

PORTAL APPLICATION USING SAP

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Abstract - In this modern world, industries like MNCs are managing complex business processes & it is difficult for those big companies to manage different sectors of one in a centralized manner like, various aspects of HR management including recruitment, employee performance, payroll and learning activities. This is where the need of SAP (System, Applications & Products) arises which helps by providing control over different business processes. SAP ERP is enterprise resource planning software developed by the company SAP SE. ERP, or enterprise resource planning, software is modular software made to integrate the main functions of an organization's core business processes into a unified system. It is designed in a way to facilitate flawless development and management of business processes and solutions that allow data processing & information flow across an organization to be seamlessly integrated. SAP ERP provides multiple business solutions and functions, with a single view of truth, by centralizing data management of the different sectors. SAP provides solutions over a wide range of areas such as ERP, CRM, HR Management, Finance management. In this project we are developing portals that manage & process from different sectors of the company.

Key Words: ERP – SAP – Centralizing

1. INTRODUCTION

The Enterprise Resource Planning (ERP) system is a piece of software designed to manage all functional areas across all departments' information systems in a single, integrated system. Finance and cost accounting, production and planning, sales and marketing, materials management, human resource management, distribution, and transportation are a few examples of business-related areas. It is regarded as the foundation of an organization's information systems and supports every aspect of business processes by facilitating information flow between all business departments at all organizational levels. According to Abd Elmonem "Sharing data and information between company departments help in many aspects and strives to achieve diverse objectives". ERP systems provide a competitive edge, especially in terms of the value of the information. The ERP system was one of the major information technologies (IT) innovations during the

1990s. The development of inventory management systems in the 1960s, MRP systems in the 1970s, and MRPII systems in the 1980s served as the foundation for the idea of ERP systems. Nonetheless, the world of ERP systems has seen a lot of changes. According to the Panorama consulting solutions study from 2017, 67% of businesses continue to choose traditional ERP, an increase of 11% over 2016. In contrast, just 27% and 6% of businesses, respectively, choose newer ERP innovations from vendors like SaaS or Cloud ERP.

2. LITERATURE REVIEW

The research paper by Justin Goldston on the Evolution of ERP Systems. Complex architectures known as enterprise applications let executives of organizations make tactical and strategic business choices. Numerous studies in the literature review examined the development of enterprise resource planning (ERP) systems, the prospects for business applications, the success of implementations, ERP implementations in small and medium-sized businesses, and managerial strategies for times of organizational change. In the research paper on Implementation and Management of ERP Systems by Mohamed-Iliasse Mahraz, we understood that in reality, an ERP system is regarded as the foundation of the majority of enterprises across all industries. If the system is configured properly, it will typically cover all business functions across all management levels, support the majority or all functional areas in the day-to-day operations of the firm, and be viewed as a source of competitive advantage by certain organizations. Nonetheless, there has always been a substantial likelihood of failure. . Due to their disregard for some management and implementation-related factors, many businesses today are unable to fully profit from ERP systems. The research paper Literature review on ERP implementation challenges by Shree Ranjan, Vijay Kumar Jha, Pralay Pal describes ERP deployment is a difficult and expensive task that demands not just diligent efforts but also a thorough examination of the variables that are essential to its adoption or implementation. The conclusion of our work's literature study focuses on the problems of ERP adoption from four different angles, including technology selection, change management, knowledge management, and new technologies.

3.SCOPE OF SAP

“At SAP, we see a dream for a simpler world, for a simpler SAP and a simpler customer experience” - Bill McDermott

MNCs in India, like TCS, IBM India, HCL Technologies, Deloitte, HP, WIPRO, etc., use SAP ERP to manage their business process. By centralizing data management. SAP provides multiple business functions & solutions with a single view of the truth. SAP provides solutions over wide range of areas such as ERP, CRM, HR Management, Finance management. Customers and vendors have completely different opinions about SAP, despite the fact that it is a very effective ERP system for innovation, providing users with innovative ideas and bringing them closer to the reality of a real-time ERP. The innovative features that SAP makes possible as the next-generation digital business platform, such as instantaneous information to support decision-making, increased order and mechanization, effective alliance and next-gen user experience, improvements in business processes, and IT cost reductions in the landscape, are exhilarating for developers and system integrators.

4.SAP MODULES

All systems are integrated into one system through SAP modules. It makes it possible for data or information to flow between an organization's many departments. Generally speaking, each department represents a single SAP Module. The integration of each Module allows for the sharing of common data. The numerous modules offered by Systems Analysis and Program Development (SAP) are tailored precisely to the requirements of its customers. Several operations, including as sales and services, sales and distribution, financial management, business intelligence, human resources, and more, are the focus of various SAP modules.

