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Analysis of SAP Technology in Enterprises

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Abstract

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SAP is an enterprise resource planning system (ERP) is often described as complicated to use. The Software has different type of customization tools available to make usage smoother, one of them being SAP FIORI.

This thesis work was done based on the small enterprise named Lakhan Carpet Pvt Ltd, India which was small business, doing its business in carpet. However, till that time owner of the business was not aware about the benefits of SAP software in a production environment. The key feature of this software is the information entered in the system is always updated on different locations by business is incorporated and management can have all the accurate information at all the time.

This thesis work is focused on the especially SMEs and SAP benefits to the SMEs. The research work done also to focus on SAP different products which are useful for SMEs and its tools like SAP modules, products, and SAP software version and how SAP works. The objective of the thesis work has been achieved which is also supported by survey.

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List of Abbreviations

ABAP	Advanced Business Application Programming. Programming language
ALM	Application Lifecycle Management
ERP	Enterprise Resource Planning
Flavor	Specific screen personalization, applied to a particular transaction
IoT	Internet of Things
JavaScript	Dynamic programming language used mostly in web development
RFC	Remote Function Call
SAP	System application planning
SAP GUI	Graphical User Interface for SAP
SaaS	Software as a Service
SMEs	Small and Medium Enterprises

1 Introduction

In today's 21st century, where Information technology (IT) is not having limit in any sector like business, health, space etc. Hence, every sector is supported with various types of benefits. SAP is ERP (Enterprise Resource Planning) software developed by SAP SE a German based multinational software corporation which came in existence in 1972 and the German subsidiary of Imperial Chemical Industries was the first customer to use the SAP. Since then SAP is mushrooming drastically and captured nearly 10.97% market globally. As per the Fortune business Insights reports, Cloud ERP market will be reached up to USD 140.14 billion by 2030 [1].

SAP used to store its data in row based approach and it used to flow in three different layers (Presentation, application and database) however now it is replaced with In-memory database also called as columnar data base in two layers (presentation and application layer).

SAP ERP is also an effective tool for various types of business for storing the data. SAP is a integrated tool (software) which connects all the other business process and whenever there is any movement in the business process system, SAP business user enters the data in the system and system updates the information instantly and the information is available for all the business user and management anywhere in the world where the user can view the data. Since the SAP launched its first version there are almost every year new versions come into existence to enhance the data process and availability.

The goal of this research is to determine whether SAP fulfills the requirements of Small and medium enterprises (SMEs). At present, SAP is broadly used by multinational companies (MNCs) and large enterprises due to its high implementation and maintenance cost.

2. SAP ECC and S/4 HANA

2.1 SAP ERP System

SAP ERP supports various business functions like Finance & Controlling, Financial supply chain management, Sales & Distribution, Material management, Production planning, Quality Management, Human resource management, Payroll process, Warehouse, Health & Safety, Real estate management etc. It helps business to automate processes, track resources, manage inventory, handle finances, and analyze data for strategic planning with its tailored and customized solutions.

SAP is available in web browser SAP is available in web browser as SAP GUI for HTML and as an application for windows in SAP GUI for Windows. Content in the browser version is generated by the internet Transaction Server (ITS).

SAP GUI for Windows is an application installed on personal client computers and general workstations around plants and other business location. These two are similar in use but can differ visually [2]. All the SAP application runs on ABAP (Advanced Business Application Programming) code but allows JavaScript to be executed on top of it [3].

Once installation is completed the SAP ERP can be used by the business user also called as End User. There are several ways to run the program either by transaction code or by the end user screen. Behind all the path or report there is SAP program which will run or program will be executed automatically based on the Transaction code or by the path or action which is being followed by End User.

SAP Transactions may consists different screens and each screen brings set of elements to view for user and finally an End user or business user can create invoice or report or payment etc based on its action.

Generally, a business user has limited access to the SAP system with comparison of consultant. See the below screen shot for business user point of view

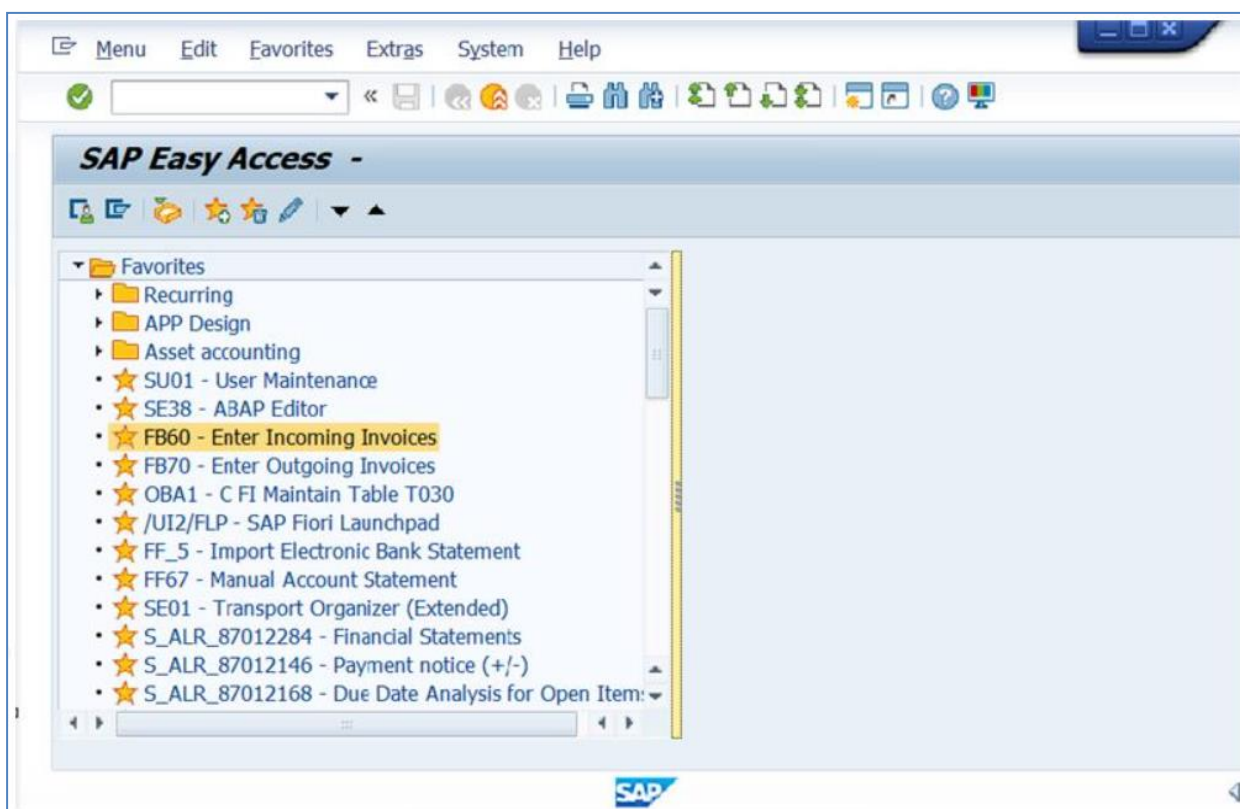


Figure 1. SAP End User Screen view

A user can create his/her favorite list like in *Figure 1* and can add some business process like Enter incoming invoice and outgoing invoices etc.

Certain transactions and business process related transaction codes can also be customized to make more users friendly and some basis information can be entered on the screen which can be saved, this process can be called as variant creation. Whenever business user wants to perform the same action or business process he/she does not need to all the information if the variant is used.

Hence, this saved information saves time and due to this a user can minimize the errors related to data entries. It offers numerous benefits and advantages, in a form of enhanced usability, process efficiency, and user productivity, as well as fewer screens, fewer clicks, less data inputs, a consistent user experience, and decreased training time and cost.

