engg.
- Users from CEAT Tyres feel that they need additional ERP training to complete their current job tasks than those from Zydus Pharma.
- Users from GSFC do not know who to phone for support for this application than those from CEAT Tyres.
- Users from ABC Bearing feel that the support people talk in terms that they do not understand than those from CEAT Tyres.
- Users from Linde Engg ask other users for help with this application rather than the support staff than those from Aventis.
- Users from Linde Engg feels that the support for ERP application is inadequate than those from CEAT Tyres.
- Users from L&T feel that the ERP team does not provide feedback regarding users' requests to modify ERP application than those from ABC Bearing.
- Users from ABC Bearing feel that the ERP team did not inform them about the current situation of ERP application than those from CEAT Tyres.
- Users from Linde Engg feel that the ERP team did not explain how application modifications would impact their job than those from Apollo Tyres.

- Users from GSFC feel that using ERP solution in their job enables them to accomplish tasks more quickly than those from ABC Bearing.
- Users from L&T feel that using ERP solution improves their job performance than those from ABC Bearing.
- Users from L&T feel that using ERP solution enhances their effectiveness on the job than those from ABC Bearing.
- Users from GSFC feel that using ERP solution makes it easier to do their job than those from Linde Engg.
- Users from L&T find ERP solution useful in their job than those from ABC Bearing.
- Users from Zydus Pharma feel that their interaction with ERP solution is clear and understandable than those from ABC Bearing.
- Users from Zydus Pharma feel that interacting with ERP solution does not require a lot of their mental effort than those from FAG Bearing.
- Users from CEAT Tyres find it easy to get ERP solution to do what they want it to do those from Linde Engg.
- Users from Apollo Tyres feel that using ERP system is compatible with all aspects of their work than those from FAG Bearing.
- Users from Zydus Pharma feel that using ERP system fits well with the way they like to work than those from ABC Bearing.
- Users from Apollo Tyres feel that using ERP system fits into their work style than those from ABC Bearing.
- Users from L&T feel that using the ERP system is a good idea than those from ABC Bearing.
- Users from L&T like the idea of using the ERP system to perform their job than those from ABC Bearing.
- Users from Apollo Tyres rate their intensity of their job-related system to be more than those from ABC Bearing.
- Users from Aventis have more likelihood of using most of the features of the

ERP solution than those from L&T.

- Users from Apollo Tyres have more likelihood of using more features than the other users of the ERP solution compared to the users from L&T.
- Users from Aventis have more likelihood of using more obscure aspects of the ERP solution compared to the users from L&T.

**9) Effect of Sector of respondent on use of ERP, technological properties of ERP solution, Organizational and Process characteristics of the company, acceptance of ERP solution and use of ERP solution: -**

- Users from Pharma Sector could complete the job using ERP system, if there was no one around to tell them what to do as they go than those from Bearing Sector.
- Users from Chemical Sector could complete the job using ERP system, if they had only the software manuals or/and the build-in help for assistance than those from Bearing Sector.
- Users from Engg Sector could complete the job using ERP system, if they could call someone for help if they got stuck than those from Bearing Sector.
- Users from Tyre Sector could complete the job using ERP system, if they had a lot of time to complete the job for which the software was provided than those from Chemical Sector.
- Users from Chemical Sector would look for ways to experiment with IT, when they hear about a new IT than those from Bearing Sector.
- Users from Pharma Sector, among their peers, are usually the first to try out new IT than those from Bearing Sector.
- Users from Tyre Sector like to experiment with new IT than those from Bearing Sector.
- Users from Bearing Sector are becoming nervous while working with a computer than those from Chemical Sector.
- Users from Bearing Sector get a sinking feeling when they think of trying to use a computer than those from Chemical Sector.

