

“STUDY ON SYSTEM APPLICATION PRODUCT”

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**ABSTRACT:** Enterprise Resource Planning Systems enable their users to work in several functional areas, industry solutions. SAP, the leading ERP System in the World, delivers the newest standard information technology, architecture and methodology when introducing its new product. New features of the introduced product gradually replace the old techniques and approaches. Present paper demonstrates that how SAP evolves and its different versions. This paper provides the advantages, disadvantages of SAP by comparing its versions; also SAP is compared to other ERP software's.

**Keywords:** SAP, ERP, SAP VERSIONS, SAP MODULES.

1. INTRODUCTION

SAP has started its own success story with introducing SAP R/1 System from 40 years. A financial Accounting system named R/1 was the 1st version of SAP's enterprise software. R/1 was replaced by R/2 at the end of the 1970s. SAP R/2 was business application software suite that was very successful in 1980s and early 1990s[13]. SAP AG brought out a client-server version of the software called SAP R/3 with the advent of distributed client-server computing (The "R" was for "Real-time data processing" and 3 was for 3-tier). Such as Microsoft Windows or UNIX, new architecture is compatible with multiple platforms and operating systems. On 6 July 1992SAP R/3 was officially launched. SAP R/3 was renamed SAP ERP and later again renamed ECC (ERP Central Component). Over the next 10 years, SAP came to dominate the large business applications market. SAP R/3 4.70's successor is SAP ECC 5.0 ERP. In 2006the latest version, SAP ERP 6.0, was released. SAP ERP 6.0 has then been updated through SAP enhancement packs. The most recent is SAP enhancement package 8 for SAP ERP 6.0 in 2016[5].

Many companies find that there were many problems with their end-to-end processes. To sharpen their core function with the end-to-end process that is where they can implement SAP ERP. To automate their enterprise and they will be able to keep their operational processes up to date with the ever-growing industry it will help them. In various areas of industry, SAP can help to execute ERP solutions. It is used around the world, in more than 100 countries, which turns out to be more than 50000 clients worldwide. Those numbers are expected to grow as more and more enterprises use the SAP ERP. Companies love the fact that they get real time updated information so they can keep their edge and stay ahead of the game[9].

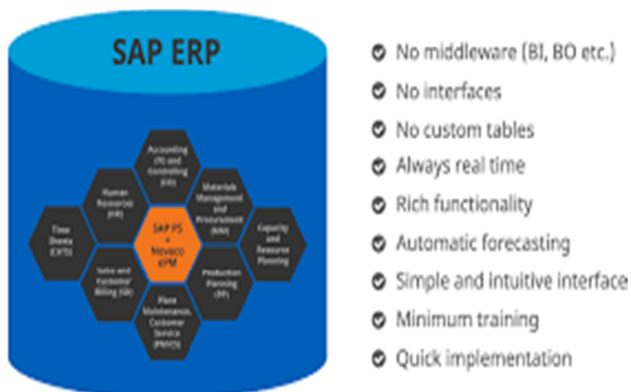


Figure 1: SAP as ERP



Figure 2: Components of ERP

- Customer Relationship Management (CRM) - Quoting and Estimating, Order Entry, Sales Force Automation.
- Manufacturing - Shop Floor Control, Routings, Capacity Planning and Scheduling, Purchasing, Forecasting, Material and Production Planning, Lot/Serial Control, Inventory, Workflow.
- Supply Chain - Supplier Management, Purchasing to Jobs/Projects, Demand Planning, Purchasing.

- Financials - Costing, Accounts Receivable (AR), Accounts Payable (AP), General Ledger (GL).
  - Human Resources - Labour Collection, Payroll, Benefits.
  - Business Performance Management (BPM) - Corporate Governance, Reporting, Business Intelligence (BI), Multi-Entity Consolidation.
1. Engineering and Product Lifecycle Management (EPLM) - CAD Interface, Routings, Parts and Product Attributes, Parts and Bill of Materials (BOM's), Change Management.

