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RESEARCH ARTICLE

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THE EVOLUTION AND IMPACT OF SAP ERP SYSTEMS IN MODERN BUSINESS

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ABSTRACT

A SAP (Frameworks, Applications, and Items) may be a driving supplier of Venture Asset Arranging (ERP) program planned to coordinated different trade forms over organizations. Established in 1972 by previous IBM workers in Germany, SAP has advanced from its starting monetary bookkeeping computer program to a comprehensive suite including a wide cluster of modules and functionalities. The ERP framework centralizes information administration, encouraging real-time get to and integration over assorted trade capacities such as back, human assets, deals, and generation. This integration improves efficiency, reduces costs, and underpins educated decision-making. Within the pharmaceutical industry, SAP's ERP arrangements address particular needs such as administrative compliance, supply chain administration, and quality control, optimizing operational adequacy and keeping up tall benchmarks of item security and adequacy. In spite of its points of interest, counting progressed information exactness and streamlined forms, the usage of ERP frameworks can be complex and expensive, requiring cautious arranging and customization. This paper investigates the improvement, highlights, and benefits of SAP ERP frameworks, especially inside the pharmaceutical division, highlighting their part in improving commerce execution and compliance.

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INTRODUCTION

SAP is an acronym for Systems, Applications, and Products in Data processing., and it means the primary suite for enterprise resource planning (ERP) software; as founded and developed by its parent company, SAP SE, which is based in Germany. Essentially, the SAP suite is a software produced to consolidate the diverse areas of business like finance, human resources, sales, procurement, manufacturing, etc¹., into one. This process of integration makes companies do away with the bureaucracy, speed up their productions, and be more fact-based, running together with or in place of the Outsourced data center(s)². ERP software would be the best program designed for companies in every industry, small or big. The ERP designates a modular computer application program, developed with a common integrated systematization of performances involving business process areas that comprise purchasing, accounting, human resources, sales, and production planning, distribution, manufacturing, shipping, finance ware house management, and all other related fields. The ERP system also gives the way of creating a single database that they can access through the content of the variety of company departments and share³.

With the help of these easy-going processes through the ERP they enable in better efficiency improvement in the organizations resulting in the cost reduction and the proper use in the decision-making process. The ERP systems are adopted and they can be aligned to fit the sectors and organizations' different requirements⁴.



Fig. 1. Overview of ERP System

History: The history of SAP dates back some couple of decades with outstanding milestones in the development of enterprise software. In essence, a summary is presented below:

Founding (1972): In 1972, SAP was founded by five former IBM employees Dietmar Hopp, Hasso Plattner, Claus Wellenreuther, Klaus Tschira, and Hans-Werner Hector. They started the company in Walldorf, Germany, with the goal of developing software that could help businesses automate their processes⁵.

DM: In the early years, SAP worked on developing financial accounting software. The initial first generation product, which was launched in 1973, was labeled the SAP R/1—Real-Time Data Processing. It was a financial accounting system that ran on the early mainframe computers. Its second-generation product was brought to the market in the 1980s; that was the SAP R/2—already extending beyond pure uses in finance to other business functions like materials management or production planning⁶.

The 1990s: Growth and Globalization—this was when the company began growing within the market. Its hallmark solution was released in 1992 and later branded as the SAP R/3. The new idioms-of-use system inaugurated client/server capabilities—in new, quality ways—and was more scalable than its ancestors. Almost instantaneously, because of the rise of SAP R/3, the marketplace saw the rise of the company into a true leader in enterprise software, with expansion globally⁷.

Internet Era (2000s): At the start of the year 2000, SAP began to turn its attention to internet-enabled functionality and began to offer web-based products and services. The company also undertook a number of significant product extensions operationally through the acquisition of other companies, including Ariba and its procurement software, and more recently, Success Factors and its human capital management system. Also in 2004, the company introduced a new ERP package- the SAP ERP suite, which has since expanded many business operations regarding its process integration and introduced business intelligence and analytics features⁸.

Cloud and Innovation (2010s): SAP took substantial measures to invest heavily in cloud computing and innovation in lieu of the market changes and demands experienced. The company, in the year 2015, launched a product called SAP S/4HANA to replace the former generation of ERP software, as it was built on the SAP HANA in-memory database platform used to build the foundational databases used in every version of the software developed. SAP expanded its product portfolio to include cloudbased solutions for human capital management, supply chain management, and customer relationship management. Business Tools.

Recent Developments (2020's): To date, SAP remains an active innovator in evolving its insightful technologies like Artificial Intelligence, Machine Learning, and the Internet of things. It also retains its top market leadership position in business software solutions across a range of business types and scales, worldwide⁹.

Why ERP Software is Required?

Centralized System: This example outlines various business procedures implemented within a company and their interconnections. Within a pharmaceutical corporation featuring a centralized information and data management system.

1. Data is centralized and disseminated among several departments.
2. Information or data of other Departments are available to departments.

In order to comprehend the manner in which a Centralised Enterprise System mitigates the challenges presented by a Decentralised Enterprise System, we ought to revisit the identical business process¹⁰.

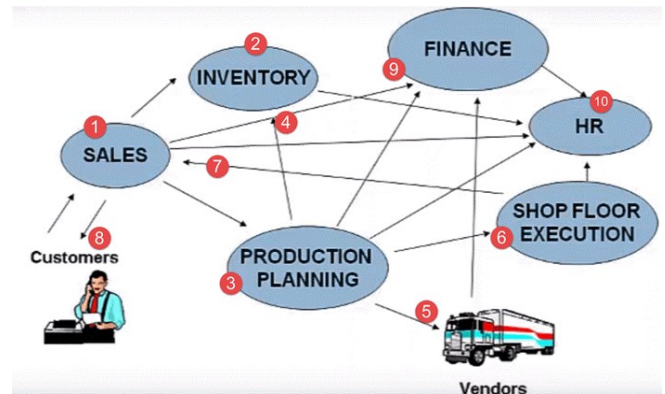


Fig. 2. Working ERP System

In this case, every unit must update a Central system of data. Realtime information regarding the availability of products in the inventory is provided to the sales team whenever a consumer urgently seeks to acquire a product from the sales team. The inventory department maintains this information in the unite system.

