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Analysis of Enterprise System: Core Functions of SAP Application

Hariprasad Mandava
YASH Technologies Inc.,
MARYLAND, USA.

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Abstract: ***An enterprise resource planning (ERP) system from SAP is software that helps business run as efficiently as possible by automating and managing core business. An initial superior technology (Hana) on the ERP market is highlighted by the analysis of these four periods when discussing cloud-based solutions. In general, the core functionality that SAP has evolved into is perceived as moving from one of tight control over the management of its technology environment to one of greater flexibility offering substitute options like infrastructure-as-a-service (Iaas) and Platform-as-a-Service (Paas). Content analysis reveals that in order to lessen the perception of the perceived lock-in effect, agreements with third parties are given more weight in SAP's discourse.***

Keywords: SAP, Enterprise Resource Planning, S/4 Hana, Cloud Technology.

I. INTRODUCTION

Information systems researchers and computer historians have written extensively about the development of SAP ERP (Enterprise Resource Planning) systems and, in general, the enterprise software sector. The evolution of cloud computing, with its dual benefits of more collaborative business and flexible computing architecture, reflects this trend. In other words, it could drastically alter the ERP environment by moving data from on-premises storage to vendors' servers that offer real-time application access [1]. These recent developments have meant that cloud computing has reached a level of platform openness that allows resources at the platform boundary to support complements. SAP S/4 HANA is a commercial software package that, under the assumption that every module is purchased and used, claims to fully integrate all information flow through a particular stand-alone entity or a collection of subsidiaries within an organization. All things considered, the development of the enterprise software market coincided with businesses switching from internally developed information systems to scalable, modular, and customized integrated systems. ERP vendors, who matched their strategies with the rise of platform economies and their ecosystems, faced new challenges as a result of the ongoing complexity of organizational structures and information flows.

ERP vendors' transition from software suppliers to platform governors has significant strategic and business ramifications. Platforms are not strictly modular systems because of the degree of interdependency, interaction, and imbrication among the various components, which results in a lock-in effect that merits additional research. Although the literature is beginning to address the potential of cloud-based applications, little is known about the challenges because the few publications that have been published so far have mostly addressed confidentiality issues and how privacy policies are received.

The SAP Enterprise Resource Planning (ERP) system streamlines operations throughout the organization and provides a single source of truth, thereby coordinating the flow of data between a company's business processes. The emergence of ERP systems has given businesses the option to purchase prepackaged software solutions from outside vendors or develop internal

software solutions to manage business processes. Purchasing packaged systems (ERPs) eventually became the sole choice [2]. When using ERP, the goal is to combine all departmental functions into a single system that can meet all the department's unique needs. Over the past ten years, there has been a notable increase in both the quantity and variety of information. The worldwide marketplaces of today, referred to as Industry 4.0 and the Internet of Things (IOT), are characterized by higher rates of complexity and a progressively faster rate of dynamism due to global supply chain networks. This necessitates the seamless interconnectivity of operations. The possibilities to improve productivity rates and the caliber of activities or products are presented by current developments. Fundamentally, SAP is the industry leader in the world. With a vast array of applications and exceptional knowledge, it is undisputed that SAP is regarded as one of the leading ERP providers worldwide. It is comparatively essential to address the complexity issue in an industry like supply chain logistics networks. Both the internal logistics frame, which represents the flow within the four walls of the organization as a whole, and the external logistics frame, which represents the flow among suppliers, manufacturing facilities, and distribution centers of the organization and their interactions with one another, will both be used to consider different logistics network nodes.

II. ERP SAP R3 Architecture

SAP systems typically use a 3-tier architecture, which divides programs into three physicals as well as logical computation tiers. The design of this architecture is superior to that utilized by conventional applications. These layers are the application's development tier, which processes the data, the data tier, which manages and stores the data according to how it connects with the application, and the presentation tier, which is the user interface. The primary advantage of this three-tier architecture is that each tier functions on its own owned infrastructure, allows for multiple development teams to work on it concurrently, and can be updated or scaled independently of the other tiers. The 3-tier systems architecture served as the foundational design for all client-server applications during the preceding decades. The majority of our three-tier applications are currently being greatly improved and developed using containers and micro services in cloud native technologies, as well as for cloud migration, for our two ERP systems in scope (S/4 HANA & Oracle Cloud ERP) [3].

The presentation tier, which is the user interface and communication layer over ERP applications, is where our intended customers engage with the ERP implementation [4]. This layer's primary functions are information display to end users and user feedback collection (in the form of entered data). This highest tier runs through a desktop program, web browser, or graphical user interface. The application tier, also known as the business tier, is where the data that was gathered from the user in the presentation tier is either handled independently or combined with other data in the data tier using business logic. The application tier serves as an interface and conduit for all communication in a three-tier application construction, which as opposed to the data and presentation tiers speaking with each other directly [5]. The degree of complexity of these applications depends on a number of factors, primarily how those applications are integrated; how simple they are to use both independently and in conjunction with one another; how easily data is distributed through the interface; whether it's easy to complete a task; and whether or not it takes a long time to become familiar with the system's workings.