**2. MEANING OF SAP**

Systems Applications and Products in Data Processing is known as SAP. In 1972, SAP was founded by Wellenreuther, Hopp, Hector, Plattner and Tschira. SAP by definition is also named as the ERP (Enterprise Resource Planning) software. SAP covers virtually every aspect of the business management and it consists of a number of fully integrated modules. SAP is assumed as one of the top system in the ERP market. It has more than 75,000 customers in 120 countries and worldwide 140,000 installations, also it has over 25 industry-specific business solutions. Oracle, Microsoft Dynamics etc. are some of other Competitive products in market

SAP is a widely used and proven ERP application. To improve the performance of organizations resource planning, management control and operational control, ERP software applications is used by SAP. SAP integrates activities across functional departments, from product planning, parts purchasing, inventory control, product sales and distribution, plant maintenance, quality control, human resource as well as finance and controlling, that's why it is called multi-module application. Using SAP software application many other functions can be integrated.

- In all around the world SAP is the fourth largest software company.
- To integrate all areas of a business the SAP R/3 system which is a business software package is designed.
- Total solutions for financials, manufacturing, logistics, distribution etc. are provided by SAP.
- In SAP system all business processes are executed and sharing common information with everyone.

SAP AG, company based out of Walldorf in Germany is an Enterprise Resource Planning (ERP) system. AG is derived from the

German word AKtiengesellschaft. SAP Stands for System, Anwendungen und Product in Der Datenverarbeitung according to German Language. SAP software suite provides end to end solutions for financial, logistics, distribution, inventories and that is being implemented as part of re-engineering. In present scenario sap software is used by large number of companies for their day to day business activities. Customer Relationship Management (CRM), SRM, XI (now called Process Integration or PI) like software's is created by SAP and by maintaining tight integration with their core ECC software it is also living up to the standards of SAP, after the success of R/3. SAP ECC 6.0 is the newest version of the suite.

**3. HISTORY OF SAP**

**SAP R/1 System RF: 1973**

The first version of SAP was launched in and around 1973 known as the —R/1 system. R stands for real-time data processing. SAP R/1 was a Single Layer Architecture application in which all three components Presentation, Application and Database are merged and installed in one system/Server.

**SAP R/2 Mainframe System: 1979**

Second version of SAP R/2 was released in 1979 with IBM's database and a dialogue-oriented business application. SAP R/2 was a mainframe-based business application software suite that was very successful in the 1980s and early 1990s [1][2]. It was particularly popular with large European MNCs that required soft-real-time business applications, with built-in multi-currency and capabilities like multi-language. SAP R/2 to handle different languages and currencies. R/2 is 2 tier architecture in which three layers Presentation, Application and Database are installed in two separate servers. (Server 1 – Presentation layer, Server 2 – Application layer + Database layer)

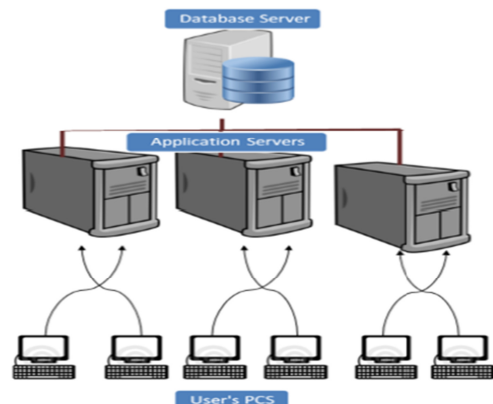
**SAP R/3**

SAP upgraded R/2 to R/3. SAP R/3 is the client/server version of the s/w and it is 3 tier architecture in which three layers are installed in three server/system i.e. Presentation, Application and data base. R signifies Real-time system. 3 represents – 3-tier architecture. (Server 1 – Presentation layer, Server 2 – Application layer, server 3 – Database layer)

**SAP R/3 Enterprise Edition 1.0 A:**

Released in July 1992. A system designed to coordinate the information, resources and activities needed to complete business processes such as billing human resource management, order fulfillment, etc.