- The sales team's response to client requests is punctual, which results in increased revenues and customer satisfaction.
- In case of production, the Sales Team updates the Centralized Database to keep everyone updated in all departments regarding the product's status¹¹.
- The requirement is auto updated to the Production Planning Department in the consolidated database.
- The manufacture Planning Team verifies the access of essential raw materials using the main database, which is continuously updated by the Accounting Department.
- In this way, information duplication is prevented, and precise information is accessible.
- The HR department has access to the Central Database, which is updated routinely by the Shops Floor Team regarding their manpower status. ¹²
- Human Resources commences an interviewing process with an extensive lead time to locate an ideal applicant at the appropriate price in the case of a labor shortage. Consequently, labor costs diminish.
- Thus, the finance department can directly access the Central Enterprise System, where vendors can upload their invoices. Therefore, in order to prevent potential litigation, payments are made punctually.

Business Process Integration: All businesses, regardless of their type and industry, must possess interconnected systems that facilitate effective information transfer between corporate processes. Business Process Integration is crucial for addressing integration difficulties that enable a business to connect systems both internally and externally. The mechanization of commercial operations, the integrating services and systems the secure sharing of data across a large number of applications, and the automation of operational supporting and management process are all enabled by Business process integration. This example discusses various business procedures conducted within a company and their relationship to one another¹³.

Types of sap and erp Modules

There are two types of modules:

1. Technical Modules
2. Functional Modules

The main technical modules of SAP are:

SAPBasis: The technical framework for the whole A system is essentially SAP Basis, which in this instance underpins all of the other divergent SAP applications detailed in this document. It involves

the administration, installation, application of configuration and updates, and routine maintenance through basis administrators to guarantee the availability, stability, and optimal functioning of systems in the SAP landscape. It means working with user scheduling, security measures, system back-up, and tons of other technical activities connected with the SAP landscape¹⁴.

2. SAP ABAP: An ABAP developer uses this language as their main language for programming Advanced Business Application Programming. Some duties performed by ABAP developers include development of workflows, enhancements, custom reports and interfaces in the system. They engage in the technical customisation of SAP programs to fulfill particular business needs.

3. SAP BI/BW (business understanding/intelligence warehouse): SAP BI/BW is a business intelligence and data warehouse system in which the facts are collected from various sources, transformed, and loaded into a cohesive repository. BI developers are enabled with the facilities and technology related to SAP BI for the development of reports, dashboards, and data visualization techniques to make the decisions and, thus, help the business¹⁵.

4. SAP NetWeaver: It's an integrated technology platform underlying any SAP landscape since it binds different SAP applications so that they work hand in hand without an argument. NetWeaver comprises different components, such as the application server, web application server, and portal technologies.

SAP systems cover numerous functional modules which facilitate transactions crucial to executing crucial company duties, such as –

- Plant Maintenance (PM)
- Production Planning (PP)
- Controlling (CO)
- Materials Management (MM)
- Financial Accounting (FI)
- Logistics Execution (LE)
- Financial Supply Chain Management (FSCM)
- Quality Management (QM)
- Sales and Distribution (SD)
- HR (Human Resources)
- Project System (PS)

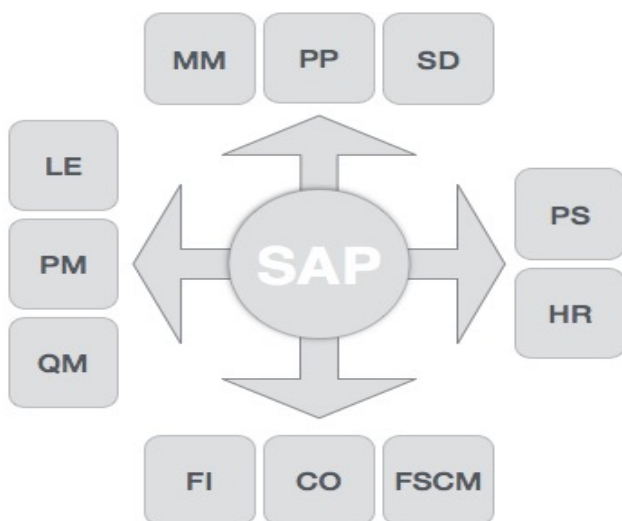


Fig. 4. Types Functional Models

1. SAP Financial Accounting: SAP FI 'Combines' various modules of the company into a single system. It includes all the features required by the company to manage financial transactions and accounts¹⁶.

2. SAP Controlling (CO): The SAP CO monitors, controls and optimizes the processes taking place in business : it does the same through its master data managing features. This information

otherwise involves cost center, internal order, cost element among others. The module, on the other hand, is supposed to discuss planning. Previously it brings room for analysis of the variances that are available in the market. A company, in this case can do so by comparing the sorts of business between planned and realities¹⁷.

3. Financial Management and Oversight or Finance and Controlling (FICO): SAP FICO comprises two modules of ERP: Financial Accounting (FI) and Controlling (CO). The following modules are involved in Finance inside SAP at the enterprise level.:

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

SAP FI (Financial Accounting) monitors and oversees the circulation of financial information throughout the institution. Data is tracked in a controlled manner and integrated in the proper way with all forms of other information that help support the right kind of strategic decisions¹⁸.

