Optimization of Sales Order and Distribution in SAP with Profitability Reporting Option in Cloud Based SAAS applications

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Abstract: The aim of this paper is to provide optimize ways in sales and distribution, marketing, product managementprocess. In order to sustain in this contemporary and dynamic environment, rapid and dynamic decision making is required to make right decision. In any organization profitability is the core parameter to assess while designing organization objectives, goals and strategies, profitability plays a major role to achieve them. This paper illustrates real time use cases of date integration using Fiori, migration and synchronization of data.

Keywords: Cloud SAAS applications, on-premises system using SAP S/4 HANA,SAP, Fiori, Automation, Sales and Purchase process

1.   Introduction

Cloud computing is a novel network paradigm, which allows to access shared resources like storage, networks, applications and services with optimal network bandwidth. National Institute of Standards and Technology (NIST) is a globally accepted information Technology organization. Every cloud will be built on the five indispensable characteristics, namely measurable services, Scalability of users and data, wide network access, on-demand application services, shared resource pooling.

1.1 Cloud Services

Cloud provides three basic services such as

1.1.1 Software as a Service (SaaS)

SaaS is a software distribution model where applications are hosted by a third-party provider and are available to customers over the internet.

1.1.2 Platform as a Service (PaaS)

PaaS products sit in the middle between IaaS and SaaS. It allows customers to create a customized experience on top of an existing set of tools.

1.1.3 Infrastructure as a Service (IaaS)

"IaaS is what people usually think of when discussing cloud computing. It emulates the hardware that companies traditionally purchased to create internal and external networks. The core of installing hardware and connecting it to physical networks has been replaced with the task of creating robust configurations. Almost every part of a traditional network is offered as a cloud service".
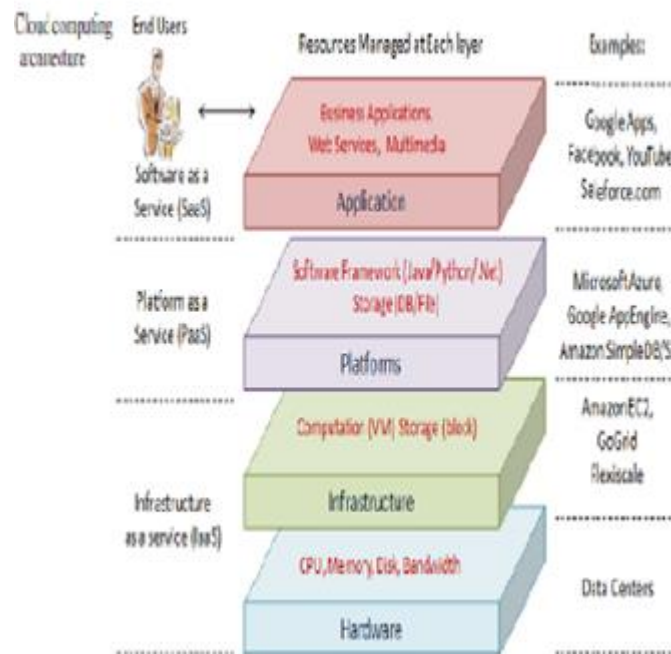
Figure 1.1 Architecture of Cloud

1.2 Experimental Set-up

In the current research survey paper, which includes variety of cloud-basedtools,interfaces,hardware appliances and content management. In this paper feature of the environment are explained. It includes following tools

1.2.1 SAP S/4HANA

SAP S/4 HANA is a leading cloud based SAAS Application. It is a cloud-based ERP business suit,which enables digital, integrated, intelligent business process across the entire business landscape.

1.2.2 SAP

SAP stands for System Applications and Products is a platform which provides to do transactions, analytics and lightening to make more digital world. SAP provides various products like Financial, Enterprise, Data and database management, CRM, Supply chain management, Human Capital, Supplier relationship management, content and collaboration technology platform, Analytics.

Out of Several Cloud issues, reliability of data integration along with authorization are the key research issues in current research paper. Current research work focuses on development of posting sales and distribution details.

2.   Review of Literature

This chapter introduces ERP Systems, what they are and why companies drive core with them.