- Users from Chemical Sector feel comfortable working with a computer than those from Bearing Sector.
- Users from Pharma Sector feel that the ERP system provides the precise information they need than those from Bearing Sector.
- Users from Chemical Sector feel that the information contents provided by the ERP system meet their needs than those from Bearing Sector.
- Users from Engg Sector feel that the ERP system provides reports that seem to be exactly what they need than those from Bearing Sector.
- Users from Bearing Sector feel that the ERP system provides sufficient information to their needs than those from Engg Sector.
- Users from Tyre Sector feel that the ERP system provides complete features they need than those from Engg Sector.
- Users from Chemical Sector are satisfied with the speed of interacting with the ERP system than those from Bearing Sector.
- Users from Tyre Sector feel that it is easy to change the output format than those from Chemical Sector.
- Users from Chemical Sector feel that it is fast to search data in the ERP system than those from Bearing Sector.
- Users from Pharma Sector feel that the ERP system loads quickly than those from Bearing Sector.
- Users from Engg Sector feel that the ERP system reliably handles their queries than those from Bearing Sector.
- Users from Chemical Sector were able to retrieve data quickly than those from Bearing Sector.
- Users from Chemical Sector feel that it is fast to create a new record (vendor, customer etc.) in this system than those from Engg Sector.
- Users from Chemical Sector feel that the ERP system is subjected to unexpected or inconvenient down times which make it harder to do their work than those from Tyre Sector.

- Users from Engg Sector feel that the ERP system is subject to frequent system problems and crashes than those from Tyre Sector.
- Users from Pharma Sector feel that the function / commands names of the ERP system are easy to remember than those from Engg Sector.
- Users from Pharma Sector feel that the exact definition of data fields relating to their tasks is easy to find out than those from Engg Sector.
- Users from Engg Sector feel that the content and index of the user manuals are useful than those from Bearing Sector.
- Users from Engg Sector feel that the user manuals are current (up to date) than those from Bearing Sector.
- Users from Engg Sector feel that the user manuals are current (up to date) than those from Bearing Sector.
- Users from Chemical Sector feel that their supervisor is very supportive of the use of the ERP system for their job than those from Bearing Sector.
- Users from Chemical Sector feel that the organization has supported the use of the ERP system than those from Bearing Sector.
- Users from Chemical Sector feel that people who influence their behaviour think that they should use the ERP system than those from Bearing Sector.
- Users from Chemical Sector feel that people who are important to them think that they should use the ERP system than those from Pharma Sector.
- Users from Chemical Sector feel that the ERP solution fits well with their business needs than those from Bearing Sector.
- Users from Chemical Sector feel that the ERP solution fits well with the business need of their department than those from Bearing Sector.
- Users from Chemical Sector feel that the ERP system is satisfactory in meeting their needs than those from Engg Sector.
- Users from Tyre Sector believe that there are some important problems with the way the ERP system is managed and made available that make it harder to do their job than those from Bearing Sector.

- Users from Chemical Sector feel that the system maintenance and the way it is provided meet their need adequately than those from Bearing Sector.
- Users from Tyre Sector feel that there is not enough training for them on how to find, understand, access or use the ERP system than those from Bearing Sector.
- Users from Tyre Sector have received additional formal training for ERP since the conclusion of the above training than those from Engg Sector.
- Users from Tyre Sector have received informal training (e.g. half hour of support from a peer or training officer) for ERP than those from Engg Sector.
- Users from Tyre Sector feel that they need additional ERP training to complete their current job tasks than those from Pharma Sector.
- Users from Bearing Sector feel that the support people talk in terms that they do not understand than those from Tyre Sector.
- Users from Engg Sector ask other users for help with this application rather than the support staff than those from Pharma Sector.
- Users from Engg Sector feel that the support for ERP application is inadequate than those from Tyre Sector.
- Users from Engg Sector feel that the ERP team does not provide feedback regarding users' requests to modify ERP application than those from Tyre Sector.
- Users from Engg Sector feel that the ERP team did not inform them about the current situation of ERP application than those from Tyre Sector.
- Users from Engg Sector feel that the ERP team did not explain how application modifications would impact their job than those from Tyre Sector.
- Users from Chemical Sector feel that using ERP solution in their job enables them to accomplish tasks more quickly than those from Bearing Sector.
- Users from Engg Sector feel that using ERP solution improves their job performance than those from Bearing Sector.
- Users from Chemical Sector feel that using ERP solution enhances their



effectiveness on the job than those from Bearing Sector.