Activities in SAP FI

- Organizational Structure Creation (Company Defining, Credit Control, Company Codes, Functional Areas, Business Areas, Allocation of Corporate Codes to Credit Management)
- Global Settings for Financial Accounting - definition of posting periods, posting keys defining document types, fiscal year, number ranges for documents. 19
- General Ledger Accounting (creation of General Ledger Account, Account groups, Chart of Accounts Creation, defining data transfer rules.)
- Ensuring Establishment and Tax Configuration and Upkeep of the Bank House
- Accounts Payable (Compilation of Client Master data and corresponding financial aspects. such as Account Classes and Payment Criteria)
- Account Receivables: Related financial attributes, including account groups and payment conditions, are included in the Customer Master data development process²⁰.
- Linkage between Sales and Distribution (SD) and Materials Management (MM)
- Asset Accounting: SAP CO (Controlling) module is designed to coordinate, monitor, and optimize all the processes in an organization. It is used to monitor business flow in an organization and check deviations from pre-decided strategies. This module also can aid in examining the mapping of actuals with the planned figures plus the planning of business thinking²¹.

Two categories of components are regulated in CO –

- Revenues components
- Cost components

Activities Involved in SAP CO

- Internal Orders
- Cost Centre Accounting
- Activity-driven Accounting (Evaluates interdepartmental operational processes)
- Profitability Evaluation examines the profit or loss of an enterprise by personal marketplace sectors.
- Cost Element Accounting: Provides a view of the overall cost and revenue occurrences of an organization
- Product Cost Controlling refers to the computation of expenses incurred during the production of a product or the delivery of a service.

- Profit Center Accounting assesses the profit or loss of separate entities, independent areas within an organization²².

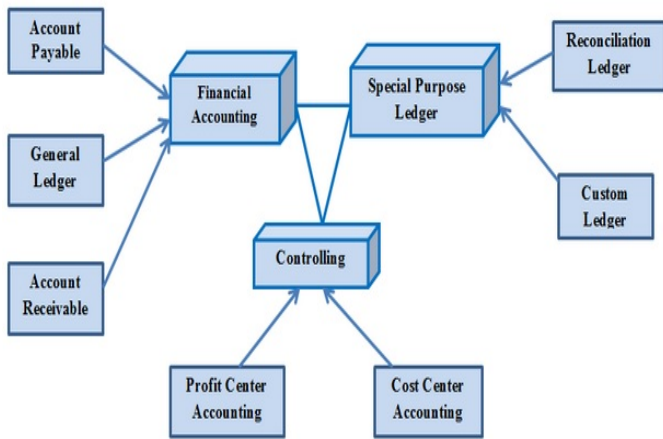


Fig. 5. Flow Chart FICO Model

SAP Financial Supply Chain Management (FSCM): SAP FSCM facilitates and optimizes all operations throughout the complete financial value chain, including the selection of suppliers and customers, payment processing, and report generation. It enhances cash flow and working capital immediately for corporations²³.

SAP Material Management (MM): Materials Management is one of the important modules of the central core of an SAP ERP system.

ERP primarily addresses an organization's procurement operations and the logistics of its supply chain.

SAP MM has been designed to facilitate the effective and efficient administration of materials, enabling organizations to proficiently plan, purchase, store, track, and utilize products.²⁴

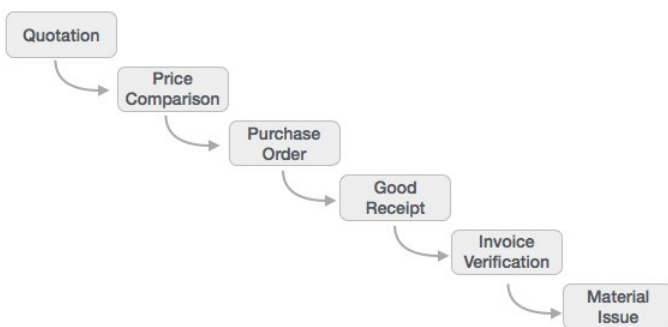


Fig. 6. Flow Chart of SAP MM

SAP Sales and Distribution (SD): It is a critical module in SAP that is challenging to integrate. The SAP SD module enables organizations to support product and service sales and distribution activities from request to order and execution. Due to its high integration complexity, organizations utilize SAP SD to services, Facilitate the process from inquiry to order, delivery, and support for sales and distribution activities of items. Furthermore, It can oversee an array of operations taking place within a company, such as product inquiries, quotations or presales activities, order placements, pricing, delivery scheduling, sales activities, picking, packing, goods issuance, product shipments to customers, product deliveries, and billing processes. All of such involve multiple modules, such as PP production planning, MM material management, CO controlling, FI finance accounting, LE logistics execution, and so on. This makes the integration quite complex. Another important module in SAP ERP is the SAP Sales and Distribution (SD), which consists of all business processes involved in selling, billing, and shipping a product. This module was also pretty tightly coupled with the SAP PP & SAP MM. Some key sub-modules of SAP SD are Vendor Master Data, Billing, Pricing,

Customer and Delivery, Sales, and Credit Management. Learn more about SAP SD²⁵.