A user can create the variant for business process like Enter Incoming invoices, Enter Outgoing invoices, making the payment, creation of purchase or sales order etc.

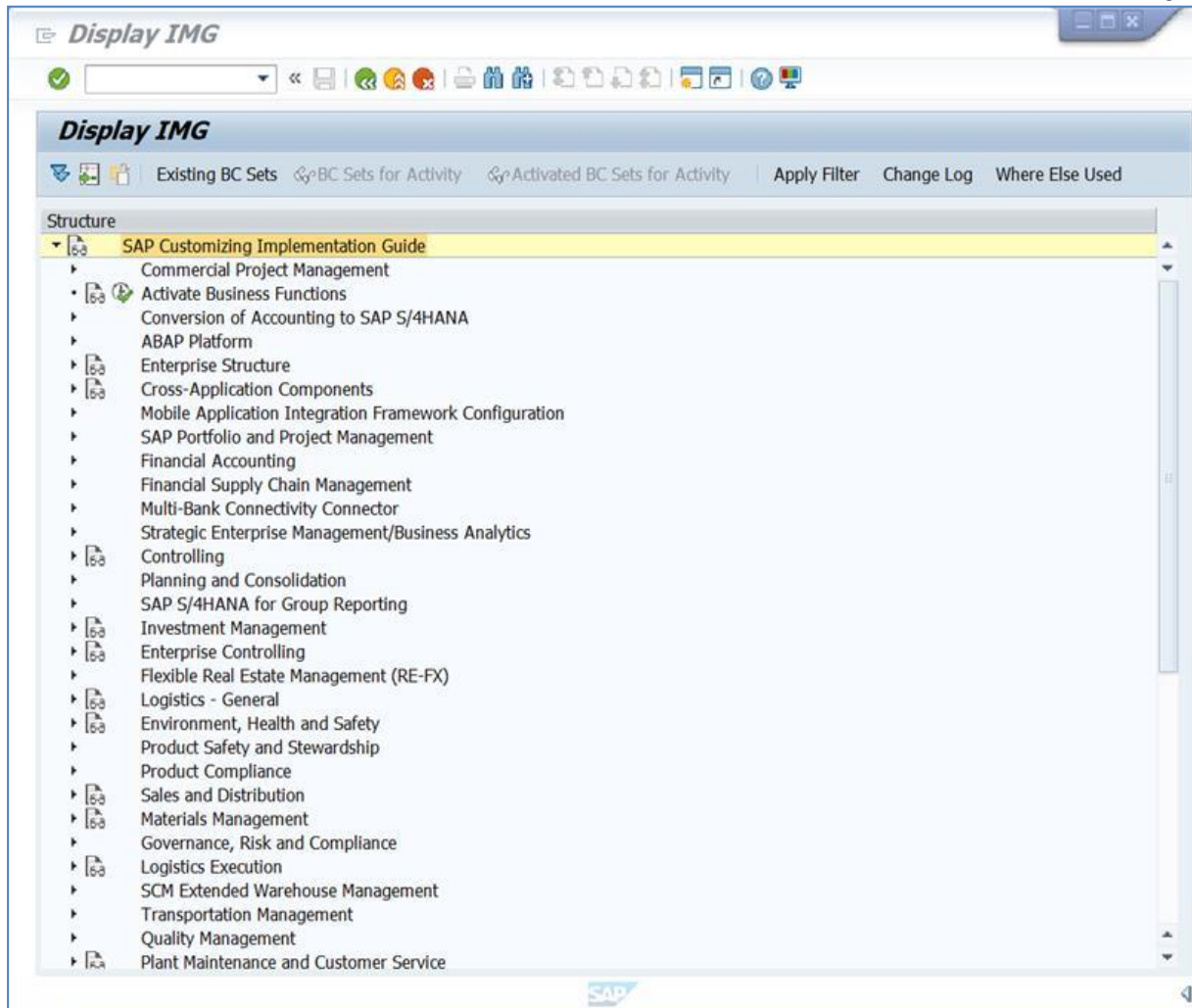


Figure 2. SAP Consultant/Developer Screen view

From this screen a consultant design the SAP system based on the business requirement, this screen also called 'Implementation Guide' (IMG).

2.2 SAP ECC

SAP ERP Central Component (SAP ECC) legacy enterprise resource planning was originally designed to operate third party data base like Oracle. SAP ERP has undergone with several versions since its inception like below:

- A. SAP launched its first version R/1 in 1972 for financial accounting.
- B. SAP launched its second version R/2 in 1979 to expand its capabilities to include materials management and other functions.
- C. SAP R/3 version came in 1992, was introduced by a client-server architecture and support for various languages and currencies.
- D. SAP ECC 5.0 and 6.0 were new versions of SAP ERP, offering improvement in functionality, scalability, and performance.
- E. SAP S/4HANA was invented in year 2015, which is the latest generation of SAP ERP. It provides real-time analytics, simplified data models and a modern user interface.

SAP ECC landscapes are designed for End user (Business user) and consultants specifically. Based on the business's requirement or business user consultants designed the system. Generally SAP has three landscapes like Development system (DEV), Quality assurance system (QAC) and Production system (PRD) [4].

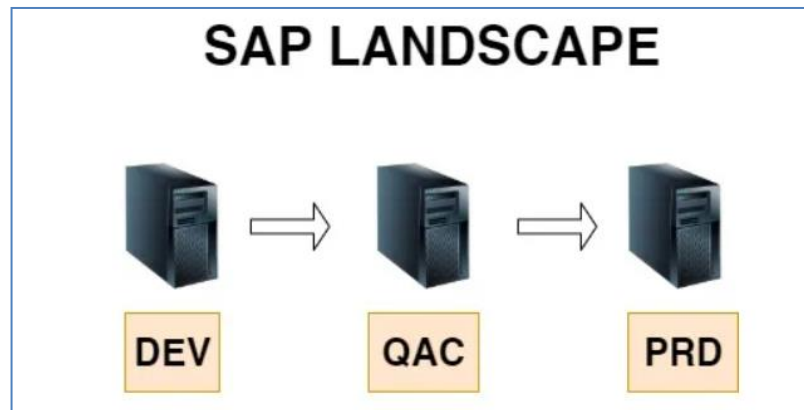


Figure 3. SAP system landscape view

These landscapes are also called as architecture servers. Development server is responsible for all the development based activities where consultants perform new customizations based on the business requirements.

This server can be utilized as undergoing unit testing as well. In this server or system, all the configuration or customization take place with Transport request (TR) number which can be moved to the other server like Quality system and production system.

Once all the TRs are moved to quality system generally business users test the business process and if there is any requirement, consultant customizes the development system and save the changes under TR and these TR will be transported to Quality system and business user checks the process once again.

Once process looks as per requirements, all the TRs will be transported to production system. This production system is also known as golden client which is only available to use for business for its real time business process.

Language: Currently, SAP supports 39 languages as does its predecessor, SAP ERP [5]

2.3 Issues in Usability

Like any complex software, some usability issues can be seen in SAP such as complex user interface, navigation difficulties, customization and personalization challenges. Sometimes performance issues, integration difficulties and error handling things can be addressed. To tackle these kinds of problems, organization can approach user training and support, user interface enhancement, performance optimization and improved documentation.

2.4 SAP S/4 HANA

SAP S/4 HANA, ERP suite which runs their own in-memory database which is also called HANA database was introduced by SAP in 2010 to improve its performance and strategic decision making process by receiving up-to-date data.

