# Analysis of Functional Modules in SAP & Oracle Applications

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**Abstract -** *Every organization expects their business to be streamlined so that their needs can be fulfilled and challenges be resolved. In order that these requirements are met, the organization needs to implement a business software so that they can get some real time view of their core business process. All these business process can be implemented by using an Enterprise Resource Planning (ERP). ERP consists of set of integrated modules which supports end to end business process and gives real time view of the business. Though there are many ERP providers in the market SAP and Oracle are the world leading ERP providers. In this paper we have done functional analysis of SAP and Oracle Applications by taking few variables like Modular Implementations of Supply chain Management and Customer Relationship Management and, Software Upgrades.*

## I. Introduction

In today's challenging business environment, best-run companies need to compete against more efficient competitors. In order to stay ahead they need to get the real time view of business process, by using many kinds of software which might not interact with each other. Customization of these software's may be difficult in few cases which will reduce the optimized functioning of companies business activities. The Company will be facing many problems in many areas of its functioning like Invoices regarding material purchases, salaries. All these things change when a ERP (Enterprise Resource planning) system is implemented. ERP is comprehensive suite of commercially available integrated modules which provide end-to-end support for statewide administrative. ERP allows you by controlling all parts of your business in one software and gives you the real-time view of its core business process such as production, order processing, and inventory management [1].

SAP Enterprise resource planning (SAP ERP, formerly SAP R/3) application is an integrated backend application with tens of thousands of installations worldwide designed for tracking and managing business processes in midsize and large enterprises [2]. The application is built on software integration platform that gives the application to control concurrency between database server and application server. Data management for enterprise applications have changed significantly over time, we no longer distinguish between transactional and analytical access patterns.

Oracle Applications is an application software of Oracle Corporation. Oracle Corporation introduced Oracle E-Business Suite (also known as Applications/Apps or EB-Suite/EBS) consists of a collection of enterprise resource planning customer relationship management(CRM) , and Supply Chain Management (SCM) applications [3]. The application is a framework for multi-tiered, distributed computing that supports concurrency between database server and application server.

Salesforce is an enterprise cloud computing application which includes sales and CRM applications which help companies to connect with customers, partners, and employees. The application is entirely build on the cloud platform and supports [4].

As per Forbes ERP software worldwide market share SAP has more market share followed by Oracle [5]. Thus, this paper provides an overview on analysis of functional modules like Supply chain Management (SCM) from SAP, Oracle Applications perspective and Customer Relationship Management (CRM) from SAP, Oracle Applications and Salesforce perspective. We further discuss about the databases and latest products provided by Oracle and SAP. Then we list few customers who are using SAP, Oracle Applications and Salesforce.

## II. Literature Review

Every large organization has some software installed to run their business. so ERP is software mainly designed to smoothen the business process in the organization. According to Forbes 2013 ERP Market share SAP has more market share when compared to other ERP software providers. There are many modules supported by the SAP and Oracle Applications of which Supply chain management and Customer Relationship management are two which have greater scope. so we would discuss about each sub modules under Supply Chain management and Customer Relationship management then would discuss the differences among these two modules. Then we discuss the architecture being supported by SAP and Oracle Applications and highlight the SAP High- Performance Analytic Appliance (HANA) architecture about its in-memory capabilities and then give a list of latest software up gradations being provided by SAP an d Oracle Applications.

## III. Problem Statement

As per Forbes 2013 ERP Market share, SAP is having more market share when compared to Oracle Apps but SAP might not be the best solution for most of the cases. In this context we would like to compare SAP with Oracle Apps and analyze the pros and cons of these two. We would like to consider few variables like Modular implementation, Software Upgrades and Customer satisfaction. To analyze the Customer Relationship Management module, we are going to consider SAP, Oracle Apps and Sales Force. For Supply chain Management we would consider SAP and Oracle Apps.

## IV. Supply Chain Management:

Supply chain management include design and management of all activities that exist in finding source and supplies, conversion and all activity which are concern to logistic [17]. We discuss Supply Chain Management from Oracle and SAP point of view and then give the differences among them. There are basically two Cycles which are followed in Oracle Applications and SAP.