- Users from Chemical Sector feel that using ERP solution makes it easier to do their job than those from Bearing Sector.
- Users from Chemical Sector find ERP solution useful in their job than those from Bearing Sector.
- Users from Chemical Sector feel that their interaction with ERP solution is clear and understandable than those from Engg Sector.
- Users from Pharma Sector feel that interacting with ERP solution does not require a lot of their mental effort than those from Bearing Sector.
- Users from Tyre Sector find it easy to get ERP solution to do what they want it to do those from Engg Sector.
- Users from Tyre Sector feel that using ERP system is compatible with all aspects of their work than those from Bearing Sector.
- Users from Engg Sector feel that using ERP system fits well with the way they like to work than those from Bearing Sector.
- Users from Pharma Sector feel that using ERP system fits into their work style than those from Bearing Sector.
- Users from Chemical Sector feel that using the ERP system is a good idea than those from Bearing Sector.
- Users from Chemical Sector like the idea of using the ERP system to perform their job than those from Bearing Sector.
- Users from Tyre Sector rate their intensity of their job-related system to be more than those from Bearing Sector.
- Users from Tyre Sector have more likelihood of using most of the features of the ERP solution than those from Engg Sector.
- Users from Tyre Sector have more likelihood of using more features than the other users of the ERP solution compared to the users from Engg Sector.
- Users from Tyre Sector have more likelihood of using more obscure aspects of the ERP solution compared to the users from Engg Sector.

## **6.4 Structural Equation Modeling (SEM) Findings**

Examination of the path coefficients and the significance level between the constructs in the model were used to test the hypotheses. The analysis shows that: -

- Organizational Process Characteristics dimension has a positive significant relationship with ERP Ease of Use.
- ERP Usefulness has a positive significant relationship with Attitude to ERP System.
- ERP Ease of Use has a positive significant relationship with Attitude to ERP System.

## CHAPTER – 7

# CONCLUSION & SCOPE FOR FUTURE RESEARCH

### 7.1 Conclusion

**Based on the data analysis, the researcher concludes as below:**

The most important contributions of ERP systems are that they significantly reduce the time to complete business processes and they facilitate information sharing (Olhager and Selldin, 2003; Lee *et al.*, 2010). Organizations offer a better work environment for their employees as they provide more efficient systems. In the routine phase of the ERP lifecycle, ERP systems may be implemented successfully from a technical perspective, but full success depends on ERP users being willing to use the delivered system (Boudreau, 2002; Kwahk and Lee, 2008).

Most studies employing TAM on ERP systems focus on the selection and implementation phases. Studies focused in the post-implementation phase are scarce and only recently published (Sun *et al.*, 2009; Shih and Huang, 2009; Lee *et al.*, 2010). Most of these studies consider a limited number of factors which influence the acceptance and use of ERP systems. The aim of this research was to extend the number of observed factors which influence user acceptance and use in the routine or mature stage of the lifecycle. Because I observed a large number of external factors, I employed the concept of second-order factors. The use of second-order factors, together with the use of a PLS approach to test my model, allowed me to test multiple influences with a relatively large dataset. TAM was used because it is the most widely used and empirically tested model for explaining actual IS use (Davis, 1989; Davis *et al.*, 1989; Amoako-Gyampah and Salam, 2004; Lee *et al.*, 2010). I focused on external factors and their influence on the actual use of ERP systems based on published research about this issue.

The present research enhances our understanding of how multiple external factors can impact attitudes about ERP systems in the routine stage by incorporating three groups of external factors: PCIL, STC and OPC. The PCIL group includes: technological innovativeness, computer anxiety, computer self-efficacy and computer experience. Data quality, system performance, user manual helpfulness and ERP functionality were included in STC. Business processes fit, social influence, ERP support, ERP communication and ERP training were included in OPC. PCIL, STC and OPC have been addressed in several studies of external factors impacting IS acceptance (some authors related their research to TAM, but not all). The present research, however, shows that PCIL does not impact ERP system usage significantly in the routine operation stage despite its being mentioned in other studies unrelated to ERP systems (Venkatesh *et al.*, 2003; Venkatesh and Bala, 2008). STC and OPC are similarly important but they impact different variables of TAM in ERP usage.

One important contribution of this research is the identification of the external factors for the improvement of the efficiency and effectiveness of ERP use and the presentation of the impact of OPC and STC on attitude towards using ERP system in the organization. The implications for researchers and practitioners are that external factors of TAM through second-order factors appear to improve ERP usage. The managerial implications of this research are that if the organization wants to improve business performance and increase ERP user satisfaction, it should take into account the external factors confirmed in this research.

## **7.2 Scope for Future Research**

- 1) To identify the clusters based on ERP usage.
- 2) To carry out the Correspondence Analysis between type of industries and external factors.
- 3) To discriminate the industries based on external factors.
- 4) To study the influence of language, culture, nation and politics on ERP implementation.

- 5) To explore the importance of external factors in different phases of the ERP lifecycle.
- 6) To carry the same research in other parts of country.
- 7) To carry the same research in other Sectors.