Differences between SAP ECC and SAP S/4 HANA:

SAP ECC is an SAP ERP immediate predecessor which is also used broadly but its SAP is now recommending using SAP S/4 HANA to its customer due to several reasons like performance and its own database which store millions of data and provides more enhanced and tailored solution. One major difference between SAP ECC and SAP HANA is SAP FIORI landscape which is designed for business users.

2.5 SAP feature development pipeline

Creating a feature development pipeline in SAP involves a structured process that ensures the effective delivery of new features, from initial conception through to deployment and maintenance.

Below are some details of SAP feature development pipeline:

- 1) Ideation and requirement gathering
- 2) Planning
- 3) Design and prototyping
- 4) Development
- 5) Testing
- 6) Deployment
- 7) Post Deployment
- 8) Continues Improvement

This pipeline ensures a structured, efficient, and iterative approach to SAP feature development, balancing thorough planning with agile execution to deliver high-quality, user-centric features.

2.6 Environments

An SAP environment is a complex and integrated setup used to manage and execute business processes and operations within an organization. It encompasses various components, systems, and configurations that work together to provide a cohesive and efficient enterprise resource planning (ERP) solution.

Below is an overview of key aspects of an SAP environment:

- 1) SAP System Landscape:
 - a) Development System (DEV)
 - b) Quality Assurance System (QA)
 - c) Production System (PROD)

- 2) SAP Modules:
 - a) Financial Accounting (FI)
 - b) Controlling (CO)
 - c) Sales and Distribution (SD)
 - d) Material Management (MM)
 - e) Production Planning (PP)
 - f) Human Capital Management (MCM)
 - g) Customer Relationship Management (CRM)

- 3) Technical Components
- 4) Integration and Middleware
- 5) Security and Compliance
- 6) Data Management
- 7) Support and Maintenance
- 8) Training and Documentation

2.7 SAP Solution manager

SAP Solution manager is an application lifecycle management (ALM) platform is used to maintain, integrate SAP system and also troubleshoot issues and keep things running securely and smoothly. Generally, here Business can store complete documentation for its business process and based on the business process the solution is designed.

Once solution is designed Key user start their business process testing the QA system and if a business user identify any issue in the process, Issue or defect or ticket can be created and stored in solution manager. This system also can be called as ticketing tool. A consultant opens the ticket in the system and resolves the issues.

2.8 SAP Screen Personas

SAP Screen Personas is a web-based SAP add-on tool for simplifying and personalizing SAP GUI (Graphical User Interface) screens. Drag-and-drop and hide functionalities can be used to relocate objects and conceal unwanted objects from SAP screens, lowering clutter and reducing information overload.

Certain transactions and business process related transaction codes can be customized to make the user friendly experience and eliminate the unwanted data entries information to save time. Due to this a user can minimize the errors related to data entries. It offers numerous benefits and advantages, in a form of enhanced usability, process efficiency, and user productivity, as well as fewer screens, fewer clicks, less data inputs, a consistent user experience, and decreased training time and cost.

The core functions of SAP Screen Personas are scripting, screen customizations and theming. SAP Screen Personas allows you to modify screens and combine tabs, the fields and buttons can be moved around, allowing information from multiple tabs to be combined into one screen or a smaller number of tabs. By combining information, the user can view the information they need quickly and with fewer clicks. Field descriptions, colors, and fonts can all be changed.

Themes are used to customize the look of a transaction or a group of transactions. Screens inside a single business process can be made consistent using the theming

Functionality, such that each screen has the same backdrop, control and object colors, border style, and so on. The user can more readily distinguish the relevant procedure among other processes by theming.

SAP Screen Personas projects are called “flavors”, and flavors are transaction specific. However, SAP Screen Personas allows flavors to navigate to other screens of the same transaction and even different transactions through scripting. Scripts are done in Javascript.

2.9 SAP FIORI

SAP FIORI application which is not available in SAP ECC. SAP FIORI is a design system that enables a business user to create business apps which can be accessed on desktops, tablets and smart-phones.

SAP FIORI is also a design language which brings the great user experience to enterprise application based on the SAP user experience.[6]

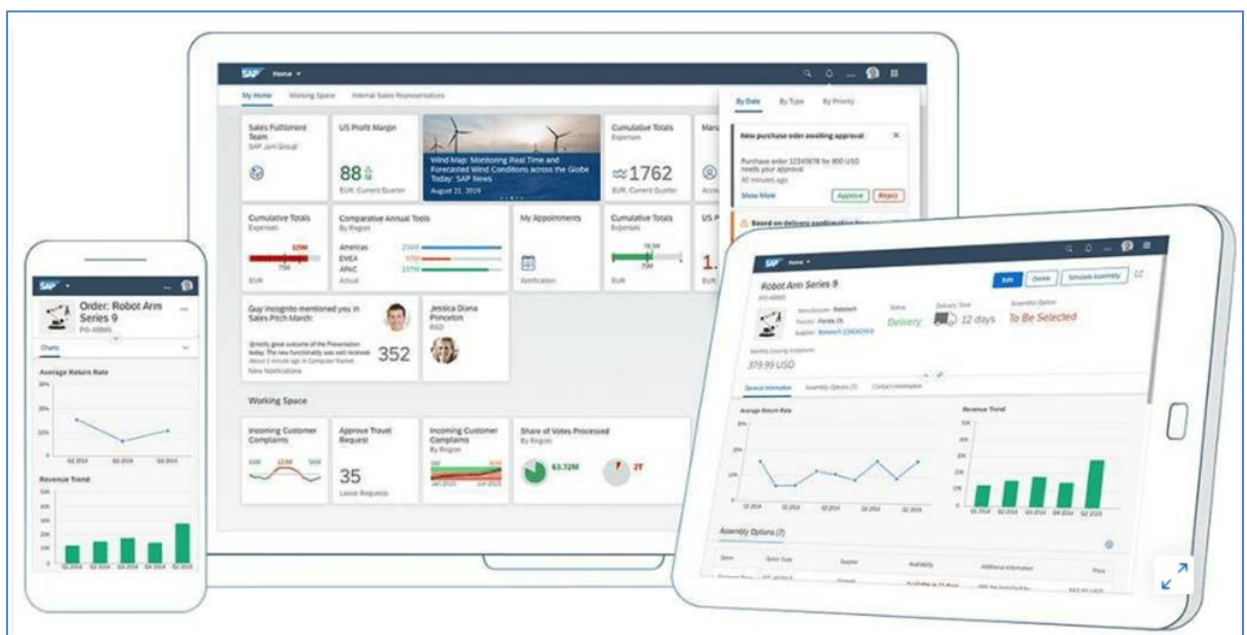


Figure 4. SAP FIORI Screen view

3. SAP Usage in business process

SAP software used by businesses of all sizes to manage business operations and customer relations. SAP integrates various business processes and functions into a

single unified system, enhancing efficiency, data consistency, and decision-making. Here's an overview of how SAP is used in different business processes:

3.1 Financial Management

SAP finance management is also called SAP FICO (Finance and Controlling). SAP FICO is an essential module of SAP ERP comprised of two key components, SAP Financial accounting and controlling (FICO). SAP FI is mainly tailored for financial transactions like payments posting, payment reminder, asset related transactions like asset master and transactional data's, posting depreciations, creation of General ledgers accounts (GL) etc and reporting while CO is focused on planning and monitoring cost inside the business.

This Module is the main fundamental pillar of the business project as in this module a consultant design the all types of GL accounts nature wise as whenever reposrts are submitted to the government for tax filling and return purpose the report generated from this module only will be accessed. Hence always the ideal organization structure is followed like below in most of the cases.