### *A. Procure To Pay:*

Figure 1 illustrates the Procure to pay cycle in ERP [15]. We create a Requisition based on the requirement. Then we send the requisition to approval. Then the purchase order is created based on the requisition and then the goods are shipped. Once the goods are received and invoice is created and payment is done to enter into General Ledger.


Figure 1: Illustrates the Procure to Pay cycle in ERP.

### *B. Order to Cash:*

Figure 2 illustrates the Order to Cash cycles in ERP [18]. The cycles starts with Creating an order and Book an order. This is then booked and passed to pick release order. Ship confirm is the process of confirming that items have shipped. Shipping Execution confirms that the delivery lines associated with the delivery have shipped. ITS creates a trip and related stops for all eligible deliveries that has not been assigned to a trip. A manual invoice is created and transferred to General ledger.

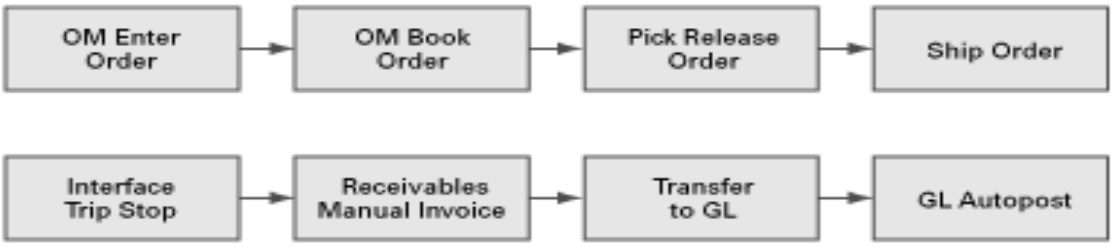


Figure 2: Illustrates the Order to Cash in ERP.

There is not much difference between SAP and Oracle Applications from SCM point of view Except that we can customize entire application in Oracle Applications where as SAP cannot be customized totally.

## V. Customer Relationship Management:

Customer Relationship Management is relationship between enterprises and customers. It is implemented in the customer areas that are related to marketing, selling, service and technical support. Though CRM is only a part of E-business, it places customers at key position. Carrying out CRM will increase profit, customer loyalty and satisfaction, and strengthen the ability to serve society [6]. We discuss Customer relationship management from Oracle, SAP and Salesforce point of view and then give the differences among them.

### A. *Oracle Applications:*

CRM in Oracle Applications can be categorized into Oracle Channel Management, Oracle Marketing, Oracle Order Management, Oracle Sales and Oracle Service.

- *Oracle Channel Management* which is also called as Trade Management is the process by which companies plan, execute and administer for trade promotions. Successful trade management includes managing trade funds, maximizing trade promotion profitability, Minimizing claim and deduction costs, successfully executing trade promotion activities through direct and indirect sales channels. Large Manufacturing companies that operate Business-to-customer (B2C) or Business-to-Business (B2B2C) modes can use Oracle Trade Management [7].
- *Oracle Marketing* leverages a single repository of customer information and intelligently markets the product. Marketing professionals can plan and personalize their campaigns, and refine them in real time with Oracle Marketing management tools. Oracle Marketing automates the entire marketing process from campaign planning, budget management, and list creation to execute and analyze. It enables marketers to be more cost-effective with complete marketing control and execute targeted marketing with complete marketing analysis [8].
- *Oracle Order Management* provides features enabling setting up the system to begin processing order information. Parameters like business order a policy which includes the classification of orders and control features prior to processing the orders with in the application [9].
- *Oracle Sales* is an application that optimizes the task of planning and managing the sale process. It simplifies the sales process by providing visibility into sales cycle, helping companies plan and manage effective selling activities. It is integrated in the E-business suite and covers key field sales flows from leads to opportunities to quotes. Oracle Sales is integrated with daily business intelligence, territory management, trading community architecture, quoting, inventory, service contracts, order management, proposals, partners, projects, incentive compensation, and marketing. Oracle Sales has been developed using the standard Oracle Applications (OA) Framework [10].