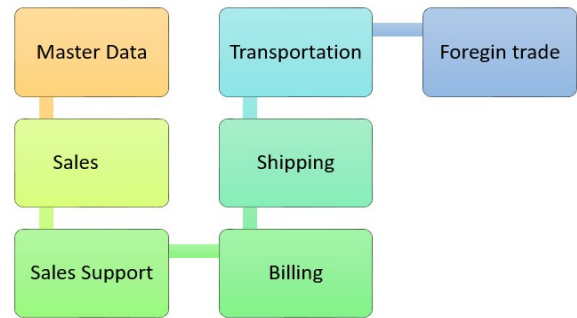


Fig. 7. Flow Chart of SAP SD

Engaged Activities in SAP SD

The organizational framework Setups: Corporate Identifiers, Plants, Commercial Offices, Maintaining Sales Area, Sales Organization, Distribution Channels, Divisions, Setting up a New Company, Business Area, and Storage Location²⁶.

Designating Organizational Entities: The allocation of separate components generated in the aforementioned actions in accordance with design, such as the association of sales organization to company code, corporate code to corporation, and distribution channel to sales departments, etc.

- Billing types, Establishing sales document classifications, and tax-related components
- Establishing customer master data records and configuration
- Establishing Pricing Elements (Defining condition types, condition sequences, condition tables)²⁷.

SAP Logistics Execution (LE): Logistical execution in SAP consists of two sub-modules: transportation of goods from purchase to the process of procurement and warehousing or merely storing goods. These modules is then integrated with the modules for sales and distribution, materials management and manufacturing and planning²⁸.

Detailed Production Planning with SAP PP:

SAP Production Planning: The module of any ERP is crucial for managing production-planning operations, including capacity and material scheduling and the execution of manufacturing instructions, bill of materials, and product transportation. The lesson provides foundational knowledge of SAP Production Planning, commonly referred to as SAP PP. This tutorial describes the key components in PP, most of which include BOM, Work Center, Data Centre, etc. SAP PP is a module in the software oku family of enterprise resource-planning solutions that aim at integrating various departments relating to the production and manufacturing segments. It comprises things like data centers, BOM, work centers, CRP, among others. Learn more about SAP PP²⁹.

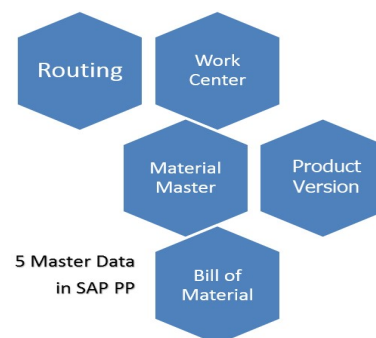


Fig. 8. Flow Chart of SAP PP

SAP Quality Management (QM): It is integral to essential SAP business functions, including production, sales, procurement, and materials management. SAP QM will support firms in lowering faults, laying down and implementing quality control procedures apart from the continuous improvement of business processes. SAP QM represents Quality Management³⁰.

SAP Plant Maintenance (PM): The Plant Maintenance module encompasses essential responsibilities such as inspection, notification, corrective and preventive maintenance, repairs, and other duties that are critical to the efficient operation of technical systems³¹.

SAP (PS for Project System): One of the core modules for project and portfolio management within SAP is the Project System (PS). It supports you in the management of the entire project lifecycle, from structuring and planning through execution to the conclusion of a project³².

SAPSRM: Management of Supplier Relationships: The SRM Module manages the smooth and successful transfer of products and services from a corporation to its suppliers. This subject primarily addresses the procurement process for services, indirect materials, and direct materials. This module notably integrates with accounting, inventory systems, and organizing³³.

SAP Customer Relationship Management: SAP CRM addresses customer-associated procedures from start to finish. CRM is intended to incorporate data for every one of the clients related with an association. It empowers an association to keep up sales and services and design marketing projects in view of market prerequisite and research of information about the customers. # guaranteeing center to its clients, Be helpful for the company to become familiar with them more through investigation of data. Improvement in sales and services and also reinforce customer relations³⁴.



Fig. 9. Flow Chart of SAP CRM

CRM is related to comprehensive customer-related processes. CRM aims at centralizing all customer-related data to which an organization is connected. It helps an organization –It should sustain its services, sales and even go to the extent of building marketing plans based on the direct needs of the market and customer data analysis. The customer can then be focused on, and with data analysis, the business can come to know its customers in that much more detailed a manner. Increase sales and service better, building a better relationship with customers³⁵.

SAP Human Resources (HR): One crucial module of the SAP is the Human Capital Management module, noted by experts as SAP HCM. Other terms are the SAP HRMS or simply the Human Resource, HR. You can automate activities of record-keeping by utilization of the software, SAP HR. Very good ground that maybe any human resource department may use in administering and paying papers³⁶.

Human Resource (HR): The primary purpose of Master Data Management in Human Resources is the input of employee related information for personnel management, time tracking, and remuneration processing. An employee may be hired without employing recruitment methods. An employee may be hired simply by executing a personnel activity inside Personnel Administration. This

method autonomously generates the requisite data for an employee's recruitment.



Fig. 10. Overview of SAP CRM

Employee information must be up-to-date. Once an employee is recruited, newly emerging scenarios are always seen that either require new entries of information or the rectification of current information. For instance:

- An staff member who relocates to his or her new address must be retained in the system.
- An staff member receives a salary increase from January 1. The new remuneration should be stored effective for the applicable date.
- An employee gets reassigned to a different role inside the org anization. Modification of his/her organizational assignment, working h ours, and compensation.
- One secures data for the past, present, or future³⁷.