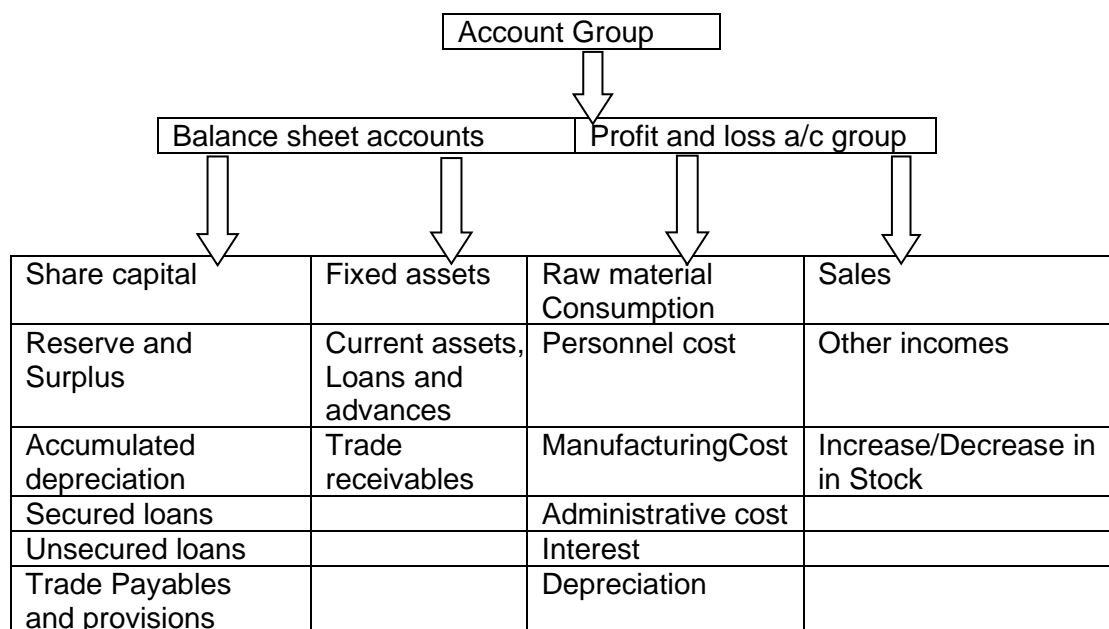


Figure 5. Business organization structure view

These above all the contents will be created as GL account group And whenever GL accounts are created those will be created under these groups. Below is the view of GL master data screen, which contains G/L account type, account group, name and number etc.

Figure 6. FS00 General ledger entry view

SAP FICO is integrated with other different modules (SAP SD, SAP MM, SAP PS, SAP HR, SAP QM, SAP PP etc) to support and optimize the business process within the SAP system

3.2 Supply Chain Management

SCM includes all activities that turn convert raw material into finished goods and after that handover them into customer's hands including sourcing, design, production, warehousing, shipping, and distribution. The use of SCM is to improve efficiency, quality, productivity, and customer satisfaction [7].

Below picture is showing key components in supply chain management.

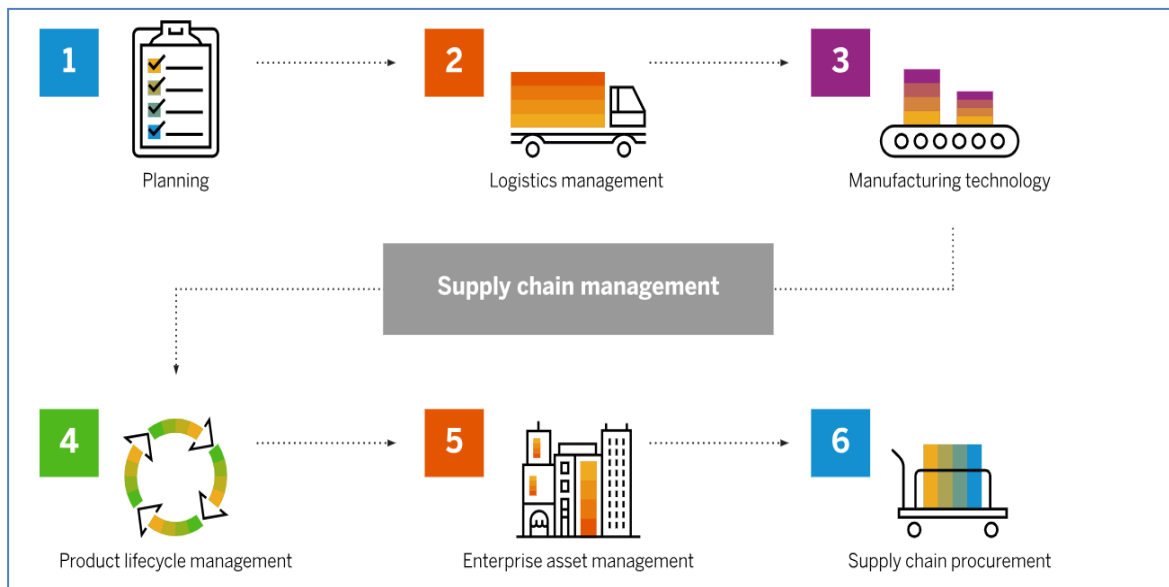


Figure 7. SAP Supply Chain Management Screen view

This is quite obvious that business might need raw material to fulfill the sales order in this case business create a purchase order and send to the supplier to whom the raw material can be bought based on the several terms and conditions.

The PO basically contains several information such as Supplier name and number in the business system material description, quantity, payment terms, plant location etc.

Below screen shot can be referred for more information and better understanding.

The screenshot shows the SAP ME21N 'Create Purchase Order' screen. The top section displays the 'Purchase Order' details, including the 'NB Standard PO' and the vendor '123 Test Vendor for ABCS'. The 'Purch. Org.' is 'ML01', 'Purch. Group' is '001', and 'Company Code' is 'ML01'. The 'Doc. Date' is '17.02.2020'. Below this, a table shows the 'Material Data' for 'ML01_TEST' with a quantity of 10 and a net price of 1,000.00 USD. The screen also features a 'User Interface for the Purchase Order' sidebar with instructions and a 'Further functions' section.

Item	Material	Description	Quantity	Unit	Net Price	Net Value
1	ML01_TEST	ML01_TEST	10	EA	1,000.00	10,000.00

Figure 8. ME21N Purchase order creation view

3.3 Sales and Distribution

SD is most significant module in SAP ERP. It is used to store the customer and product data of an organization. SD module helps in shipping, billing and transportation of product.

This module manages customer relationship starting from raising a quotation to sales order and billing of the product. SD module is commonly integrated with SAP MM and PP modules. How the sales order is created in SAP and which information it contains below screen shot can be referred.

Standard Order: 20166 Net value: 45,500.00 INR

Sold-To Party: 1800010 Kesineri Transport Agencies / 456 Lakadi Ka Pool / 500064 Hyderabad

Ship-To Party: 1800010 Kesineri Transport Agencies / 456 Lakadi Ka Pool / 500064 Hyderabad

PO Number: PO date:

Sales Item overview Item detail Ordering party Procurement Shipping Reason for rejection

☐ Complete div. Total Weight: 0 KG

Delivery block: Volume: 0.000

Billing block: Pricing date: 23.02.2019

Payment card: Exp. date:

Card Verif.Code:

Payment terms: B001 Birla Payable immediat... Incoterms: EXW Freight From Plant

Order reason:

All items

Item	Material	Order Quantity	Un	Description	S	Customer Material Numb	ItCa	DGIP	HL Itm	D First date	Plnt	Batch
	10 BSR001	500 KM		Birla Transport Service	<input type="checkbox"/>		TAD			D 23.02.2019	BMP1	
					<input type="checkbox"/>					D 23.02.2019		

Figure 9. VA02 Sales order Entry

3.4 Human Resource Management

Human Resource Management is one of the significant module in SAP and is referred to human capital management used in companies to operate HR process such as hiring the employees and storing their data, payroll, training and goal planning. This module helps in increase productivity and employee satisfaction with end-to-end service experience.