### 7.3 Limitations of the Study

This study is by no means an exhaustive one as it has been carried out with many constraints, some of them arising out of human element. Following are the limitations and constraints of the present study, under which researcher had to work.

- 1) **Time Constraints:** The present study was carried out with the regular job of teaching and other assignments related to job. So, there was time constraint for researcher to carry out research.
- 2) **Non-availability of Secondary Data:** There was non-availability of sufficient literature specific to ERP implementation in various sectors. If some published research study would have been available, it may perhaps have helped in making the study still better. Better statistical techniques could also have been employed to carry out comparative analysis of ERP implementation in various sectors, but could not be used as availability of data was constraint.
- 3) **Possibility of bias in respondents answers:** There is possibility that the answers given by respondents may be biased, which was a further constraint within which a study of this nature had to operate.
- 4) **Non-Generalization of the results:** The study was confined to Gujarat State and its findings may not be applicable to other states. Since secondary data have been collected from more than one source, there may be slight discrepancies between one source and another on the same variable.
- 5) **Unanswered Questions:** Some of the issues in the questionnaire remain unanswered either due to lack of understanding of the subject or because of reluctance to share information.

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### List of Paper Publications

Sr. No.	Title of Paper	Details of Journal / Conference Proceeding	ISSN / ISBN No.	Month & Year of Publication
1	ERP Solutions Acceptance in Different Business Environments*	International Journal of Innovative Research & Development (Vol: 5, Issue: 2)	2278-0211 (Online)	Jan-16
2	ERP Implementation in Chemical Industry: A Case Study of Micro Inks Ltd.-Vapi, Gujarat**	Journal of IMS Group: Achieving Excellence in Management & IT (Vol: 12, No: 1)	0973-824X	Jul-15
3	Ethics & ERP Implementation: Can they co-exist?***	Conference Issue of SANKALPA: Journal of Management & Research (Vol: 5, February 2015)	2231-1904	Feb-15
4	A study of issues & challenges affecting ERP Implementation in SMEs**	Management of SMEs in Global Era: Challenges, Opportunities & Perspectives and Lessons from Gujarat Model	978-93-8486-934-2	Jan-15
5	ERP Implementation in United Phosphorus Limited, Vapi, Gujarat: A case study**	International Journal of Computer Informatics & Technological Engineering	2348-8557 (Online)	Nov-14

\* Research Paper written jointly with **Dr. Samo Bobek**, Co-Supervisor.

\*\* Research Paper written jointly with **Dr. Rajesh Khajuria**, Supervisor.

## QUESTIONNAIRE ABOUT USE OF ERP SYSTEMS

### Introduction:

I, **Prof. Sameer K. Rohadia**, am Director at **Parul Institute of Management**, Waghodia, Vadodara. I have done Electrical Engineering & MBA with IT specialization, both from M. S. University, Baroda. I am having 2 years industry experience & 13 years academic experience.

I am **pursuing research under PhD program** of Gujarat Technological University [GTU], Ahmedabad on the topic of “*A study of ERP Implementation in select industries*” **under the guidance** of **Dr. Rajesh Khajuria**, Director, C. K. Shah Vijapurwala Institute of Management, Vadodara.

In this survey I want to explore the factors that affect the utilization and better use of ERP solutions specially SAP. Kindly contribute about 15-20 minutes to participate in the survey and help me in finding the factors which determine the better utilization of the ERP solutions.

The questionnaire is anonymous!

1. Below are written statements relating to your use of ERP. Rate each statement on a scale of 1 to 7, where 1 means that you strongly disagree with the statement and 7 means that you strongly agree with the statement. To the success of the research is important to evaluate each of the statement in the list.

1	2	3	4	5	6	7
Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree

### COMPUTER SELF EFFICACY

#### *I could complete the job using SAP...*

... if there was no one around to tell me what to do as I go.	1	2	3	4	5	6	7
... if I had only the software manuals or/and the build-in help for assistance.	1	2	3	4	5	6	7
... if I could call someone for help if I got stuck.	1	2	3	4	5	6	7
... if I had a lot of time to complete the job for which the software was provided.	1	2	3	4	5	6	7

### TECHNOLOGICAL INNOVATIVENESS

If I hear about a new IT, I would look for ways to experiment with it.	1	2	3	4	5	6	7
Among my peers I am usually the first to try out new IT.	1	2	3	4	5	6	7
I like to experiment with new IT.	1	2	3	4	5	6	7

### COMPUTER ANXIETY

Working with a computer makes me nervous.	1	2	3	4	5	6	7
I get a sinking feeling when I think of trying to use a computer.	1	2	3	4	5	6	7
I feel comfortable working with a computer.	1	2	3	4	5	6	7

### COMPUTER EXPERIENCE

How much experience did you have with computers before you started using ERP system at work?