Fig. 11. Overview of SAP CRM

The HR module is formed by the collection of significant functional areas, referred to as sub-modules. The HR module is among the authentic illustration of the efficacy of SAP products in the realm of ERP. However, the system is massively integrated with pretty well every other SAP module, without human intervention, holding keen integration points. Besides, there exists a highly cohesive integration among HR sub-modules³⁸. The following are sample fundamental SAP HR terms depicted in the above:

- MSS
- Time Management

- Personal development
- Business trip managing
- ESS
- Payroll
- Department Management
- Workforce Organizing
- Recruitment

Supplier Relationship Management (SRM): The SRM module relates to the efficient transfer of products and services between a corporation and its supplies. This section primarily addresses the purchase of including direct materials, products, indirect materials, and services. This module may seamlessly interface with accounting, stock systems, and strategizing.³⁹

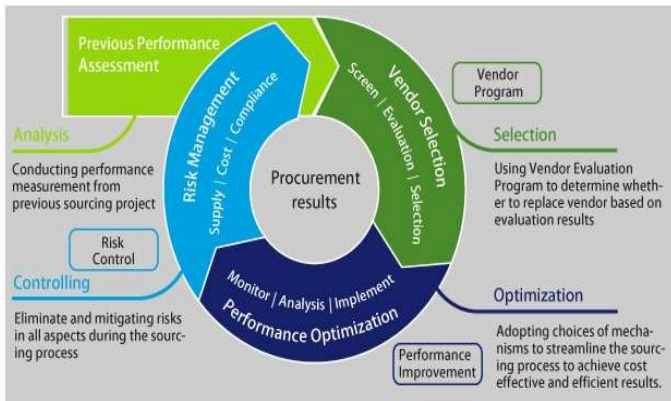


Fig. 12. End-to-End Procurement Cycle

The steps involved in the procurement cycle of SAP Enterprise Buyer are as follows:

- Shopping Carts
- Purchase Orders
- Process Invoice
- Personal Administration
- Invoice Approval
- CATS
- Approval of Shopping Cart
- Purchase Order Approval
- Confirmation Approval
- Sourcing of Requirements
- Confirm Goods/Services
- Training and event coordination
- Compensation management
- Benefits

Sap in Pharma Industry: SAP's involvement in the industry of pharmaceuticals, for that matter, has revolutionized how business is controlled in this specific sector in order to satisfy the craves for compliance, optimization, and innovation. With a comprehensive set of business software solutions, SAP addresses complex demands in this industry, which go from strictly enforced regulatory requests to difficult supply chain management. SAP offers very highly targeted solutions across operations typified by precision, quality, and compliance in the pharmaceutical sector. These ranges from management of regulatory compliance to optimization of supply chain, effectiveness in manufacturing, quality of output, management of clinical trials and strong ERP systems⁴⁰.

Architecture of sap in Pharma Industry: Accommodate the complexity and high-standard demands of the industry. At its core lies the ERP system, which is the central hub for managing diversified business processes like finance, procurement, manufacturing, sales, and distribution. Secondly, this product's quality management system features customizing enhancements for quality control and quality assurance, batches, deviations, and even a risk functionality.

In addition, the SCM functionality poses additional challenges to deal with the already complex terrain of the pharmaceutical supply chain--inventory and logistics--as well as has a specific focus on Serialization Compliant⁴¹. MES supports the aspects of real-time monitoring and control for the production operation, while Clinical Trials Management modules pay way for greater speed in research and development, regulatory compliance, and fast trust on new drug developments. In general, the architecture from SAP allows the pharmaceutical companies to handle the regulatory complexities, operational efficiency, and drive for innovations in the association with the life cycle of a drug.



Fig. 13. Overview of ERP MODULES

Process flow in Pharmaceutical Industry:

Admin Transaction

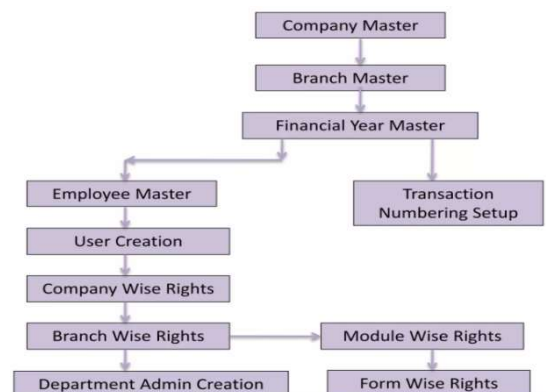


Fig. 14. Flow Chart of ADMIN Transaction

Purchase Transaction

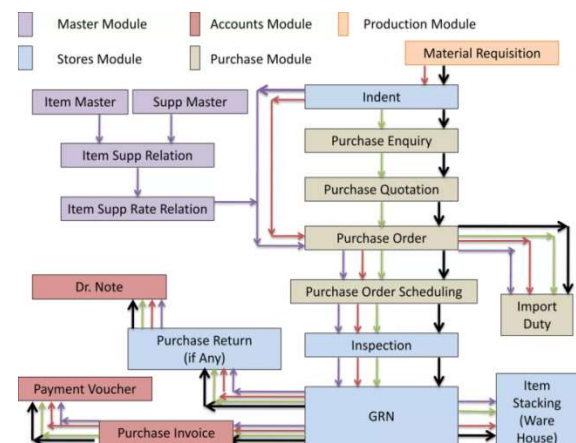


Fig. 15. Flow Chart of PURCHASE Transaction

Sales Transaction

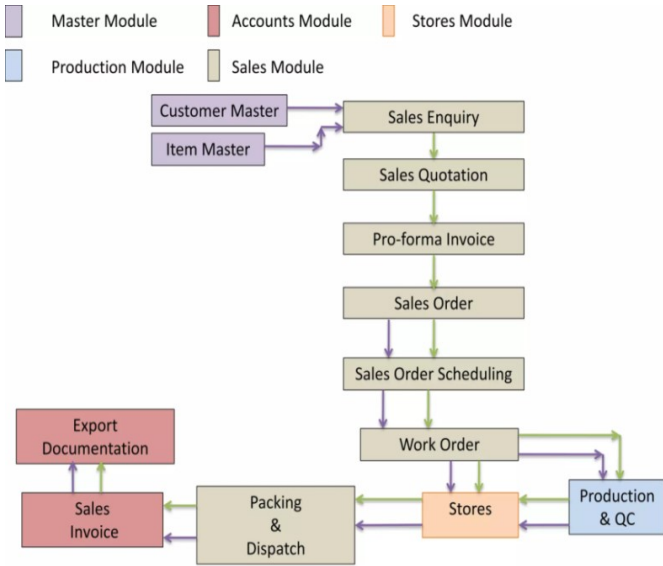


Fig. 16. Flow Chart of Sales Transaction

Accounts

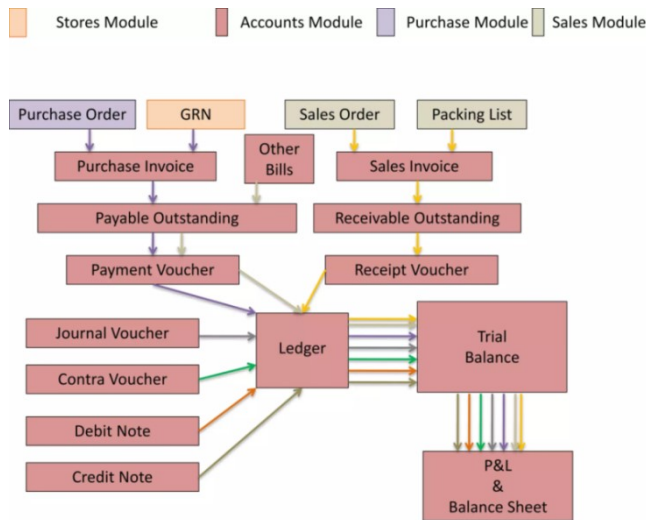


Fig. 17. Flow Chart of Accounts

Stock and Warehousing

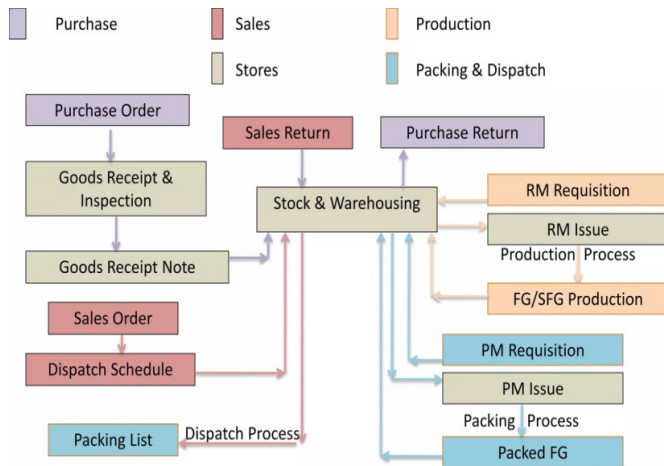


Fig. 18. Flow Chart of Stock and Warehousing

Production and Tqm

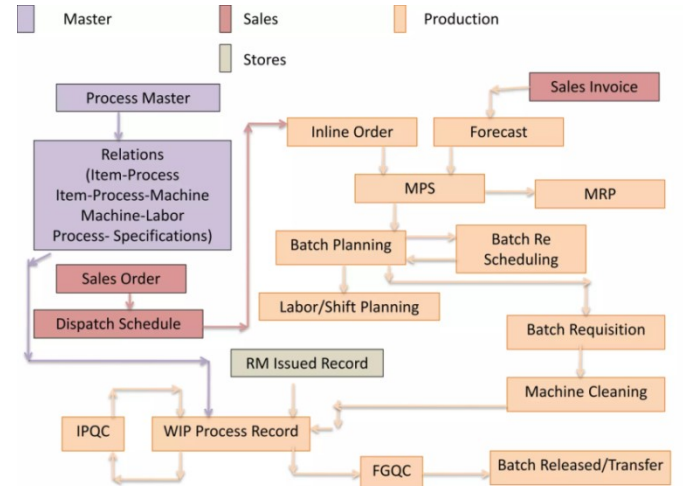


Fig. 19. Flow Chart of PRODUCTION AND TQM

Excise Transaction

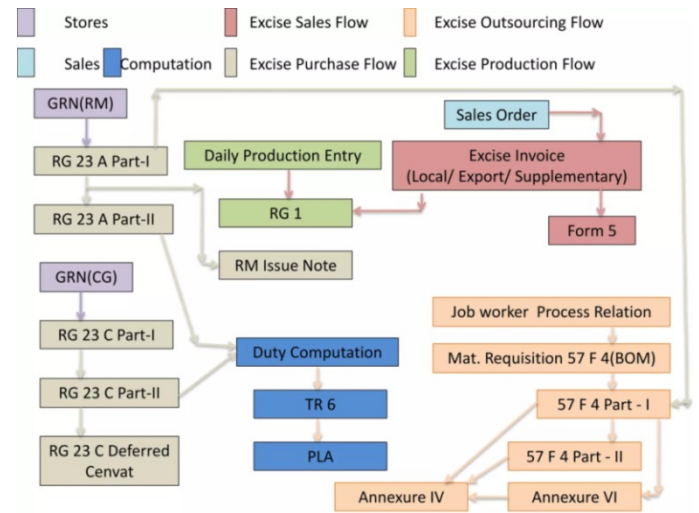


Fig. 20. Flow Chart of Excise Transaction

HR Module

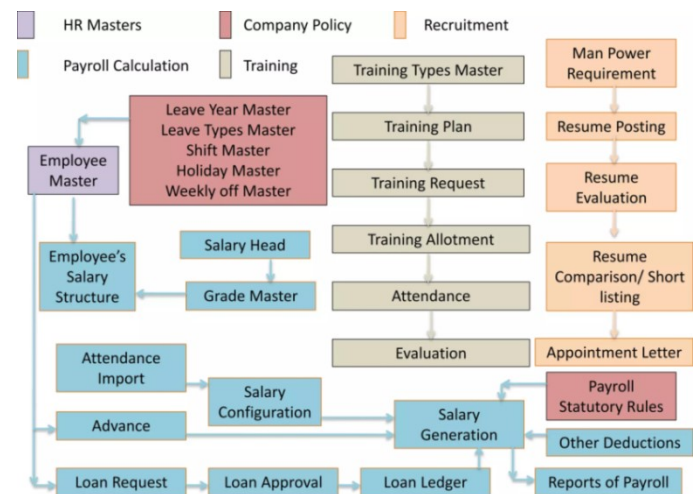


Fig. 21. Flow Chart of HR MODULE

Integration of sap in Pharmaceutical Industry: There are a lot of things to consider in executing an SAP system. There are three related expenses with ERP implementations: manpower, hardware, and software [7].

A SAP executing is such a mission which takes much time and requires very skilled employees. The implementation is generally completed by SAP Approved third parties. Enhancement, Configuration, modification and modification, are also a part of the implementation of SAP. An organization may be in a position of managing its operations in a much easier way through the implementation of the ERP systems that may provide the following benefits: reduced stocks, improved coordination of the supply chain; increased flow of the processes; improved analysis of the data, among other many benefits⁴³.

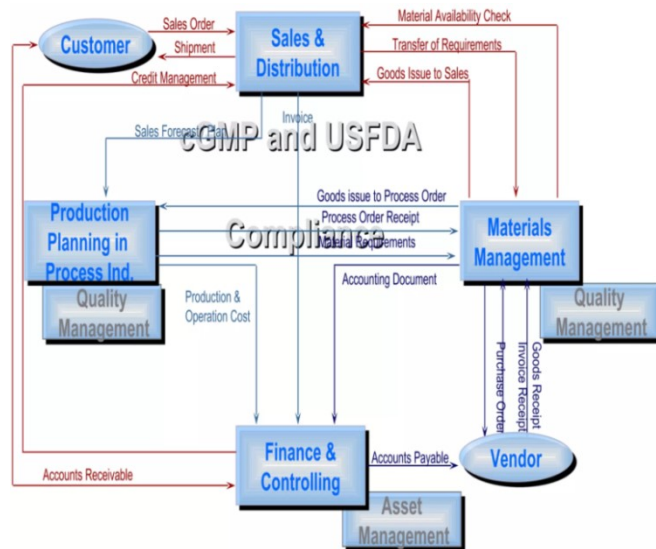


Fig. 22. Overview of Integration of SAP and ERP

Business Benefits of erp for Pharma Manufacturing Industry: An ERP designed for the pharma industry could bring a lot of benefits because it would be exclusively tailored to meet all the stringent statutory requirements prescribed by FDA and FSSAI.

- **Compliance with Regulatory Standards:** Complying with the requirements of FDA and FSSAI gives assurance about very rigid regulations for finished product safety and legalities.
- **Cost-Reducing with Product Efficacy:** Pharmaceutical ERP software optimizes processes, lowering operational costs while maintaining the efficacy of pharmaceutical products.
- **Quality improvement and consistency:** Improved quality, consistency, and speed of drugs to market are all advocated by Higher consumer satisfaction and trust.