- SAP R/3 Enterprise Edition 2.0B : July 1993
- SAP R/3 Enterprise Edition 3.1I : 11 May 1998[1][2]
- SAP R/3 4.0B: 6 April 1998
- SAP R/3 Enterprise Edition 4.3
- SAP R/3 Enterprise Edition 4.5B : 29 March 1999
- SAP R/3 Enterprise Edition 4.6B : 6 December 1999
- SAP R/3 Enterprise Edition 4.6C : 3 April 2000
- SAP R/3 Enterprise Edition 4.6F
- SAP R/3 ENTERPRISE 4.7X110: 15 July 2002
- SAP R/3 ENTERPRISE 4.7X200: 22 September 2003



**Figure 3 : SAP R/3 Architecture**

- SAP ECC 5.0: 21 June 2004
- It includes SAP ECC (successor of SAP R/3) and EHP (Enhancement package) .
- SAP ECC 6.0: 24 October 2005
  - EHP1 FOR SAP ERP 6.0: 21 December 2006
  - SAP enhancement package 2 for SAP ERP 6.0 (EHP2 FOR SAP ERP 6.0): 27 July 2007  
It is an SAP technique to deliver more innovation, more quickly, in a more accessible way to organizations that have implemented or upgraded to SAP ERP 6.0. It enables the rapid deployment of select new functionality in a way that minimizes disruption on core production systems.
  - SAP enhancement package 3 for SAP ERP 6.0 (EHP3 FOR SAP ERP 6.0): 7 December 2007  
It is easier to be installed and immediately added incremental value to business processes without disruption.
  - SAP enhancement package 4 for SAP ERP 6.0 (EHP4 FOR SAP ERP 6.0): 21 November 2008  
It gives an overview of the most important documents and notes. This one provided for better readability.
  - SAP enhancement package 4 for SAP ERP 6.0 on SAP enhancement package for SAP NetWeaver 7.0 (EHP4 FOR SAP ERP 6.0 / NW7.01): 21 November 2008
  - SAP enhancement package 5 for SAP ERP 6.0 (EHP5 FOR SAP ERP 6.0): 12 July 2010
  - SAP enhancement package 6 for SAP ERP 6.0 (EHP6 FOR SAP ERP 6.0): 24 August 2011  
It is a version for SAP HANA- this was the first version of SAP Business Suite on HANA.
  - SAP enhancement package 7 for SAP ERP 6.0 (EHP7 FOR SAP ERP 6.0): 13 August 2013  
This enables the most areas of the existing SAP ERP functions for SAP HANA to be able to utilize the in-memory technology.
  - SAP Fiori 1.0 for SAP ERP (UI FOR EHP7 FOR SAP ERP 6.0): 29 November 2013
  - SAP enhancement package 8 for SAP ERP 6.0 (EHP8 FOR SAP ERP 6.0): 20 January 2016
- SAP S/4 HANA  
SAP S/4HANA is SAP's ERP for large enterprises. SAP S/4 HANA is the advanced version of SAP R/3 and SAP ERP and is optimized for SAP's in-memory database SAP HANA.
  - SAP S/4HANA Finance 1503: March 2015.
  - SAP S/4HANA 1511: November 2015.
  - SAP S/4HANA Finance 1605: May 2016.
  - SAP S/4HANA 1610: October 2016.
  - SAP S/4HANA 1709: September 2017.
  - SAP S/4HANA 1809: September 2018.
  - SAP S/4HANA 1909: September 2019[1][2].