3.5 Manufacturing and Production Planning

Manufacturing and production module can boost the time to market, enhance the production efficiency and minimize the cost significantly with the help of SAP through

the automation. Like other industry sectors, SAP automation and digitalization are meeting various challenges which is not only designed for big corporations but also for SMEs.

This technical module is also designed to offer right production planning and management for manufacturing the product. As all the data has been configured with master data to get the actionable insights on real-time in the system.

All the data material requirement, operations activities, production and sales can be stored here, which also called BOM (Bill of Material) and manufacturer can manage the production based on the available planned data in this module.

3.6 Project Management

SAP PM module is also one of the most crucial module which is used to enable the successful projects with the integration of the several applications in the same platform. With the help of this module a project can be divided in the several parts based of the requirement and then planning the cost and revenue process can be performed.

They also represent one possible project or portfolio initiative that contains several possible related projects. This module also can be used to forecast the project task, cost, time lines and assigning resources and tracking the progress.

3.7 Business Intelligence and Analytics

Business intelligence the process helps everyone in business of analyzing the business data and turn into actionable insights. This process not only analyses past data but also current data, and presents the clear picture to the management and employees in the company to make decision process successful. Business intelligence also focus on what happened in the past and what is currently happening, So that suitable action can be taken on right time.

3.8 Customer Experience

SAP is providing tailored industry specific customer experience solutions to support the business process. SAP is redefining intelligence the customer experience by leveraging interconnected, insightful and adaptive technology solutions such as CRM and AI solutions for customer experience solutions.

4. SAP Business Technology Platform (BTP)

SAP BTP is the principle module consists of spanning data and analytics, application development and automation, integration, enterprise planning, and artificial intelligence technology.

SAP decided to use multiple services and products into one platform to make decision process smooth with the help of different parts of artificial intelligence (AI) in 2021. There were many different parts to an enterprise and to bring all of them together into central core. As part of this process SAP cloud platform converted into SAP BTP.

To support its capabilities, SAP purchased Askdata to improve its AI capabilities in SAP BTP, regarding natural language searches. During fully integration of Askdata's IP in 2022, SAP included advance event mesh, process automation and SAP Build Apps (formally SAP AppGyver) [8].

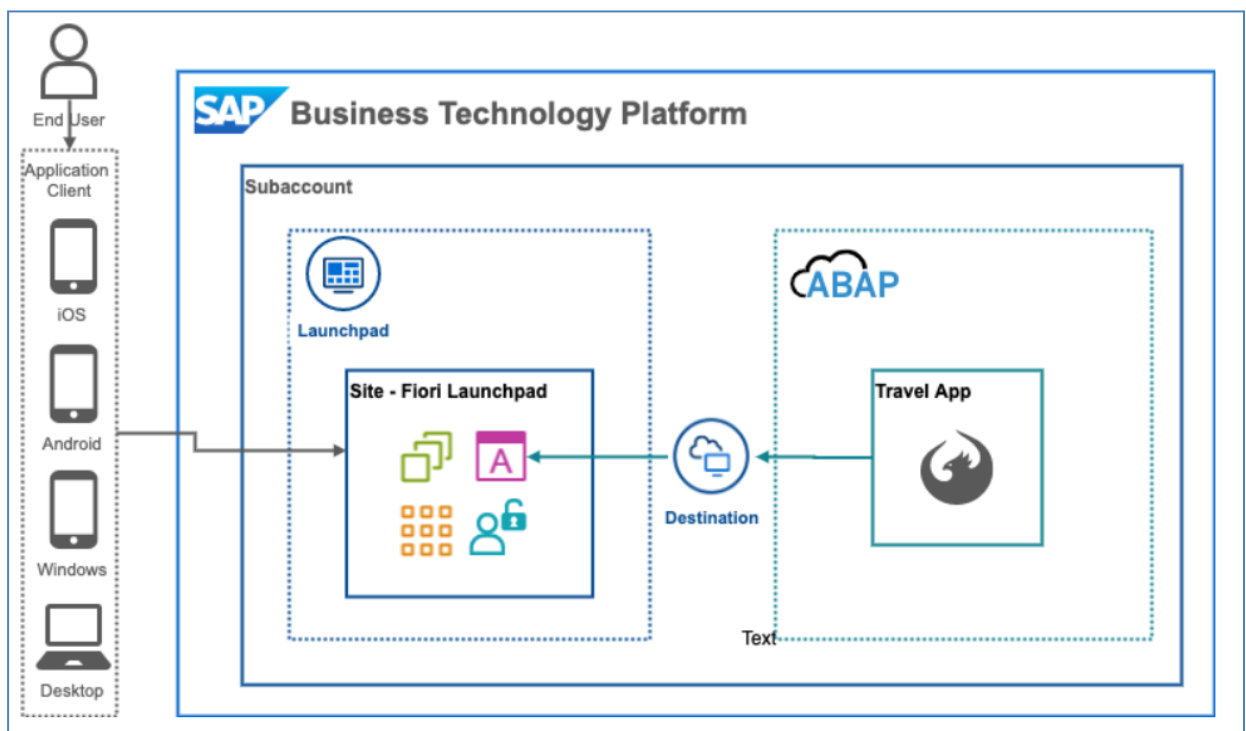


Figure 10. Integration between SAP FIORI launchpad and SAP ABAP

Types of SAP BTP:

At present there are two types of environments in SAP BTP, Neo Environment and Cloud Foundry Environment.

Neo Environment is mainly based on SAP own data center which allows users to connect SAP ERP. The Neo environment is developed in multiple languages such as Java, HTML and SAP HANA.

Cloud Foundry Environment allows users not only its own SAP data center but also outside data center such as Microsoft Azure, Amazon web services, Google cloud etc. Developer can build this environment also in multiple languages such as developer's own programming languages and multiple runtime exists including ABAP and Kyma.

5. SAP Activate Methodology

SAP activate methodology is a combination of project implementation methodology to plan and execute the different phases in sequence like discover, prepare, explore, realize, deploy and run to help customer and partners for complex project solutions. This process is also designed to improve quality to achieve a business goal.

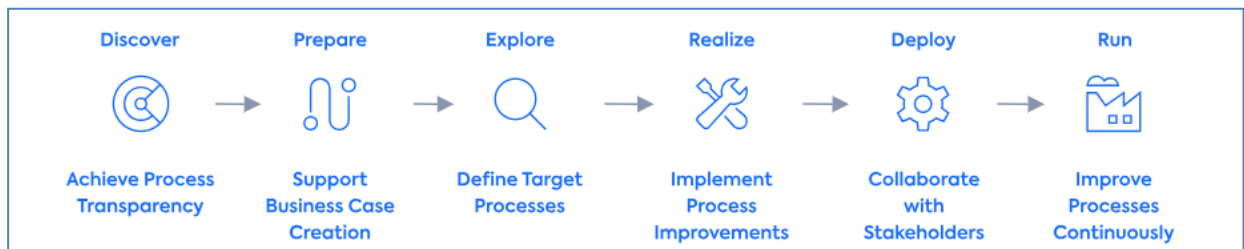


Figure 11. SAP phase sequences overview

1. Discover phase

In this phase client/customer realize the needs of business activities and its solutions. In this phase only customer is able to discover the solution and the roadmap to bring it in the business. Once client is made decision to implement the SAP solution and then moves into the next phase of ALM.