- **Cost Control and Inventory Management:** Reduction of wastage and optimal stock management both help expense control for better financial efficiency.
- **Improved Quality and safety:** Safety ensures there is a safer product of higher quality available at the right economy and time, thus promoting customer trust and brand reputation.

Effective Preventive and Remedial Action:

- **In-built:** quick and appropriate reply mechanisms for precautionary and remedial actions to smoothen the operation and reduce risks.
- **Real-time Batch Monitoring:** This allows real-time monitoring for the right decisions to be made, improving operational efficiency.
- **Formula Secrecy Maintenance:** Facilitates ease of secrecy maintenance about important formulas and intellectual property from access by unauthorized entities.
- **Rapid Response to Consumer Demands:** Its agility enables prompt reply to customer demands, which change rapidly, thus improving customer satisfaction.
- **Streamline Operations for More Profits:** The smoothness of operational processes and increasing their efficiency directly relate to more profits and increased business.

- **End-to-End Bi-Directional Traceability:** The pharma industry software confirms that the material, starting from the raw to the finished product, has a major role in traceability and thus in quality control and compliance⁴⁴.

Advantages of ERP

The ERP provides following benefits, developed by integrating the business processes:

Saves on time and expenses

- Enables quick decisions by the organization, using the information and reporting tools created within network.
- Unified data repository and dissemination of information across all organizational components.
- It helps in monitoring all transaction that occurs in an management from start to finish.
- Provides instantaneous data as needed.
- Facilitates coordinated data exchange among several functional domains such as sales, finance, production, human resource, marketing and logistics.

Disadvantages of ERP

- Integrating ERP into an organization is often challenging. The following are the different drawbacks from which ERP suffers –
- Sometimes it is some business process critical to the organization that needs to be re-engineered before aligning it with an ERP remedies.
- Intricate integration can be very costly.
- The cost of implementation is further burdened by the transition from one ERP solution to another.
- End-users are required to undergo training for their day to day operations.
- Alteration is not preferred⁴⁵.