1 (none)	2 (a little bit)	3 (some)	4 (average)	5 (a far bit)	6 (quite bit)	7 (a lot)
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2.	Below are written statements relating to the system (technological) properties of ERP solution. Rate each statement on a scale of 1 to 7, where 1 means that you strongly disagree with the statement and 7 means that you strongly agree with the statement. To the success of the research is important to evaluate each of the statement in the list.
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1	2	3	4	5	6	7	N
Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree	No opinion

<b>DATA QUALITY</b>								
The ERP system provides the precise information I need.	1	2	3	4	5	6	7	N
The information contents provided by the ERP system meet my needs.	1	2	3	4	5	6	7	N
The ERP system provides reports that seem to be exactly what I need.	1	2	3	4	5	6	7	N
The ERP system provides sufficient information to my needs.	1	2	3	4	5	6	7	N
The ERP system provides complete features I need.	1	2	3	4	5	6	7	N
<b>SYSTEM FUNCTIONALITY</b>								
I am satisfied with the speed of interacting with the system.	1	2	3	4	5	6	7	N
It is easy to detect and correct possible errors in the ERP system.	1	2	3	4	5	6	7	N
It is easy to change the output format.	1	2	3	4	5	6	7	N
<b>SYSTEM PERFORMANCE</b>								
It is fast to search data in the ERP system.	1	2	3	4	5	6	7	N
The ERP system loads quickly.	1	2	3	4	5	6	7	N
The system reliably handles my queries.	1	2	3	4	5	6	7	N
I was able to retrieve data quickly.	1	2	3	4	5	6	7	N
It is fast to create a new record (vendor, customer etc.) in this system.	1	2	3	4	5	6	7	N
The ERP system is subjected to unexpected or inconvenient down times which make it harder to do my work.	1	2	3	4	5	6	7	N
The ERP system is subject to frequent system problems and crashes.	1	2	3	4	5	6	7	N
The description of the functions /commands displayed on screen is clear to me.	1	2	3	4	5	6	7	N
The function / commands names of the ERP system are easy to remember.	1	2	3	4	5	6	7	N
The exact definition of data fields relating to my tasks is easy to find out.	1	2	3	4	5	6	7	N
<b>USER MANUAL HELPFULNESS</b>								
The content and index of the user manuals are useful.	1	2	3	4	5	6	7	N
The user manuals are current (up to date).	1	2	3	4	5	6	7	N
The user manuals are complete.	1	2	3	4	5	6	7	N
The user manuals are easy to understand and follow.	1	2	3	4	5	6	7	N

3.	Below are written statements relating to the organizational and process characteristics of the company. Rate each statement on a scale of 1 to 7, where 1 means that you strongly disagree with the statement and 7 means that you strongly agree with the statement. To the success of the research is important to evaluate each of the statement in the list.
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1	2	3	4	5	6	7	N
Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree	No opinion

<b>SOCIAL INFLUENCE</b>								
My supervisor is very supportive of the use of the ERP system for my job.	1	2	3	4	5	6	7	N
In general, the organization has supported the use of the ERP system.	1	2	3	4	5	6	7	N
People who influence my behaviour think that I should use the ERP system.	1	2	3	4	5	6	7	N
People who are important to me think that I should use the ERP system.	1	2	3	4	5	6	7	N
<b>BUSINESS PROCESS FIT</b>								
The ERP solution fits well with the business needs of me.	1	2	3	4	5	6	7	N
The ERP solution fits well with the business need of my department.	1	2	3	4	5	6	7	N
All in all, the ERP system is satisfactory in meeting my needs.	1	2	3	4	5	6	7	N
Overall, I believe there are some important problems with the way the ERP system is managed and made available that make it harder to do my job.	1	2	3	4	5	6	7	N
The system maintenance and the way it is provided meet my need adequately.	1	2	3	4	5	6	7	N
<b>ERP TRAINING AND EDUCATION</b>								
There is not enough training for me on how to find, understand, access or use the ERP system.	1	2	3	4	5	6	7	N
I have received additional formal training for ERP since the conclusion of the above training.	1	2	3	4	5	6	7	N
I have received informal training (e.g. half hour of support from a peer or training officer) for ERP.	1	2	3	4	5	6	7	N
I feel that I need additional ERP training to complete my current job tasks.	1	2	3	4	5	6	7	N
<b>ERP SUPPORT</b>								
I do not know who to phone for support for this application.	1	2	3	4	5	6	7	N
The support people talk in terms that I do not understand.	1	2	3	4	5	6	7	N
I ask other users for help with this application rather than the support staff.	1	2	3	4	5	6	7	N
The support for this application is inadequate.	1	2	3	4	5	6	7	N
<b>ERP COMMUNICATION</b>								
The ERP team does not provide feedback regarding users' requests to modify this application.	1	2	3	4	5	6	7	N
The ERP team did not inform me about the current situation of this application.	1	2	3	4	5	6	7	N
The ERP team did not explain how application modifications would impact my job.	1	2	3	4	5	6	7	N