2.1 ERP Systems

An ERP Systems is an enterprise resource planning applications, which share communication and database with each other. This can eliminate information data between departments and gives everyone a single source of information. This system can automate core business processes and help reduce risk, ensure regulatory compliance and fast reporting. [1]

The ERP systems are to be replaced by Internet applications and separated systems that can communicate together. But over the time, organizations were forced to control the IT budget and also the problems, as IT complexity, transparency and cost of ownership have become crucial. The organizations have started to focus on modern ERP systems and target the creation of the added value together with lowering the cost of IT. [2]

The ground foundation of ERP systems is one common database which provides the possibility to incorporate all the processes essential for the given company. These processes are generally in the areas such as finances, controlling, production planning, logistics, sales, material management and human resources. [3]

2.2BriefHistory of SAP S/4 HANA

SAP is focuses on the cloud technologies and in-memory computing of SAP S/4 (HANA). The newest products aims for the real-time delivery of data using HANA databases. It stands for high performance analytic appliance, which is designed to process structured data from the relational databases, both SAP and non-SAP applications. It can run in parallel with SAP ERP applications. Analysts can access both real-time transactional and operational data. They no need to wait for a run of daily or weekly reports. SAP S/4 HANA can be deployed on-site as an appliance or purchased as a managed cloud service.

"SAP HANA Cloud Platform is a cloud platform based on open standards. It provides access to a feature rich, development, easy to use environment in the cloud. This platform also includes asset of services for integration, enterprise mobility, collaboration and analytics. This Cloud Platform enables both customers and partners to rapidly build, deploy and manage cloud-based enterprise applications that complement and extend SAP or non-SAP solutions, either on-premises [4], or on-demand. As Platform as a Service operated by SAP, HCP frees from any infrastructure and offers advanced quality of service – availability, scalability".

The following are the programming models that could be used to build highly scalable applications:

 • Java – SAP S/4 HANA Cloud Platform is Java EE 6 Web Profile certified. Which is easy to developaJava application for any application server is possible.

 • HTML5 – lightweight HTML5 applications can easily develop and run in a cloud environment.

 • SAPUI5 uses UI Development Toolkit for HTML5 for developing rich user interfaces for modern Web business applications.

The applications developed on this Platform run in a modular and lightweight run time container. The platform provides a secure, scalable run time environment with an advantage of platform services. The preferred technologies to develop and deploy applications used are WEB IDE, SAPUI5, S/4 HANA Cloud Platform.

2.3 Sales and Distribution module

This module combines applications for handling all the activities connected to expedition, processing of orders, delivery and invoicing. For better understanding, here is the explanation of how the typical workflow of this module may look like. The customer sends sales order. Based on this, the purchase order is generated. The purchase order contains date of delivery, the required materials and prices. All the materials will be collected and will be ready for delivery.

After the materials are accounted, the delivery list is ready. The whole process end, once the customer pays for the order. In the beginning of the process, there can be an exchange of two documents: customer inquiry and company quotation.[5]

2.4 Material Management module

To accomplish this business processes, different materials are required. SAP MM module deals with a material flow from the point where material accesses the organization, until it is transformed into the final product and its aspects. Therefore, it is a backbone module for SAP Logistics and other modules are also dependent on it. [6]

Its core is procurement of materials. It should be done with correct quantity, appropriate value and useful timing. Procurement is important because the organizations try to get stock supplies to minimum,but at the same time to avoid a situation when they cannot produce due to the insufficient inventories. Basic procurement is done through purchase requisition, purchase order, invoice and receipt goods issue.

3.   Real time data Integration approach between the cloud and with on-premises systems

Data Integration between cloud platform and with on-premises systems is described in detail integration approaches. The integration of cloud platform with others is done in two ways, namely data related integration and process-oriented integration. The two types of approaches are data-based integration and process-based integration. Data based integration patterns address the data synchronization process in between two or more systems, but the systems must have meaningful information. Process based integration required for the business functionality where two or more systems participate to complete one single task. In this approach the application triggering must call its dependent process edges to other apps. These types of approaches address both orchestration and choreography. Orchestration means where only one application has overall control and in choreography there is no control application. Process based integration

Fig 3.1 SAP S/4 HANA real-time data requires high design scope, robust exception handling, and good testing scenarios