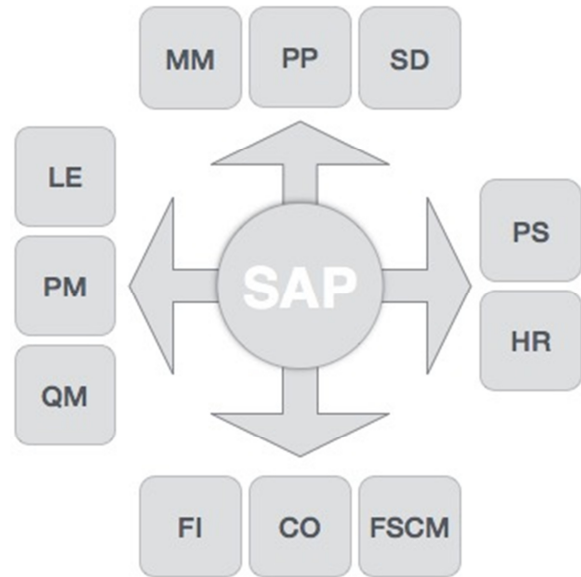
**4. SAP MODULES**

SAP Modules SAP works on 3 core functional areas such as Logistics, Finance and Human resources[8].

Different modules are created in these functional areas, which are tightly integrated with each other such as –

- Financial Accounting (FI)
- Financial Supply Chain Management (FSCM)
- Controlling (CO)
- Sales and Distribution (SD)
- Materials Management (MM)

- Logistics Execution (LE)
- Production Planning (PP)
- Supplier Relationship Management(SRM)
- Customer Relationship Management(CRM)
- Quality Management (QM)
- Plant Maintenance (PM)
- Project System (PS)
- Human Resources (HR)



**Figure 4 : SAP Modules**

**4.1 Finance and Controlling(FICO)**

SAP FICO includes two ERP modules, i.e., Finance Accounting (FI) and Controlling (CO). Finance in SAP and at an enterprise level, the following modules are involved –

- FI – Finance
- CO – Controlling
- IM – Investment Management
- TR – Treasury
- EC – Enterprise Controlling

**SAP FI** tracks the flow of financial data in a controlled manner across the organization and all the information is integrated for effective strategic decision-making[9][11].

**4.2 CO (Controlling)**

It facilitates coordinating, monitoring, and optimizing all the processes in an organization. Business flow in an organization is controlled. This module helps[9] in analyzing the actual figures with the planned data and in planning business strategies. Mainly two kinds of elements are managed in controlling –

- Cost elements
- Revenue elements

These elements are stored in the FI module[9][11].

**4.3 Sales and Distribution(SD)**

SAP Sales and Distribution is one of the most important modules in SAP. It involves high level of integration complexity. SAP sales and distribution is used by organizations to support SD activities of products and services. It starts from enquiry to order and then end with delivery[10].

SAP sales and distribution module can look after many activities that take place in an organization such as enquiry of products, pre-sales activities, pricing, order placing, scheduling

of deliveries, packing, picking, shipment of products to customers, delivery of products and billings.

Various modules are involved in all these process such as Finance Accounting, Controlling, Material Management, Logistics Execution, etc., which shows the complexity of the involved integration [10].

#### **4.4. Material Management(MM)**

It deals with movement of materials via other modules like supply chain management, logistics, sales and delivery, production and planning , warehouse management..

#### **4.5. Logistic Execution(LE)**

Logistic Execution can be divided into two sub-modules, i.e., shipment of goods and warehouse. These two modules are integrated with SD, material management, and production and planning[8][9].

#### **4.6. Supplier Relationship Management(SRM)**

This module deals with the efficient and effective transition of products and services between an organization and its suppliers. This module can be effectively integrated with planning, accounting, and inventory system.

#### **4.7. Customer Relationship Management(CRM)**

CRM deals with end-to-end customer related processes. CRM centralizes the data related to all the customers associated with an organization.

#### **4.8. Human Resources(HR)**

The most important objective data administration in HR is to enter employee-related data for administrative, time-recording, and payroll purposes [9].

### **5. BENEFITS OF THE ERP SYSTEM**

#### **Customized solutions**

As the needs of every company are different, each gets a customized system. It considers operational and departmental needs. As all the ERP systems are adaptable and flexible to work. It means it is easy and handy for every employee to use it. The reason behind the flexibility of it as there are various system modules for various departments. Like finance, product management, sales and distribution, and personnel management modules. It is adaptable because the system is available via mobile [3]. Hence, anyone can use the software from anywhere.