- *Oracle Service* supports the product after the sales have been done. It offers complete access to customer and product profiles, including current and past service history. Oracle Service helps in managing customer relationships. Oracle Service is an integrated customer service solution that provides installed base management, support service tracking, service requests, field service, depot repair, service billing, and Web integration. Oracle service effectively with other modules in CRM for providing service [11].

### *B. SAP:*

SAP CRM can be broadly classified into Marketing, Sales and Services.

- *SAP marketing* plan is composed of marketing plan elements, namely campaigns and trade promotions. A campaign contains information such as the campaign objectives, tactics, priority, channel (email, telephone, mail, print media, etc.) and target market. A trade promotion contains information such as the trade funds (or budget), trade activities, maximum price discount, maximum duration, whether there is allowed overlap with other promotions, and so on. Segmentation is another feature where customers who have specific and similar needs are grouped into Customer Segments. These Customer Segments are used for market campaigning. Trade Promotion Management (TPM) helps increase the effectiveness of their in-store retail promotions. [12].
- *SAP sales* which is a version of SAP Business Objects Sales Rapid Mart, supports analysis of data in the sales and distribution (SD) module of SAP Solutions. It allows businesses to manage products, sales and services and to manage their performance with customers and other business partners. The functions this module performs are analyzing the sales trends, determining customer behavior and forecast product sales with greater accuracy [13].
- *SAP services* which are referred to as sales force automation (SFA) systems or computer aided selling (CAS) systems, primary support for sales. The following key tasks could be easily completed by the sales representatives using this module. They are managing customer contacts, Organizing sales activities, Classifying sales opportunities, Analyzing developments in sales, collecting information about customers and products [14].

### *C. Salesforce:*

Salesforce CRM product is called as Sales Cloud which deals with a CRM application on Cloud. Unlike SAP and Oracle Apps, sales cloud is not divided separately into modules. But, for our analysis purpose we will segregate the CRM module into sub-modules[].

- *Sales Cloud Marketing* can be categorized into tracking budget and campaign calculations. The factors considered during the implementation of module is measuring the performance of marketing campaign and analyzing return on investment from marketing Campaigning based on the outcome of the campaign. The distribution of the budget to the marketing can be increased or decreased based on the outcome. Also, forecasting of the budget can be done by tracking budget and campaign calculations.
- *Sales Cloud Sales* is a module where the sales deal with real time integration with the third party tools. For example, the sales cloud application uses a Google map which is a third party tool in order to gather information about the customer. Whenever a new deal is being made, they refer to the closed deals. They do this in order to extract the positives from the closed deal to make a successful deal.
- *Sales cloud contracts* deals with the current contract opportunities with the customer and predicting the future. When a customer requests for a quotation, the customer authenticity is checked first. By customizing the existing fields and options according to the requirement, a quotation is made. There are options like logging a call, sending a mail to the customer in order to communicate the quotation information.
- In *Sales Document Management*, there is an integrated content library for maintaining the transaction history and price details. These details will be helpful when we need to refer to a new deal which resembles a deal already made. By referring to those deals, new deal can be closed successfully by implementing or

modifying the mechanisms in the closed deals. Cloning and Customization of presentations given to the customer is another aspect where the document management comes into picture.

- *Sales Service* is all about maintaining a good relationship with the customer after the product is delivered. Dashboard components like doughnuts funnels and gauges provide quick views in vital information that matters. Every employee has his own dashboard which is based on User access and permissions. Dashboards can be customized by each user using Sales force App Exchange.

Table 1: Illustrates the CRM Differences in SAP, Oracle Applications and Salesforce

| SAP | Oracle Applications | Salesforce |
|---|---|---|
| No Third Party integration | Third Party integration | Third Party integration |
| Call Center Management | No Call Center Management | Call Center Management |
| No customer support tracking | No customer support tracking | customer support tracking |
| Can be Implemented on Cloud | Can be Implemented on Cloud | Only Implemented on Cloud |
| No Dashboards | Dashboards | Dashboards |

## VI. Architecture:

### *A. Oracle Applications:*

The Oracle E-Business Suite Architecture as shown in figure 3 [19] is a framework for multi-tiered, distributed computing that supports Oracle E-Business Suite products. In this model, various servers or services are distributed among three levels, or tiers. A server (or services) is a process or group of processes that runs on a single machine and provides a particular functionality. For example, Web services process HTTP requests, and Forms services process requests for activities related to Oracle Forms. The Concurrent Processing server supports data-intensive programs that run in the background.