In this research the best possible ways are considered to integrate cloud application with on-premises systems. Development stage of the program that will cover the automated process with technologies like ABAP programming, Fiori are used. Here using SAP S/4 HANA as in fig 3.1 and Fiori Elements to generate this report.Following screens represents the SAP HANA login screen with real-time data and Fiori Launchpad as in fig 3.2 with different inboxes, which includes posting and displaying of data.
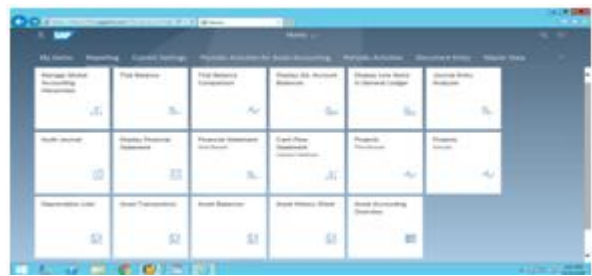
Fig 3.2 Fiori launchpad

4.   Design and Development of Profitability Reporting

Before development of profitability reporting, and also considering cost-based profitability analysis (CO-PA),also need to understand operating concern to formulate a optimized solution with profitability analysis as mentioned below.

4.1 Operating Concern

Operating Concern acts as organization unit in a company, for which sales market has a uniform structure. This is valuation level of Profitability Analysis.

4.1.1 Defining Structure

Defining Structure of operating concern is by selecting following two options

* Characteristics decide which level to perform analysis, which includes sales organization, product, region, and customer.

* Value fields decide values and key figures to be analyzed, such as revenues, cost of goods, Gross Profit or Loss.
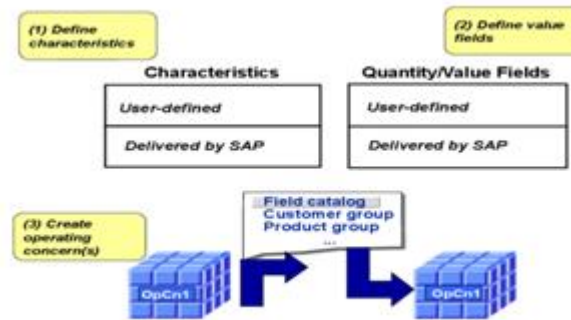
Fig 4.1. Structure in Operating Concern

This structure varies from one company to another company. For example, structure in manufacturing company for total production costs differs in a retail or wholesale company. Based on analysis, characteristic and value fields are defined in Co-PAwith customization [7].

4.1.2 Characteristics for Profitability Segments

In the operating concern all characteristics are used in line item.While creating profitability segment, few characteristics

can be restricted as they are almost always populated

, which are not necessary and impractical for the

Profitability segment. By using more characteristics in

Profitability segment reduces system performance.

 Onecharacteristic sales order should not be used in repetitive

Manufacturing..[7]

Fig4.2 Characteristics for Profitability Segments

4.1.3 Value Fields

In costing-based Profitability Analysis requires value fields. These are the fields that contain the currency amounts and quantities that needed for analysis in CO-PA. They represent the structure of costs and revenues.

There are two types of Value fields,

- Value fields that contain amounts in currencies, which are also referred to as "amount fields". All amount fields in a single line item use the same currency.
- Value fields that contain quantities are referred as "quantity fields". Each quantity field is assigned a field containing a unit of measure. Consequently, each quantity field in a line item can use a different unit.

5.   Illustration of secured and reliable data representation of the report with Fiori

Before developing Profitability report ,need to identify with the characteristic fields and value fields ,so following are the values identified for the generation of current report,

5.1. Characteristics:

Characteristic fields include, Sales and Distribution, Product management and finance accounting elements .Each of these elements are grouped and defined as

5.1.1 Organization Units such as Company Code, Sales Organization and distribution channel

5.1.2 Customer-related chars such as Customer, Country

5.1.3 Product-related chars such as Product,Plant,Division,Profit Center

5.1.4 Sales and Distribution such as Sales and Distribution

5.2. Value Fields:

5.2.1 Sales and Distribution such as Revenue, Finance Exp

5.2.2 Legal view of operating concern currency is Cost of Goods, Sale Quantity

5.2.3 Calculation value fields are Gross Profit/Loss, Net Profit/Loss

After identifying with the characteristics and value fields to generate the profitability report ,need to follow following steps as mentioned below.