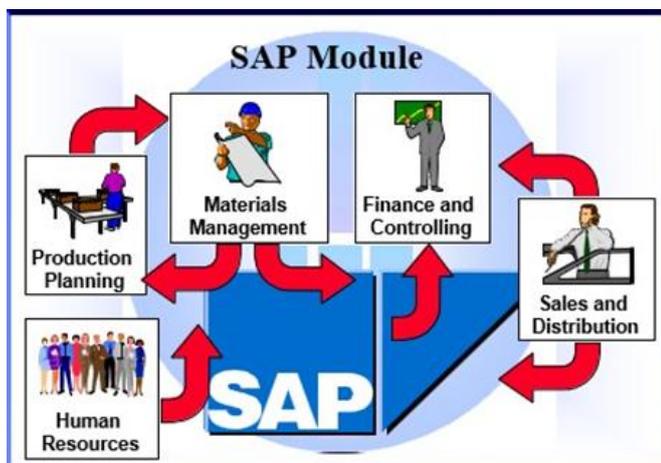


Fig -1: SAP Module

The two main categories of SAP modules are functional and technical.

4.1.SAP FUNCTIONAL MODULES

Business functions including processing orders, turning raw data into intelligence, and managing human resources are all provided by SAP functional modules.

4.1.1. Sales and Distribution (SAP SD): The business operations for selling, shipping, and invoicing a product are all included in the SAP SD module.

4.1.2. Materials Management (SAP MM): Because it offers capabilities for material, inventory, and warehouse management, materials management (MM) is crucial to a manufacturer's supply chain.

4.1.3. Financial Accounting (SAP FI): The crucial SAP ERP module known as SAP FI is used to store and analyze the financial data of a firm.

4.1.4. Controlling (SAP CO): Business decision-makers can better understand and optimize how their company's money is spent with the help of information from SAP CO.

4.1.5. Production Planning (SAP PP): Production planning, which is a subset of SAP Production Planning, addresses the Plan to Produce process.

4.1.6. Plant Maintenance (SAP PM): The SAP PM module is a piece of software that handles inspection, preventative maintenance, and technical system repairs to streamline total maintenance management.

4.1.7. Quality Management (SAP QM): The QM module works with sales, procurement, planning, manufacturing, inspection, notification, audit management, control, and other areas to help firms manage quality output.

4.1.8. Human Resource Management (SAP HCM): The Human Resources module offers help with managing salaries and payroll in addition to work schedule models.

4.2.SAP TECHNICAL MODULES

The primary goal of SAP technical modules is to maintain the efficiency of the SAP landscape.

4.2.1. SAP Basis: SAP Basis, also referred to as SAP system administration, provides the technical framework needed for SAP applications to operate without interruption.

4.2.2. SAP Security: Within SAP systems, a technological Element known as SAP security controls access by allowing access where it is necessary and prohibiting access where it is not. establishing efficient internal security and access controls.

4.2.3. SAP Solution Manager: With SAP Solution Manager, clients may consolidate, expand, automate, and improve the management of their whole system environment, which decreases total ownership costs.

4.2.4. SAP NetWeaver: SAP NetWeaver connects business users to SAP software in real-time regardless of their access point (social media platforms, mobile devices or web applications). Many processes, including business intelligence, exchange infrastructure, and enterprise portals, may all be tracked in one place with NetWeaver.

4.2.5. Middleware I Exchange Infrastructure (SAP XI): Implementing cross-system procedures from various manufacturers and versions is made possible by exchange architecture. Non-SAP applications inside and outside the firm may be smoothly connected using this strong middleware from SAP.

4.2.6. Advanced Business Application Programming (SAP ABAP): With the help of this module, SAP customers can enhance the application's built-in features or add new ones to encourage the creation of specialized solutions.

5.METHODOLOGY PROPOSED

SAP uses different portals to manage & control different business processes in an MNC. Each portal has separate functionality that is specific to one business process of a firm, which maintains data management. The portals are to be developed are

1. Customer Portal = Sales & Distribution + Finance
2. Vendor Portal = Material Management + Finance
3. Employee Portal = Human Resource + Finance
4. Maintenance Portal = Plant Maintenance
5. Shop Floor Portal = Production Planning
6. EHSM - Safety Ticket = EnvironmentHealth & Safety Management
7. Quality Check = Quality Management

6.SOFTWARES

Fronted:



Middleware:



Backend:



7.PORTALS USING SAP

7.1. CUSTOMER PORTAL: The purpose of this site is to keep track of all of the client's doing business with the company. To access and view the entire transaction between the company and the client, a customer portal is required. This

portal contains a login page and dashboard page that contains inquiry data, sale order data, list of delivery, invoice detail, payment and credit/debit memo. Development Technology Stack to be used **Angular, SAP RFC Webservice, SAP Database.**

7.2. VENDOR PORTAL: The data of all the vendors doing business with the organization would be maintained on this platform. To access and view the entire transaction between the company and the vendor, a vendor portal is required. This portal contains a login and dashboard page (Fig.3) that contains invoice, profile, credit/debit memo (Fig.6), purchase order. Development Technology Stack to be used: **Angular, SAP PI/PO, SAP Database.**

7.3. EMPLOYEE PORTAL: This site is intended to be used for giving information about the company and its employees, printing out pay stubs, checking leave balances, and submitting leave requests. Employee portals are required in order to provide rapid and simple access to HR-related services and transactions. This contains a login and dashboard with pay slip, profile (Fig.4) and leave request. Development Technology Stack to be used: **Angular, SAP PI/PO, SAP Database.**

7.4. MAINTENANCE PORTAL: A maintenance portal that contains the following features needs to be created in order to enable simple, everywhere access using our mobile phones. The organization's maintenance department or maintenance engineer will access the maintenance portal. A maintenance portal is necessary to access and view all of the organization's maintenance-related activities. This portal contains a login and dashboard with notification and work order. Development Technology Stack to be used: **Flutter, PIPO, SAP Database.**

7.5. SHOP FLOOR PORTAL: This portal will be created to keep track of all production orders and planned orders processed on an enterprise's shop floor. This shop floor portal's major goal is to give the production shop floor engineer and the staff information about the entire transaction of supplies and items. This contains a login page (Fig.2) and a dashboard with planned order and production order. Development Technology Stack to be used: **SAP Ui5, OData, SAP Database.**

7.6. EHSM PORTAL: The SAP S4 HANA system must be integrated via SAP ODATA for the Safety Engineer Portal to have the following functions. The organization's safety engineer will have access to the EHSM portal. Using the EHSM portal is necessary in order to view incidents occurring in the plant and implement the necessary safety actions. This a login page and a dashboard with incident (Fig.5) and risk details. Development Technology Stack to be used: **SAP Ui5, OData, SAP Database.**

7.7. QUALITY PORTAL: Understanding the workflow of the Quality Management Module is the goal of the Quality Portal. It must be created and built in order for the quality engineer

of an organization to keep the data of the inspection lots, record the results, and decide how to use the lot. The organization's Quality Engineer will have access to the quality check portal. This contains a login page and a dashboard with inspection lot, usage decision and result record. Development Technology Stack to be used: SAP Ui5, OData, SAP Database.

8.SAMPLE OUTPUTS

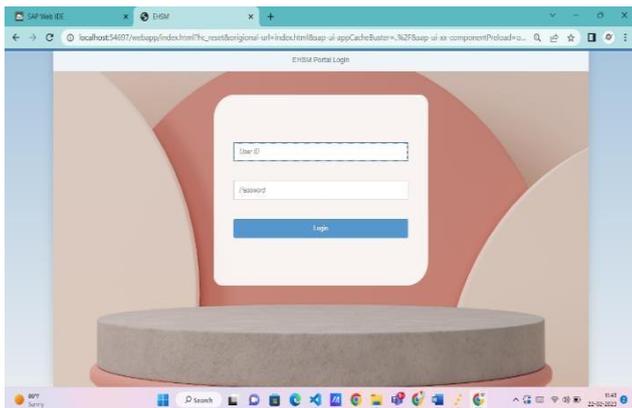
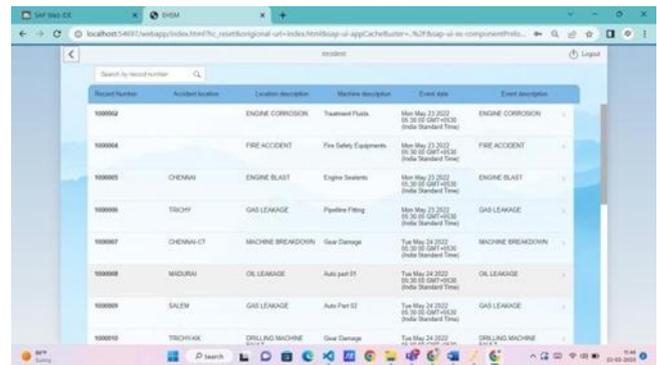
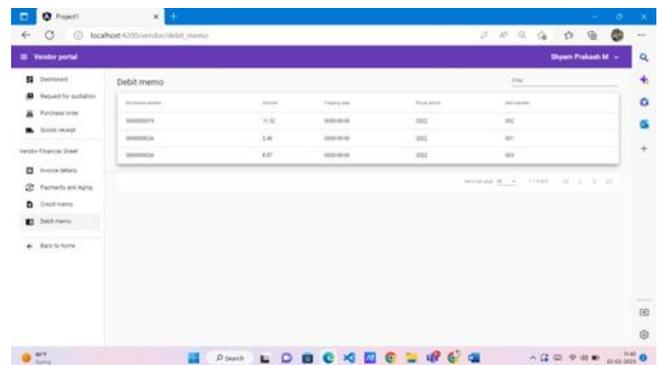