2. Prepare phase

Once the first phase is complete, Client can move to next step Prepare. In this step SAP provides the initial project planning and preparation which is aligned with the project timeline.

During this phase SAP project is initiated and SAP team validates the business activities. Role authorization and governance procedures for projects towards success are also part of preparation.

The outcome of this SAP project is preparing team of SAP consultants which is the most important phase for this ALM. During this phase various questions are raised by the client which need to be clarified here itself. SAP team also prepares a draft plan how the business will be migrated to its legacy system to SAP or SAP S/4 HANA.

3. Explore phase

The purpose of this SAP Explore phase, client will make a decision to finalize the business process which will be followed by SAP system. SAP consultants will demonstrate the business process to the business owner or business management in the system as per the business requirements.

There are various type of SAP Fit to standard processes which can be adopted by the client. These fit to standard workshops if not as per the business requirement then additional objects or process can be configured and designed in SAP system based on the requirement.

If there are still some backlogs that can be documented and will be delivered by SAP team. And the document will be signed off by business and SAP team. Outcome of this phase as analysis will be completed to understand how new SAP system will accelerate the business process.

4. Realize phase

In this realize phase of SAP activate methodology is to start design and configuration the SAP system based on the above signed document in explore phase. Once the

system is ready for showcase to the client. Then SAP user and business client will check and ensure that all the signed business objects have been configured timely. Generally, multiple level of testing such as Unit testing, Integration testing, User Acceptance Testing (UAT) are performed to ensure that SAP system is designed and configured accordingly as per the business requirements.

During this building and testing phase of SAP activate methodology business user will ensure that SAP landscape are as per the listed requirements and it is also important for them to visualize the impact of changes on the business.

SAP team will upload all the master data and transactional data to the system. Then Data migration testing is also done to ensure the data filled by the business user are in correct format and ready to import in new SAP system.

5. Deploy phase

The SAP deploy phase is also one of the most important phase of SAP activate methodology. This is usually done on weekend or during the business downtime to minimize its impact on business activities.

This cutover process is quite crucial process which gives sometimes sleepless nights to SAP team as this is culmination of their hard work being moved into new SAP system for business user usage. Once the process is completed and checked by business users and partners, business users continue to be supported if there is any challenges or issues.

The outcome of this phase is to implement the new SAP solution so that business users and partners can benefit from the new SAP system while continuing the support from SAP team in case if it is required in case of any issues.

6. Run phase

The final phase of SAP Activate Methodology is Run phase. This phase demonstrates the end of project life cycle from exploring the business solution and implementing to support business process.

During this phase SAP team will keep SAP system upto-date with latest technology in SAP products as SAP generally updates its product annually basis and business user is also aware about new technologies.

The SAP Activate technology has been designed to support SAP clients for new implementation and conversions projects. This methodology is now quite matured to support SAP S/4 HANA projects (Green field approach or brown filed approach or conversions). SAP Activate Methodology can be for each of the deployment mode i.e. Cloud, On Premise and hybrid etc.

SAP Activate Methodology is to provide end-to-end (E2E) Application Lifecycle Management (ALM) and initial implementation for SAP S/4 HANA [9]

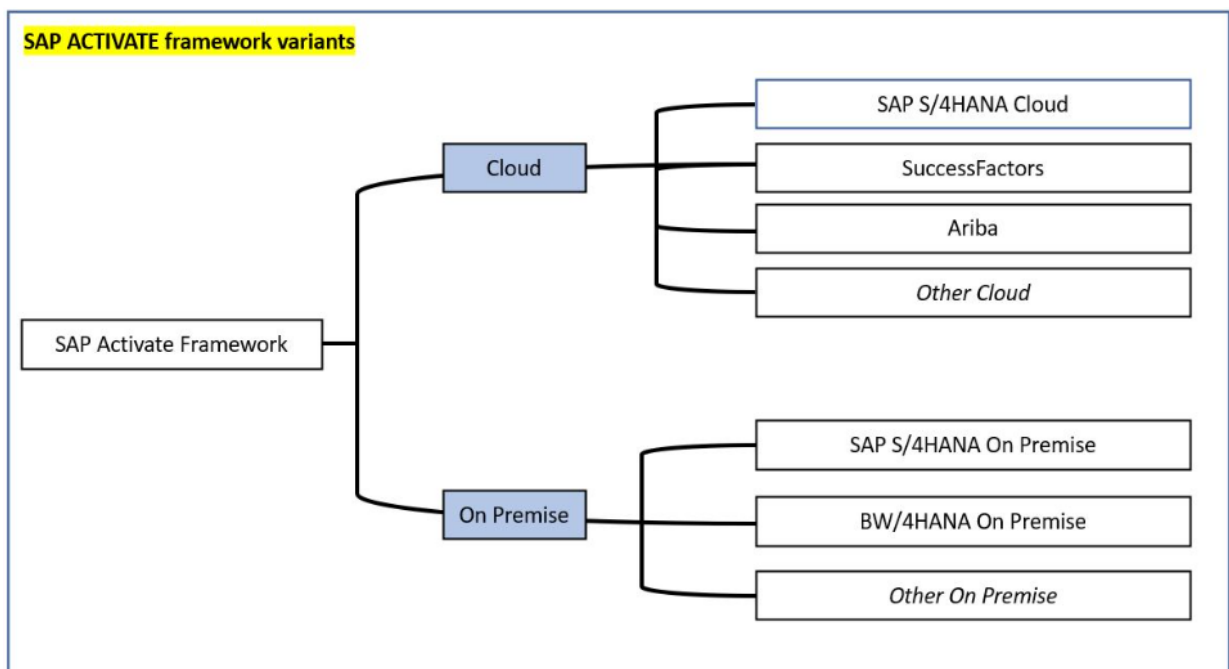


Figure 12. SAP Cloud based product overview

6. Analyzing SAP benefits to business and limitation

There are various benefits of SAP systems to manage various business processes in the business such as human resources, financial accounting, sales & distribution, material management, warehouses etc.

One of the biggest benefit of SAP as compare to other technology is its ability to seamlessly integrate with other system and applications to provide the unified view of an organization and to make faster decision making process.

Not only its own pre defined solutions but also SAP business solution can be tailored based on the business requirement, which makes the SAP more user friendly landscape for users. Day by day because of its continuous research and development brings new innovations almost every year to support its continuous process.

Comparison with other technologies/competitors, SAP is much flexible and user friendly. As a result it makes viable option for all kinds of businesses regardless to business size.

There are major SAP benefits below for business which also make first choice for several businesses:

1. Business efficiency

SAP system can decrease the omissions during entering the data, a user can create and save a daily business process as a variant to save time & efforts and can utilize this time for other tasks. Due to this a user can enhance its work skills and business cost significantly.

2. More data security

Now a day, data security is become a crucial task for every business as cyber security breaches and hacks increase simultaneously with the growth of technology. SAP is built to improve data security by providing limited access to limited users based on the business role in as organization. Also data is constantly backed up and centralized to prevent any failure which may lead to loss of data.

3. Scalability

Every business wants to grow and increase its market. Whether business is exploring new market or increasing its contacts base. SAP make sure business has its accessibility to all the transitions. User can create asimple integration and seamlessly scale up according to the industry specification with the help of SAP software.

4. Less costs

Day after day SAP is focusing on the reduce the cost of its software on large scale due to its features of automation, centralization, minimization of administration and operation expenses. When repetitive tasks are assigned to SAP, fewer complication arises and which allowing business user to operate more deftly.