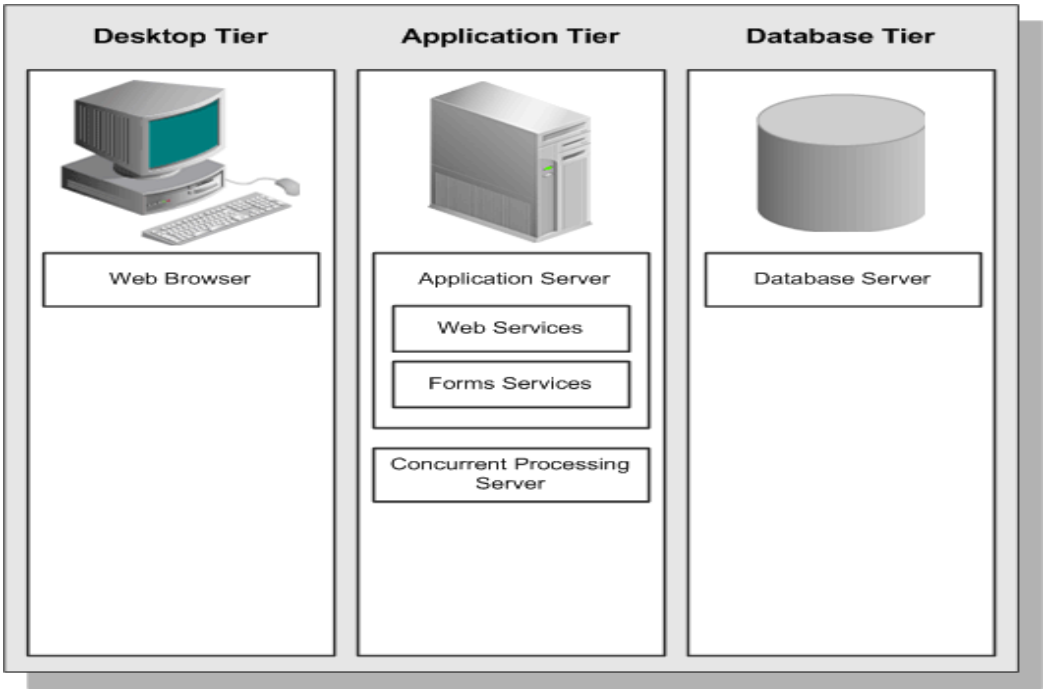


Figure 3: Oracle E-Business Suite Architecture

*B. SAP:*

SAP HANA architecture as show in figure 4 [16] is an in-memory data platform that is deployable on demand. By using SAP HANA, application performance is increased by utilizing RDBMS. The other advantages are reduction in cost of ownership, enabling of new scenarios and applications. With SAP HANA applications that can integrate business logic and the database layer be built by minimizing data movements. A SAP HANA System consists of multiple communicating processes (services). The following describes the SAP HANA Database Architecture in an application context. Generally traditional database Applications use well-defined Interfaces (ODBC and JDBC) to communicate with the database management system functioning as a data source. These application servers generally use SQL to manage and query the data in the database.

In SAP HANA database management, the main component is the index server which contains data stores and the engines for processing the data. The index server can process either SQL or MDX statements. SAP HANA database has its own scripting language named SQLScript. SQL Script embeds data-intensive application logic into the database.SQL Script is based on side-effect free functions operate on tables using SQL Queries. In addition to SQL Script, SAP HANA supports a framework for the installation of specialized and optimized functional libraries. Examples are Business function library and Predictive Analytics Library. SAP HANA also supports the development of programs written in R language. Database persistence layer is responsible for the durability and atomicity of transactions. Index server uses the preprocessor server for analyzing text data and text search capability. The name server owns the information about the topology of SAP HANA. The statistics server collects information about status, performance and resource consumption from the other servers in the system [16].