Benefits of Sap Erp

- 1) It makes it easier for the company to streamline operations and reduce staff.
- 2) Uses cloud ERP, forecasts future situations, and speeds up the latest technical developments—all of which are beneficial for future generations.
- 3) By automating repetitious tasks, it boosts internal productivity.
- 4) Makes the workplace more secure and impervious to threats like hackers.
- 5) Provides security to protect user data from hackers.
- 6) Because it is cross-platform, it can run on a variety of computers.
- 7) Offers solutions tailored to their best possible use.
- 8) The solution removes the issues with data duplication in the report creation and data analytics processes.
- 9) Produces real-time reports on business performance, risk assessments, and performance reports.
- 10) It helps achieve greater efficiency by making all processes more efficient.
- 11) Accounting is simple for all kinds of sales and transactions.
- 12) Maintains inventory control and achieves dependable operational outcomes.
- 13) Reduces operating costs and time.
- 14) Keeps an eye on completed product sales.
- 15) Customer service is now better.

Key points of SAP ERP

- Access to information.
- Smooth harmonization of various functions.
- Fortified IT infrastructure.
- Reduced margin for errors.

Need for Sap in Pharma Industry

Preformulation management and manufacturing formulation:

The drug manufacturing process involves meticulous formulation, monitoring of raw material components, and end product yields in order to make a batch. The preformulation phase includes defining the steps, phases, quantities, and other aspects of pharmaceutical manufacture. With a strong ERP system, pharmaceutical companies can ensure automated management of intricate formulations without having to constantly supervise production or worry about human error. Costing a product effectively involves a number of factors, such as supply chain monitoring, vendor cost management, procurement costs, raw material master management, etc. These divisions function independently in a legacy system, and modifications to data or variables take time to spread to other divisions. To encourage concurrency, an ERP system creates an integrated network between several operations and offers centralized data access. Effective product cost definition is made possible by well-captured data, and any modifications can be reflected in the system, enabling finance to react appropriately.

Meeting Regulatory compliance: Adherence with regulations is a main concern for all pharma companies. These regulations affect consumer trust and brand reputation, but safety must also be taken into account. Regulations also differ depending on the location. Keeping up with safety and healthcare requirements is essential to upholding global standards, and this is where an all-inclusive solution like ERP may be useful. Pharma companies can monitor and adhere to these measures, as well as stay up to date with evolving laws and regulations, thanks to its automated solutions, centralized networking features, and configurable interface. Additionally, pharmaceutical companies must adhere to CFR 21 Part 11, which stipulates that it is legally obliged to record (either electronically or in paper) the steps and processes involved in producing a medical product.

Managing Variability and Forecasting Scalability: The production of pharmaceuticals involves controlling release failures, identifying the reasons behind supply chain variability, and managing it. Anticipating the scalability of product demand in order to effectively adjust production capabilities is another component. Both of these need the use of data to predict change and efficient communication across numerous departments. With a comprehensive ERP for the pharmaceutical industry, businesses may accomplish these goals through supply chain visibility, data processing, and predictive analysis.

Below are some key benefits that a pharma company can derive from ERP software are:

- By streamlining all processes, it aids in achieving higher efficiency.
- Accounting for all types of sales and transactions is easy.
- Maintains inventory management and obtains reliable operating results.
- Saves time and money on operations.
- Monitors the sale of finished products.
- It has improved customer service.

Extensive reporting: ERP allows you to create multiple reports that show you a list of all of your company's transactions. With ERP on the go, you can make better business decisions from any laptop at any time. Inventory tracking is crucial, as is maintaining the stock of each raw material. Manufacturing companies have various departments such as manufacturing, quality control, and sales. Knowing the current status of a project is simple with an ERP for the pharmaceutical industry. Throughout the sector, there is clear visibility on cost control. Accounting would be able to manage all forms of consumer and vendor bills with ease ⁴.

DISCUSSION

Based on the aforementioned, it is evident that an ERP software that is efficient is a critical component of the pharmaceutical industry.

This is due to the fact that it simplifies all mandatory processes, maintains patient records, and, most importantly, enables pharmaceutical professionals to concentrate on areas that necessitate more attention, such as medicine quality. Finally, pharmaceutical companies can benefit from enterprise resource planning software. Because it oversees all activities in a single location and performs all tasks effortlessly. Pharma companies are burdened with an abundance of tasks, and operating a business proficiently is exceedingly challenging when executed manually. Furthermore, it is impossible to manage all duties flawlessly; however, ERP enables this, as well as the advantages it provides to the organization. It is prudent to implement ERP in pharmaceutical industries to enhance productivity. SAP systems are the optimal solution for getting ahead in the market by remaining current with the times. At times, organizations employ SAP software to establish a single database and bring their businesses online in order to embrace digital transformation. However, the implementation cost has risen due to the constant enhancements and the large and complex data structure, which results in a high cost for customers.

CONCLUSION

For this reason, the demand in the market for pharma-manufacturing industries has surged. Thus, ERP system pharmaceutical company would be a strong tool for the management of overall operations in manufacturing businesses. It can help the industry in many aspects and is able to deliver excellent results by managing its operation and ensuring compliance with the rules. If it makes the choice of an intelligent and smart partner like Cogniscent for the pharma manufacturing business, it could continue to scale it up without any hassle to proffer safe pharma products. SAP and ERP in the pharmaceutical industry are tools to be embedded within business operations so that there is operational excellence, compliance with regulatory requirements, innovation, and growing activities. These technologies help in optimizing operations, raising quality and safety standards, and building a competitive advantage like never before within the dynamic pharmaceutical market.⁷

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