5. Improvement in data management

Data handling is one of the best features of SAP, which makes also a first choice of business to opt this software. SAP organizes and store business organization's scattered data in a single location.

This data is easily accessible and reviewable for business users regardless of user location. Automation also enables business members throughout the business to view this data without retaining manual records.

6. Customer services

Customer service is one of the principle reasons for every business which highly impact the decision making process for business whether to adopt the particular technology or not. When SAP is implementing business information is centralized and streamlined which gives sales reps and good footing build quality relationship.

In addition, SAP also provides customer services related to any system fault which a business user is not able to diagnose. SAP customer care team will take the ownership and will be committed to provide the solution within time frame,

7. More flexible customizing

SAP system is quite flexible as compare to other technology which can be customized based on the business's requirement. It also allows a business user to choose components as per need and discards the rest. System availability on almost all the electronic gadgets like computer, tablets and smart phones etc make it also first choice for business.

SAP system is also quite user friendly as it can be designed as per the specific business process for example there is a business requirement that whoever is responsible for supplier payment, payment advice also need to be sent out from SAP system to supplier Email which is not as SAP standard but this can be done with small code changes in the program like below.

```
* Begin of change (add email sender by sy-uname)

"This is just data declaration it should be move up to line 21
DATA: lt_return  TYPE TABLE OF bapiret2,
      lt_addsmtp TYPE TABLE OF bapiadsmtp,
      ls_addsmtp TYPE bapiadsmtp.

"This BAPI fetch user information based on sy-uname
"the return table is mandatory but the addsmtp table contains the email address
CALL FUNCTION 'BAPI_USER_GET_DETAIL'
  EXPORTING
    username = sy-uname
  TABLES
    return    = lt_return
    addsmtp   = lt_addsmtp.

"After the BAPI run, we should read the data from the table
READ TABLE lt_addsmtp INDEX 1
  INTO ls_addsmtp.
"If the data is not empty, then add the user email address as sender
IF sy-subrc IS INITIAL.
  c_finaa-mail_send_addr = ls_addsmtp-e_mail.
  "If empty then add yours. It can be a technical email address or something else
ELSE.
  c_finaa-mail_send_addr = 'useremailaddress@gmail.com'.
ENDIF.
```

Now the payment advice will be sent to the supplier email address and any daily activity can be created as variant to avoid the so many data entries and which saves the user time.

8. Analysis and forecasting

Accurate analysis and report planning is always a headache for the business user. With the help of SAP system this risk is also eliminated and more accurate report can be created as there is no risk of duplicates data. The system can provide the reports for almost in every module for almost for all the business process. And that is always required for a business for forecasting.

As there are several advantages of SAP implementation including its complex features like data safety, flexibility, integration, and customizing options. However, still there are many downsides such as high implementation cost, SAP product updates, special workforce's team etc.

Even though SAP advantages overcome to disadvantages but still below these disadvantages cannot be ignored:

1. Periodic system updates

The main disadvantage of SAP system is it needs periodic system updates every few years. And this sometime can be little costly. Apart of it once system updates are completed new functions are added and few old functions may disappear or becomes out of scope which can be a another challenge as it is confusing for business users.

2. High costs

Besides the above mentioned drawbacks there is another major disadvantage is unexpected huge cost of SAP product. Some time business needs to adopt a newupdate in the system which can be high costly or business may need to adopt the brand new SAP product.

To implement this product a highly skilled team need to be required to implement the new SAP product for instances many business who are using SAP ECC version or any old version already but still they need to upgrade SAP new version or SAP S/4 HANA product which costs a business lot.

As we have seen there are more advantages of SAP and less disadvantages which makes still a first choice to implement SAP.

7. SAP Implementation Methods

SAP implementation is a unique process which consists lots of planning and based on current software in use for business. SAP can be implemented as green field approach, brown field approach and blue field approach. In other words, the installation of SAP software refers to the Greenfield project as a fresh new project where business is not using SAP or ECC system.

However, if business is already using SAP or ECC product and upgrading it then the project can be called as brownfield approach. And if there are other software other than SAP, in those cases the data preparation, de-duplication installation can be called as bluefield approach.

Greenfield approach:

This approach is used when a company wants to implement new SAP system from scratch. This method is mainly used when an organization wants to use new technology such as SAP S/4 HANA that qualifies SAP standards. While deployment of this method, all the system are entirely reinstalled and configured.

This method is very beneficial for the business that has many locations and wants to change their service from one area to other. However, this approach is quite expensive in beginning than other alternatives.

Advantages of Greenfield approach:

- This approach is easy to implement especially in case of SAP S/4 HANA related projects.
- Another advantage of this approach is multiple or different deployment can be supported for example if a business has multiple locations.

Disadvantages of Greenfield approach:

- This green filed approach is little expensive at first time.
- Another drawback is sometime business may lose historical data
- Multiple types of testing need to be completed

Brownfield approach:

Brownfield approach is used to convert existing SAP ERP system to S/4HANA. This method can be also defined as upgrading method, where all the processes, data are transfer to SAP S/4HANA system.

This kind of approach is more beneficial for that business whose systems are quite modern already. Because of function of this method, organization does not need to start from beginning it is not so expensive.

Advantages of brownfield approach:

- This approach is less expensive as compare to Greenfield approach.
- Less Implementation efforts required as this is not a fresh implementation
- Less configuration and customizing required too to support business process.

Disadvantages of brownfield approach:

- The main problem with this, this approach need to be implemented at once for all the locations.
- This approach has long term impacts on business as well and also due to complexity some issue might not be resolved within the time frame as it may need more time to investigate.

Bluefield approach:

This blue field approach is mostly used for quite big organization which has quite complicated data structure and this kind of solution is mostly used for the organization where SAP ERP tool is already in used or other tools are in used but business wants to adopt another SAP product however they want to keep also current solution and configuration as well so that the business user is also more or less is aware about the future system or solution.

In other words, blue field approach is hybrid strategy which keeps the current solution in the upcoming system whereas want to be supported by other additional solutions. This approach also allowing the distinct Go-live for other business entities or branches.

To support this approach, an organization should do some pre cost benefit risk analysis before opting the best SAP product or version which fulfills the business maximum requirements.

Advantages of Blue field approach:

- The big advantage of this approach is its hybrid mode means a business can take both the benefits of Greenfield approach and Brownfield approach
- This approach is also easy to implement and new technology such as Machine learning and IoT also help the business to archiving the data.

Disadvantages of Blue field approach:

- This approach is quite lengthy approach which takes number of years to implement.

8. The challenges faced by enterprises in India

Not only big companies but also SMEs are the main factors for Indian economy which play a vital role in India's GDP. However, this important role of business is impacted due to many challenges. In this 21st century which is full of technology, starting and nurturing a business is becoming a challenge for enterprises also. There are several challenges for the business highlighted below.

1. Access to finance:

Limited availability of finance is a big problem for enterprises in India. Especially many small business is enable to keep even working capital, unavailability of loans also makes it more worst. Even-though there are many schemes are in existence which run by government but still to get this financial ad application process is quite lengthy and becomes useless for businesses.

As based on the survey, nearly 70% respondents told the main problem is related to finance only.

2. Customer demand

The second factor for a business is its consumer or customer's demand, which is quite versatile and also grow depending on many factors like market behavior, social trends, environmental factor, religion factors and main factor is cost too. Due to current global situation especially disturbance in some countries in the world also direct or indirect cost of living is impacted.

3. New technology adoption

The next factor is related to technology also cannot be ignored. New technology and rapid changes in technology can help businesses to open many paths for success and communication with its customer or consumers and stakeholders. However, SMEs especially not able to embrace digitalization risk failing behind.