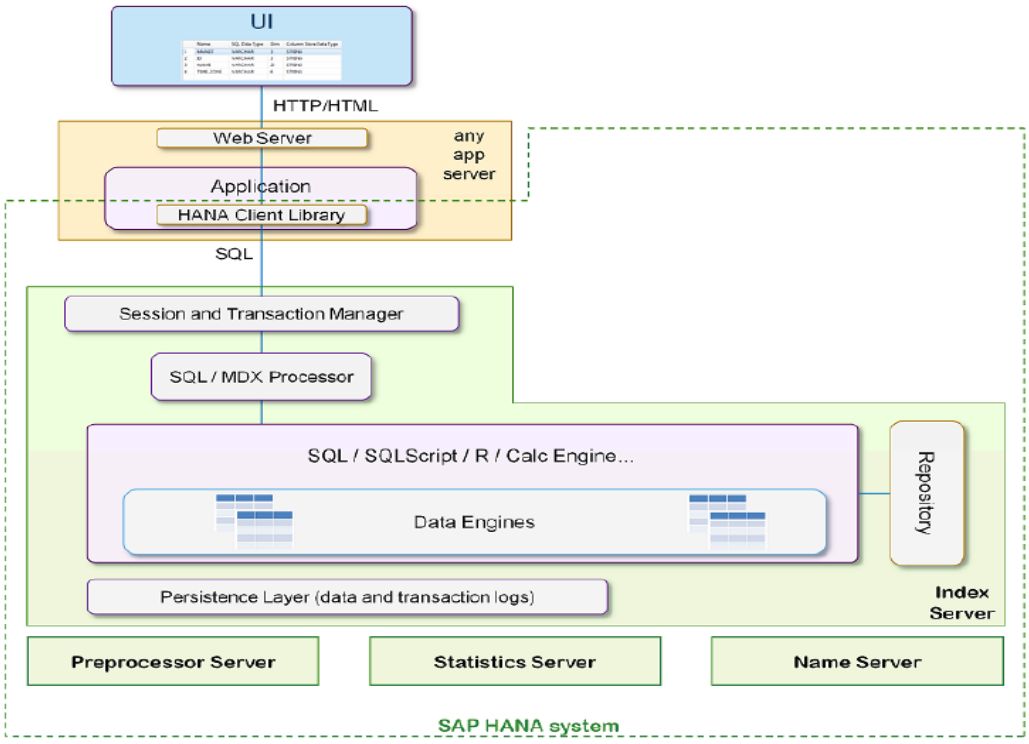


Figure 4: SAP HANA Architecture

## VII. Software Upgrades:

*A. Oracle Applications:*

- Oracle as recently introduced Oracle Fusion applications which is build by combining the features and functionalities taken from Oracle EBS,JD Edwards, People Soft, and Siebel after Oracle acquires them.
- Oracle has also introduced Enterprise business suite R12.
- Oracle latest Database release is 12C which supports Column based and row based transactions.

*B. SAP:*

- SAP has introduced SAP HANA.

## VIII. List of customers:

Table 2 : Illustrates the list of customers Using Oracle Applications

| Name Of the Customer | Type of Industry |
|---|---|
| Taconic | Rats Supplier |
| Tanishq | Diamond sales |
| Rochester Institute of Technology | College |
| LG Electronics | Electronics |
| McDonald's | Fast food center |
| Hologic, Inc. | Medical Devices |
| Emerson | Electric Company |
| Korean Air | Airlines |

Table 3 : Illustrates the list of customers Using SAP

| Name Of the Customer | Type of Industry |
|---|---|
| McAfee | Software Security |
| PepsiCo | Beverages |
| Asian Paints | Chemical |
| Lexmark International | Software |
| Linfox | Logistics |
| Lenovo | Electronics |
| Bloomberg | Financial Software |
| Pioneer Foods | Food Manufacturing |

Table 4 : Illustrates the list of customers Using Salesforce

| Name Of the Customer | Type of Industry |
|---|---|
| Activision | Game Development |
| Burberry | Fashion House |
| Canon | Imaging Products |
| Dunkin Brands | Fast Food Restaurants |
| Electronic Arts | Game Development |
| The Hershey's | Chocolate |
| Japan Post | Logistics Services |
| Delta Airlines | Airlines |