Fig -2: Login Page



Record Number	Accident location	Location description	Machine description	Event date	Event description
1000002		ENGINE CORROSION	Treatment Plants	Mon May 21 2023 08:30:00 GMT+03:00 (Indo Standard Time)	ENGINE CORROSION
1000004		FIRE ACCIDENT	Fire Safety Equipments	Mon May 21 2023 08:30:00 GMT+03:00 (Indo Standard Time)	FIRE ACCIDENT
1000005	CHEKAM	ENGINE BLAST	Engine Systems	Mon May 21 2023 08:30:00 GMT+03:00 (Indo Standard Time)	ENGINE BLAST
1000006	TROCKY	GAS LEAKAGE	Pipeline Filling	Mon May 21 2023 08:30:00 GMT+03:00 (Indo Standard Time)	GAS LEAKAGE
1000007	CHEKAM CT	MACHINE BREAKDOWN	Gear Damage	Tue May 24 2023 08:30:00 GMT+03:00 (Indo Standard Time)	MACHINE BREAKDOWN
1000008	MADUNAI	OIL LEAKAGE	Auto part 01	Tue May 24 2023 08:30:00 GMT+03:00 (Indo Standard Time)	OIL LEAKAGE
1000009	SALEM	GAS LEAKAGE	Auto Part 01	Tue May 24 2023 08:30:00 GMT+03:00 (Indo Standard Time)	GAS LEAKAGE
1000010	TROCKYAK	DRILLING MACHINE	Gear Damage	Tue May 24 2023 08:30:00 GMT+03:00 (Indo Standard Time)	DRILLING MACHINE

Fig -5: Incident Details of EHSM Portals



Item	Amount	Open items	Post items	Balance
10000000	11.52	10000000	000	000
10000001	2.45	10000000	000	000
10000002	6.57	10000000	000	000

Fig -6: Debit memo

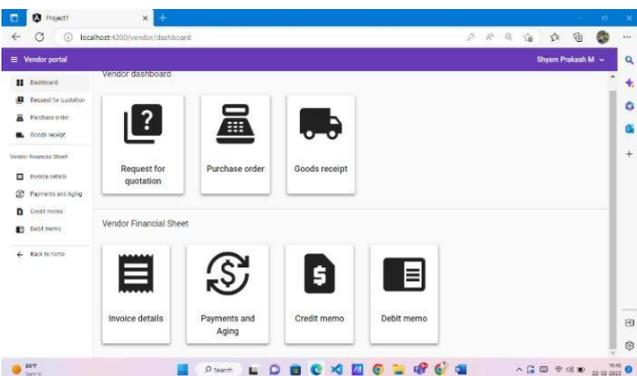


Fig -3: Dashboard Page

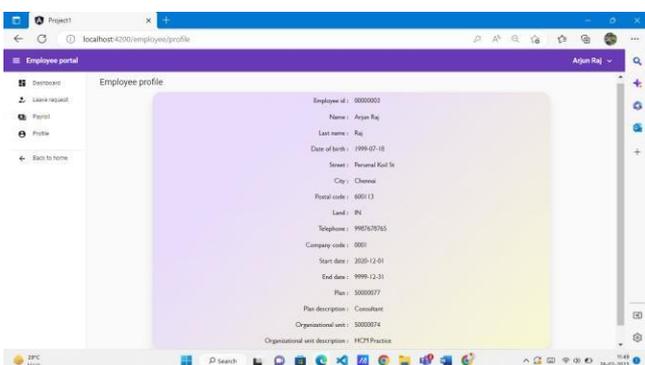


Fig -4: Profile Details

9.CONCLUSIONS

From these portals we can conclude that SAP ERP efficiently helps in overcoming the difficulties of maintaining multiple complex business processes. Portals created using SAP, each have specific functionalities of its own are interconnected through the modules of SAP which highly helps in managing & controlling different functions of a single business process. So this can be concluded with the advantages that SAP provides to businesses & that are Total visibility, Improved report & planning, Complete customization, Improved efficiency and Data security & Quality.

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