Most of the time access to less expensive technology solutions and assistance in technology adoption can be more crucial to stay in market against its competitors. The impact of this challenge is not limited to specific sectors but also to medical, science, information technology, food industries etc.

4. Skilled workforce

The next important factor is lack of skilled workforce. It has always been a crucial task for SMEs and major corporations to recruit and keep highly skilled workforce. However, generating the frequent skills programs, training can fulfill this gap.

But this process is more costly and this is another challenge for especially for SMEs to have these kind of program or task as it impact its budget.

5. Market access

For small level business this is also a another challenge to find-out the new market place both domestically and internationally. However, government can help to tackle this problem for SMEs.

6. Competition

SMEs often struggle to maintain its product demand alive in the market due to large business, branded products and foreign companies. Hence, SMEs also need assistance to keep branding for their products, marketing strategies etc to compete its competitors. Even in some cases government can also help to impose high tariffs on import goods to support local business.

7. Hiring and recruitment

As we have seen above factor skilled workforce similar to it hiring and recruiting new workforce or skilled workforce can be challenge too. Generally highly skilled workforce can cost more than regular workforce. And that is why running hiring or recruiting campaign ends without desired results.

Some SMEs might try to even hire foreign workforce which can be some time lengthy and costly as well at-least on initial time but in future this workforce some time helps business to grow with different thoughts and ideas.

8. Innovation and Research & Development

This is also another main factor for businesses to invest funds on research & development. However due to lack of finance availability this is a big challenge especially for SMEs. That's why businesses need more support from the government and research institutions.

9. Increased oil prices

As middle countries and Russia especially are major producers of crude oil, and disruption due to war between Russia & Ukraine and Israel & Palestine and its supportive countries. As a result oil, gas and related products are become four times costly. This also influences SMEs directly or indirectly. Hotels, cafes, restaurants etc consumes more oil and gas as compare to other sectors. That's why these small SMEs spend a major part of its income on these services.

10. Sustainability

SMEs need to adopt eco friendly practices with an increasing focus on sustainability. Government incentives and awareness campaigns can assist them in becoming more environmentally responsible.

9. Proposed solutions

As we have seen thoroughly all the details of SAP system including benefits and drawbacks of it. Now as this is very clear picture for the businesses how to maximize the SAP usage and more beneficial as SAP system is quite flexible and can be modified as per the business requirement.

Based on the research work and survey conducted, we got to know nearly 51% respondents expressed their issues are related to unavailability of suitable technology and finance, which is also our focus point in this research work. There are many SAP products are designed to support SMEs which are described below. Now the important decision need to be made by business which SAP product is best suited for them.

SAP Business One:

SAP Business One is one of the best products which especially designed for small level of industries. SAP Business One is available in 28 languages and allows its customer to manage accounting & finance, purchasing process, sales process, inventory records, and customer relationships and reports. SAP recommends to take support from accredited implementation partners. Role of these partners are sharing best practice solution which is very much relevant to business needs along with sharing business blueprint for transformation of project with its stakeholders. As we have seen already above SAP is quite customer friendly and it has been designed in such a way which contains almost all the necessary reports and process for business, if still there are any business process which is not available as a standard then these SAP accredited partner can customize and configure the SAP Business One system.

SAP Business ByDesign:

SAP Business ByDesign is another popular SAP product. SAP Business ByDesign is fully functional cloud based ERP product and it operates on SaaS basis. According to Forbes business magazine nearly 20% business get failed due to unsuitable technology and not enough capital is also one of the big reason for business failure. SAP also spending a big amount as an investment on its R&D which is always aimed to support SMEs.

Rise with SAP:

Not only small businesses but also medium size businesses are also most of the time not able to opt the ideal system for its business process. Keeping this concept into consideration SAP has come up with the idea of another product 'Rise with SAP'. These types of business always try to expand its enterprise and market, that's why this 'Rise with SAP' cloud based ERP product is always one of the best technology to accelerate business line. SAP Ariba also support business which can provide access to world's largest business network.

All types of industry, its size and its IT structure play a vital role to determine the SAP product. SAP has designed the solution for all types of industries from small to multi-corporation and from manufacturing to service industries. It is quite obvious that 90% businesses are SMEs in world and SAP is very much aware about it. And that is the reason SAP is focusing on these SMEs as well.

10. Conclusion:

The purpose for my research work is to demonstrate the benefits of SAP technology usage in production environment. A questionnaire survey was conducted to ask the business owner how their business is really impacted by several factors where technology was the major point to discuss in details with them.

From this research our findings is based on the questionnaire survey what we got to know that especially in developing countries like India, Business Management is not very much aware about the best suite technology for their business, that's the reason not having enough knowledge about it becomes one of the major reason for business failure.

To overcome these kind of issues SAP is focusing on marketing and making SMEs owner and management aware about the suitable business SAP software. As we have seen above SAP came into existence with multiple business software on reasonable process so that owner of these businesses are able to invest money on it and can take their business on top highs.

SAP is not only providing the solution for their business process but also providing some country specific reports which can be submitted to the government by business owner or management. There are actually numerous benefits which are provided by the SAP.

Nowadays, Artificial intelligence (AI) is transforming business process, repetitive tasks etc by automating. SAP AI's capabilities can use machine learning algorithm to make this automated business process. This feature might be little expensive for SMEs but that day is not so far when SAP start supporting SMEs also with this AI feature to benefits small businesses.

There are several factors which drives the SMEs growth and becomes the reason of failure. However as our aim here to investigate and explore more about the lack of technology access for business which can be a reason for business failure.

This research work was focused on real time data collection from the several business and analyzing the key finding about the usage of technology in the business was quite minimal. Which lead their business to generate less revenue or even in some cases failure of business and more than 50% respondents are not having suitable technology or not familiar at all. Due to that reason they are having dependency on human power and unsuitable technology. Hence making aware business owner about the suitable technology like SAP can make a big impact and also can play a vital role to make business success.

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Appendices.1:

Which type of business you operate?

- ☐ ☐ Food & retail industries
- ☐ ☐ Medical & Hospital services
- ☐ ☐ Warehouse
- ☐ ☐ Transport Industries
- ☐ ☐ Other:

What is the number of employees in your business?

- ☐ ☐ Micro (2-9)
- ☐ ☐ Small (10-49)
- ☐ ☐ Medium (50-249)
- ☐ ☐ Other:

For how long you are operating this business?

- ☐ ☐ 1-4 years
- ☐ ☐ 5-9 years
- ☐ ☐ 10-20 years
- ☐ ☐ Other:

What are the main key factor affect your business performance?

- ☐ ☐ Business software
- ☐ ☐ Financial factors
- ☐ ☐ Social factors
- ☐ ☐ Environmental factors

What are the main key factor affect your business performance?

- ☐ Microsoft (MS Excel, MS Word etc.)
- ☐ ERP Products
- ☐ Others
- ☐ None of these

How much satisfied are you with this software?

- ☐ Very Satisfied
- ☐ Satisfied
- ☐ Neither satisfied nor unsatisfied
- ☐ Not satisfied

Do you feel to change the current software with other software?

- ☐ Yes
- ☐ No
- ☐ May be in future
- ☐ None of the above

Which ERP software you prefer for similar to your business?

- ☐ SAP ECC
- ☐ SAP S/4 HANA
- ☐ SAP Business One
- ☐ None of the above

Does software cost impact your decision?

- ☐ Yes

- ☐ ☐ No
- ☐ ☐ None of the above

Do you have any suggestion related to ERP software?

- ☐ ☐ Related to cost
- ☐ ☐ Data protection
- ☐ ☐ System performance
- ☐ ☐ Related to system update