4.	Below are written statements relating to user acceptance of ERP solution. Rate each statement on a scale of 1 to 7, where 1 means that you strongly disagree with the statement and 7 means that you strongly agree with the statement. To the success of the research is important to evaluate each of the statement in the list.
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1	2	3	4	5	6	7	NM
Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree	No opinion

<b>ERP USEFULNESS</b>								
Using ERP solution in my job enables me to accomplish tasks more quickly.	1	2	3	4	5	6	7	N
Using ERP solution improves my job performance.	1	2	3	4	5	6	7	N
Using ERP solution enhances my effectiveness on the job.	1	2	3	4	5	6	7	N
Using ERP solution makes it easier to do my job.	1	2	3	4	5	6	7	N
<b>ERP EASE OF USE</b>								
I find ERP solution useful in my job.	1	2	3	4	5	6	7	N
My interaction with ERP solution is clear and understandable.	1	2	3	4	5	6	7	N
Interacting with ERP solution does not require a lot of my mental effort.	1	2	3	4	5	6	7	N
I find ERP solution is easy to use.	1	2	3	4	5	6	7	N
I find it easy to get ERP solution to do what I want it to do.	1	2	3	4	5	6	7	N
<b>WORK COMPATIBILITY</b>								
Using ERP system is compatible with all aspects of my work.	1	2	3	4	5	6	7	N
Using ERP system fits well with the way I like to work.	1	2	3	4	5	6	7	N
Using ERP system fits into my work style.	1	2	3	4	5	6	7	N
<b>ATTITUDE</b>								
Using the ERP system is a good idea.	1	2	3	4	5	6	7	N
I like the idea of using the ERP system to perform my job.	1	2	3	4	5	6	7	N

5.	Below are written statements relating to use of ERP solution. Rate each statement on a scale of 1 to 7, where 1 means negligible and 7 means very big. To the success of the research is important to evaluate each of the statement in the list.
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1	2	3	4	5	6	7
Negligible	Very little	Little	Average	A little more than average	Big	Very big

<b>SYSTEM USE</b>								
How long have you worked with the ERP system (fill in years)?								
How many hours per day you in average use ERP system (fill in hours)?								
I would rate the intensity of my job-related system use to be:	1	2	3	4	5	6	7	
<i>In a typical one-month period, what is the likelihood of you ...</i>								
g most of the features of the ERP solution?	1	2	3	4	5	6	7	
... using more features than the other users of the ERP solution?	1	2	3	4	5	6	7	
... using more obscure aspects of the ERP solution?	1	2	3	4	5	6	7	

6.	Please circle the answer or answer the questions below.	
<b>Sex:</b>	• Male	• Female
<b>Age (in years)</b>	• <19 • 20-29 • 30-39	• 40-49 • 50-59 • >60
<b>Ended level of education</b>	• Less than high school • High school graduate • Baccalaureate degree	• Masters degree • Doctorate
<b>How long have you worked with the company (fill in years)?</b> _____		
<b>How long have you worked in your current job (fill in years)?</b> _____		
<b>Working place:</b>		
<ul style="list-style-type: none"> <li>• worker (experts and other employees)</li> <li>• low management (e.g. manager of group or organization unit)</li> <li>• middle management (e.g. CIO)</li> <li>• Top management</li> </ul>		

**I sincerely thank you for taking the time and filled out a questionnaire! Please, return the questionnaire to the person in your company who had sent it to you.**