The 3 essential steps to creating a Profitability Report are:

5.3 OData service Preparation

5.4 Forming the UI Annotations

5.5 Fiori App creation using the Fiori Elements with List Report template

Prerequisites to create this report is need web browser to run Firori App, e.g, Firefox, Chrome etc.,A front-end server which is capable of supporting Fiori Elements like SAPUI5.And finally with the OData service to provide data for the Fiori elements.

5.3 Prepare the OData Service

First and foremost is to prepare OData Service which extracts data from backend system which will be displayed in the report. Using features of OData Service as below

5.3.1 $count - which is used to show the count of items in the report

5.3.2 $filter - which is used to filter the report

5.3.3 $top,$skip paging features can be used for the report

Quickest way to create a OData Service using latest ABAP and S/4 HANA systems. Initially to define a ABAP CDS view to extract data for the report. Then to test the CDS view which is returning exact data using data preview tool in the ADT. Exposing CDS view as a service using annotations @OData.publish:true. Activating OData Service in SAP Gateway, so that it consumed by OData Client of Fiori App.Finally to test OData Service in web browser whether its returning expected data.

5.4 Prepare the UI Annotations

Annotations are added directly to CDS view, as shown in the example figure highlighted [8]

Fig 5.4 : Annotations added in the logic to CDS View [8]

5.5FioriApp creation using the Fiori Elements with List Report template

Finally creating a Fiori App ,we use SAPHCP Web IDE, From Menu options File ->New->Project from Template , from the template selection tab, select list report application, in the basic information tab project name and title to be entered, On the data connection tab need to select OData Service, on the annotation selection tab,will be listed with annotations from OData service ,it list service metadata xml generated by SAP gateway and annotations assigned to OData Service, In template customization tab OData collection is selected to which report to be generated. Finally after clicking on finish we are generated with report .

Fig 5.5: Report Result [8]

As in the above figure showing a list report generated in Fiori using Data Service.Generating Profitability Report with the fields mentioned in 5.1 and 5.2 characteristic and value fields
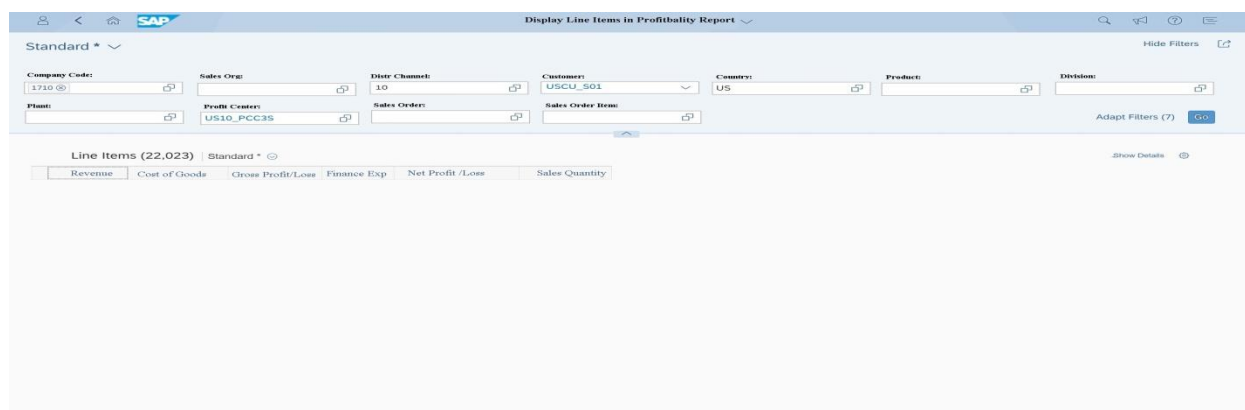
Fig5 6: Profitability Report

From the Portability Analysis, and with the generation of Profitability Report as in fig 5.6 helps to reach organization goals by analyzing profitability as per market segments by extracting revenue, gross profit/Loss from different module of Sale and Distribution, Production and Material Management. This report can be used in companies in any branch of industry.

6.   Conclusion

As Profitability Report gives a complete 360° view of Company's Performance.Which allows companies to maximize their profits, maximize opportunities that business can take advantage of ,inorder to keep itself successful. Increases productivity across organization using historical data for comparison. This Report integrates data from all modules of a organization ,both billing documents and sales order can be transferred in real-time. Based on this report ,can analyze revenues, cost of goods based on sales quantity. This navigates through multidimensional data using number of different functions.

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