#### **Increased Productivity and Efficiency**

With the help of real-time information, all the employees can do more work and handle customer queries faster. Different departments communicate effectively since all the information is up-to-date [3]. As customers can make orders, pay, and track their goods, they are able to relate to the company. The company can improve its customer services ensuring by the customer service relationship system. To monitor the inventory, employees use the *supply chain management system*. They track transactions between the business, the suppliers, and the customers [3].

#### **Cost Efficient Use**

This system can operates in each department only on a cost of one. It helps to reduce the cost of labor by making sure each and every labor is working. It also helps to reduce administration costs. There are various controls available on replenishing the supply and this also helps to reduce the cost of inventory. It prevents overstocking unnecessary goods. Aside from reducing the compliance costs, the software assures there is incoming revenue. This happens because customers are using a seamless system for ordering and paying for goods [3]

#### **Data Analysis and Reporting**

It is very difficult to rely on people to provide accurate data analysis and reports. Error occurred due to humans can cost your business a lot of money. It takes the risk out since there is no data duplication in the ERP system. The system provides real-time reports of everything happening in the business. It delivers risk analysis and performance reports. An ERP system updates transactions and inventory changes as they are occurring. The old data of the company can help to determine the future of the business and industry.

#### **Maintain consistent operations**

With the help of SAP ERP system, managers direct all departments to achieve the same goals. This accelerates the decision-making process. You can make system updates and it applies to every department. The system manages a global business[3]. It solves foreign exchange rates and allows the group of companies to communicate. It becomes very easy to spot operational risks as well.

### **6. DISADVANTAGES**

#### **Expensive**

This entails software, hardware, implementation, consultants, training, etc. Or you can hire a programmer or two as an employee and only buy business consulting from an outside source, do all customization and end-user training inside. That can be cost-effective[4].

#### **Not much flexible**

It is flexible but it depends. It can be configured to almost anything. In Navision one can develop almost anything in days[4]. While other software may not be flexible.

### **7. DIFFERENCE BETWEEN SAP ERP AND OTHER ERP SYSTEMS**

List of top 10 ERP system is as follows[6]:

1. SAP
2. ORACLE and NetSuite
3. Microsoft
4. Infor
5. IFS
6. Workday
7. Epicor
8. abas
9. Deltek
10. Sage

Below are the points that explain the key differences between SAP and Oracle:

- SAP ERP is a known solution for Enterprise Resource Planning whereas Oracle is the most famous technology provider, especially for relational database management system[7].
  - SAP ERP deals with business functional areas like Finance, Material Management, Sales & Distribution, Accounting, etc. whereas Oracle Relational Database Management System deals with key data areas like Data warehousing.
  - SAP ERP has been synonymous with large corporations like Microsoft whereas Oracle Relational Database Management System is available from simple versions that can be quite well employed for personal to enterprise-level solutions[7].
  - SAP system breaks the traditional information system management which acknowledges processes independently whereas Oracle deals with RDBMS which can work on the multi-model scheme, to make the database design process easier.
  - SAP R/3 is one of the classical examples of SAP ERP whereas Oracle Database 18c is the latest Relational Database Management System released by Oracle Corporation.
  - SAP ERP employ ABAP as a standard language whereas Oracle RDBMS can be accessed by virtue of a standard language called SQL.
  - SAP ERP is an asset in the sense that it operates in real-time not unlike traditional systems although Oracle RDBMS can be termed an asset in a sense that it can be scaled down to personal use from the confines of enterprise firms.
  - SAP ERP domain lies in real-time business management systems whereas Oracle strength lies in Database Management[12].
  - SAP ERP integrates business applications whereas Oracle relational database management system is utilized in enterprise environments for data-level functionality [7].
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## 8. CONCLUSION

This study shows the evolution of SAP versions and their different functions. In this paper, the basic modules of SAP are listed and studied. Also benefits of SAP are discussed which shows the advantages of this system over the other systems. With these benefits of SAP, disadvantages are also discussed. SAP is one of the top ERP systems in all over the world but for the comparison, top 10 ERP systems in the world are listed with the comparison/difference between Oracle and SAP. In this way we studied SAP and its functionalities.

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