## IX. Conclusion

ERP connects all the operations and provide a in-depth access and information we need to analyze a organizations business to make better decision making and growth. Supply Chain Management basically deals with the management of flow of goods in an organization. Supply Chain management flow cycles in SAP and Oracle Applications have many things in common, it depends on the customer to whether to go with SAP or Oracle Applications. Customer relationship management basically handles the sales, marketing and services operations from customer point on view. Salesforce when compared to Oracle Applications and SAP has more advantages in terms of marketing and availability of the application on cloud. SAP HANA with in-memory capabilities has many advantages like performance, analytics when compared to Oracle Applications. So by taking above factors into consideration we can choose either SAP or Oracle Applications as per our requirement and implement them in their organizations.

## X. References


[1]. Yan Xu; Rahmati, N.; Lee, Vincent C S, *"A review of literature on Enterprise Resource Planning systems,"* Service Systems and Service Management, 2008 International Conference on , vol., no., pp.1,6, June 30 2008-July 2 2008

[2]. Jerry Rolia, Giuliano Casale, Diwakar Krishnamurthy, Stephen Dawson, Stephan Kraft, *"Predictive modelling of SAP ERP applications: challenges and solutions"*, VALUETOOLS '09 Proceedings of the Fourth International ICST Conference on Performance Evaluation Methodologies and Tools 2009

[3]. Oracle Applications ebusiness,http://www.oracle.com/us/products/applications/ebusiness/overview/index.html,(Accessed: 2 December 2013)

[4]. Sales Force, http://www.youtube.com/watch?v=0Mh4cgIaRm4,(Accessed: 25 November 2013)

[5]. Forbes,http://www.forbes.com/sites/louiscolumbus/2013/05/12/2013-erp-market-share-update-sap-solidifies-market-leadership/, (Accessed: 20 November 2013)

[6]. Shao Jihong; Wu Danhong, "Views on CRM under e-business environment," E -Business and E -Government (ICEE), 2011 International Conference on , vol., no., pp.1,3, 6-8 May 2011

[7]. Oracle Trade Management,http://docs.oracle.com/cd/B25284_01/current/acrobat/ozf115ug.pdf,(Accessed : 2 December 2013)

[8]. Oracle Marketing,http://docs.oracle.com/cd/B15436_01/current/acrobat/ams115ug.pdf,(Accessed : 2 December 2013)

[9]. Oracle Order Management,http://docs.oracle.com/cd/A99488_01/acrobat/115ontug.pdf,(Accessed : 2 December 2013)

[10]. Oracle Sales,http://docs.oracle.com/cd/B53825_08/current/acrobat/121asnug.pdf,(Accessed : 3 December 2013)

[11]. Oracle Services,http://docs.oracle.com/cd/A60725_05/pdf/csug.pdf,(Accessed : 3 December 2013)

[12]. SAP marketing,http://help.sap.com/bp_crm70/BBLibrary/HTML/B72_EN_DE.htm,(Accessed : 3 December 2013)

[13]. SAP sales,http://help.sap.com/businessobject/product_guides/RMxi32/en/xi3_rm_sap_sa_ug_en.pdf,(Accessed : 2 December 2013)

[14]. SAP services,http://www.sap-press.de/download/dateien/1759/sappress_service_with_sap_crm.pdf,(Accessed : 3 December 2013)

[15]. Procure to Pay,http://docs.oracle.com/cd/E18727_01/doc.121/e13409/T207713T208906.htm,(Accessed : 10 December 2013)

[16]. SAP HANA Architecture,http://help.sap.com/hana/SAP_HANA_Developer_Guide_en.pdf,(Accessed : 26 November 2013)

[17]. Tavassoli, S.; Sardashti, M.; Toussi, N., "Supply chain management and information technology support," *Computer Science and Information Technology, 2009. ICCSIT 2009. 2nd IEEE International Conference on* , vol., no., pp.289,293, 8-11 Aug. 2009

[18]. Order to Cash,http://www.oracle.com/us/solutions/benchmark/apps-benchmark/order-to-cash-166935.html,(Accessed: 6 December 2013)

[19]. Oracle E-Business Architecture,http://docs.oracle.com/cd/E18727_01/doc.121/e12841/T120505T120508.htm,(Accessed: 1 December 2013)