III. End User Experience

The idea of end user experience has gained significant attention in the human-computer interaction (HCI) group over the past few years. It encompasses not only the accessibility of an application as a whole, but also certain aspects of it, such as aesthetic and hedonistic qualities that are excluded from traditional usability research and are unrelated to finishing a task or reaching a specific objective [6]. The main focus of usability is on how simple it is for users to interact with the system; there are also a number of other issues that need to be resolved, such as faults, fulfilment, recognition, comprehension, and effectiveness [7]. The interface will arrange the data in front of the user interface in a logical and natural order, using terms and phrases that the user is already familiar with. By giving users, the option to modify frequent actions, the system can accommodate both novice and expert users by using accelerators. It provides users with timely feedback that is appropriate and keeps them informed at all times. Similarly, it observes platform conventions; users shouldn't be concerned if various

circumstances, phrases, or system operations result in the same outcome. The interface makes alternatives, objects, and actions visible in order to reduce the amount of memory that the user must manage. System usage instructions must be readily available and visible when needed; otherwise, users won't be able to recall specific details from one context to another. It is generally preferable to have thoughtful ERP or interface design that stops issues before they arise rather than well-crafted error messages. Provide users with an affirmative option, an alert information, or even better, remove susceptible to errors conditions, before they make a task. Interfaces must not include any unnecessary information [8]. Each additional piece of information directly competes with the most important pieces of information, lowering the relative visibility of the most important pieces of information. Users frequently make oversights, so it must be simple to go around the error or undesirable state without requiring additional lengthy dialogues. Adjusting settings is difficult for users to do on their own; administrators must make the necessary changes, even if they are related to business requirements. Users may find it challenging to understand the system's current interface and its primary functions at first, until they have had a lot of experience using it. Feedback and information are frequently given in a confusing or unhelpful manner, and in certain situations they are even placed incorrectly within the system. The interface's fundamental selection and list navigational instruction are inconsistent overall, and the search function feature for transactions is ambiguous and inconsistent.

IV. Versatility of SAP ERP System

Versatility is still sometimes regarded as a subordinate aspect of ERP system design, despite all the demonstrated benefits of consistent, effective consideration of system usability basic criteria over performance [9]. The requirement for achieving optimal user performance has been envisioned as an added responsibility rather than a primary one. This is undoubtedly problematic in complex industries or with intricate business processes within organizations since users would require additional time to complete tasks due to the complexity of the interfaces. The ease of use of the software and the ability to manipulate data through the system interface are key factors in determining end user satisfaction with ERP software [10]. The high rate of complexity required for business scenarios means that information systems evaluation is still not carried out consistently. In addition to other things, the objective measures used in the empirical studies would yield additional information related to the creation of the assessment accessibility standards.

V. Conclusion

A user-friendly interface is found to be crucial in ensuring that the main stakeholders are happy with the ERP that is being used. User experience through ERP design phase of the applications must be taken into more consideration. ERP ergonomics, while advantageous as previously demonstrated, is not always correlated, or presented as it should be during the design phase of the ERP interface. Creating fully ergonomic ERP interfaces is just as important to the design process as incorporating new, advanced functionality. This means that gaining a competitive advantage involves more than just developing advanced system functionalities. Even though they achieved a good rank over the SUS score, SAP S/4 HANA applications still have room to improve their ergonomic system usability design and maintain their competitive advantage over SAP S/4 HANA. This means that they need to put a lot more effort into designing their interfaces for system users' ease of use and to adequately fully decouple all their applications from their legacy structure.

References

1. Davenport, T. H. (1998). Putting the enterprise into the enterprise system. In Harvard Business Review 76 (4),121-131.
2. Buckhout, S., Frey, E., and Nemee, J. (1999). Making ERP succeed: Turning fear into promise, IEEE Engineering Management Review, Fall 1999, 116-123.
3. Y. Amanatullah, C. Lim, H.P. Ipung, and A. Juliandri, “Toward Cloud Computing Reference Architecture: Cloud Service Management Perspective”. International Conference on ICT for Smart Society, 2013: p. 1-4.
4. J. Duan, P. Faker, A. Fesak, and T. Stuart, “Benefits and Drawbacks of Cloud-Based Versus Traditional ERP Systems”. Proceedings of the 2012-13 course on Advanced Resource Planning. 2013.

5. G.C. Peng and C.J. Gala, "Cloud ERP: A New Dilemma to Modern Organisations?" Journal of Computer Information Systems. 2014. 54 (4): p. 22-30.
6. Bargas-Avila, Javier A. & Hornbaek, Kasper (2011) Old Wine in New Bottles or Novel Challenges? A critical Analysis of Empirical Studies of User Experience
7. All about UX (2013) User experience definitions: Downloaded on February 06, 2021 from http://www.allaboutux.org/ux-definitions
8. S. V. Grabski, S.A. Leech, and P. J. Schmidt, "A Review of ERP Research: A Future Agenda for Accounting Information Systems", Journal of Information Systems, 2011. 25(1): p. 37-78.
9. A. Tiwana, B. Konsynski & A.A. Bush, "Platform Evolution: Coevolution of Platform Architecture, Governance, and Environmental Dynamics". Information Systems Research. 2010. 21(4): p. 675-687.
10. B. G. Glaser, "The Constant Comparative Method of Qualitative Analysis", Social Problems. 12(4): 436-445.

