การดำเนินการวางแผนทรัพยากรองค์กรบนคลาวด์และระบบการวางแผนทรัพยากรองค์กรแบบดั้งเดิมสำหรับองค์กรขนาดเล็กและขนาดกลาง

The Implementation of Cloud-Based ERP and Traditional ERP System for SME

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ABSTRACT

Cloud technology, under various forms, is becoming more advanced and flexible, making it an essential component for success in the digital age and business process for companies. By enhancing the organization's performance, it can become a significant software provider, combining virtualization with cloud technology. The cost of ERP implementation is one of the concerns in SME for the financial. Currently, data communication and telecom companies offer, along with other communication and cloud storage services, access to on-line ERP, with standard modules with a few customization features, where time-to-deployment is considerably reduced, ERP being marketed as Software as Service. Small and large organizations can use different types of cloud computing. It can alter the commonality within the acronyms following Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS). This paper's purpose is to identify the benefits and drawbacks of traditional ERP versus cloud-based ERP systems in small and large organizations. This paper investigates the business process for ERP implementation in SME, between Cloud-Based ERP and Traditional ERP System highlighting the differences in common approaches.

Keywords: Enterprise Resource Planning (ERP), Cloud-based computing, Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Software-as-a-Service (SaaS)

บทคัดย่อ

เทคโนโลยีคลาวด์ในรูปบริการระบบเครือข่ายมีความก้าวหน้าและยืดหยุ่นมากขึ้นทำให้กลายเป็นองค์ประกอบสำคัญต่อความสำเร็จในยุคดิจิทัลและกระบวนการทางธุรกิจของบริษัท ด้วยการเพิ่มประสิทธิภาพขององค์กร และความสามารถเป็นผู้ให้บริการซอฟต์แวร์รายใหญ่ที่ผสมผสานการจำลองเสมือนเข้ากับเทคโนโลยีคลาวด์ ค่าใช้จ่ายในการติดตั้ง การวางแผนทรัพยากรองค์กร ERP ถือเป็นข้อกังวลประการหนึ่งของ วิสาหกิจขนาดกลางและ

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ขนาดย่อม SME ในด้านการเงิน ปัจจุบัน บริษัทการสื่อสารข้อมูล และโทรคมนาคมได้มีการพัฒนาอย่างต่อเนื่องการ วางแผนทรัพยากรองค์กร ERP ออนไลน์พร้อมด้วยโมดูลมาตรฐานพร้อมคุณสมบัติการปรับแต่งบางอย่างควบคู่ไป กับบริการการสื่อสารและการจัดเก็บข้อมูลบนคลาวด์ โดยการปรับตัวในการดำเนินการการวางแผนทรัพยากรองค์กร ERP และยังมีการวางตลาดเป็นซอฟต์แวร์เพื่อนำมาใช้ในองค์กรขนาดเล็กและขนาดใหญ่สามารถใช้การประมวลผล แบบคลาวด์ตามประเภท โครงสร้างพื้นฐานเป็นบริการ Iaa) แพลตฟอร์มเป็นบริการ PaaS และ ซอฟต์แวร์ในรูปแบบ บริการ SaaS วัตถุประสงค์ของบทความนี้คือเพื่อระบุข้อดีและข้อเสียของระบบ การวางแผนทรัพยากรองค์กร ERP แบบดั้งเดิมเทียบกับระบบ การวางแผนทรัพยากรองค์กร ERP บนคลาวด์ในองค์กรขนาดเล็กและขนาดใหญ่ เอกสาร นี้จะตรวจสอบกระบวนการทางธุรกิจสำหรับการใช้งาน การวางแผนทรัพยากรองค์กร ERP ใน วิสาหกิจขนาดกลาง และขนาดย่อม SME ระหว่าง การวางแผนทรัพยากรองค์กร ERP บนคลาวด์และระบบ การวางแผนทรัพยากร องค์กร ERP แบบดั้งเดิม โดยเน้นถึงความแตกต่างในแนวทางกระบวนการทางธุรกิจของบริษัท

คำสำคัญ: การวางแผนทรัพยากรองค์กร การประมวลผลแบบคลาวด์ โครงสร้างพื้นฐานรูปแบบบริการ แพลตฟอร์มรูปแบบบริการ ซอฟต์แวร์ในรูปแบบบริการ

Introduction

The integration of cloud systems into the virtual SMEs environment characteristic of the current economy, businesses undergo structural changes affecting material and information flows within the organization. In this regard, the principal alteration in the existing enterprise organization is to alter the objectives in relation to the business activities undertaken, starting to produce at the cost of cloud computing and software possible price to complete customer satisfaction.

SMEs and international businesses recognize that transforming the company objectives is a direct consequence of increased competition through globalization, regional and international level. By enhancing and increasing customer expectations and enhancing the quality of small and medium-sized enterprises in relation to residential premises. Consequently, SME is required to integrate ERP and cloud technology for customer requirements in business process and performance, particularly in the implementation of the cloud technology, through changes imposed by the beneficiary of SME. In the

literature review, Business finds very important aspects, besides integrating cloud technology for customer needs in the enforcement process, is to improve the quality of business applications software (Ali *et al.*, 2020).

Enterprise Resource Planning Software Systems

In this section, the author discusses and analyzes several review articles related to Enterprise Resource Planning (ERP) to clarify this purpose of study and necessary structural changes to the entire SME organization. In the literature review, the important review of the ERP software systems of these changes is based on the implementation. This alters the SME's operation systems of coordination and control operations to allow instantiation of SME's production by structure cloud technology and architectures suited for reviewing SME software applications (Khayer *et al.*, 2020).

The ERP software systems that enable organizations to automate and manage core business processes and performance by representing cloud computing technology for small and midsize enterprise organizations (Chung & Snyder, 2000).

ERP software systems harmonize the data flow between business organization's business processes for data analytics which provide a single source of veracity and data streamlining via operations across the enterprise. It can integrate a company's operations for internal and external stakeholders for the marketing, financial and accounting, supply chain, operations, commerce, reporting, manufacturing, inventory and warehouse, and human resources activities on one platform (Venkatachalam, 2006).

The organization can be achieved between integration often results in higher operational costs and improved internal and external stakeholders. Furthermore, similar data that focused on functional districts, the modules of ERP system focus on the supply chain and procurement for transmission of data integration. (Al Mourad & Hussain, 2014). In this way, data transmission is facilitated via internet-based architecture. This study demonstrates the benefits of enterprise resource planning software systems to accommodate undertaking, with emphasis on the small and medium-sized enterprises module since this review has practical use in the lodging industry. The study also highlights elements inscriptional for the successful ERP Implementation for SME.

Cloud-based Enterprise Resource Planning

Cloud computing refers to the on-demand access of computing resources with virtual servers, data storage, networking capabilities, application development tools and programmes over the Internet rather than the computer's hard drive (Rashid & Chaturvedi, 2019). SME organizations have employed on-premises enterprise resource planning (ERP) systems. An ERP system described as a business software solution that can integrate the range of business processes that enables companies to gain a competitive advantage as well as holistic view of the business enterprise (Al-Shboul, 2018). The ERP uses one data repository to coordinate different organizational processes and business models in different organizational units by enterprise resource planning software systems. (Karkoskova & Feuerlich, 2014). Cloud technology has become indispensable in business models, from SME to global enterprises. Business applications utilize remote work by providing data access and softwares from cloud commuting, creating the framework for seamless omnichannel customer engagement. A cloud services provider managing cloud-based technology services hosted at a remote data center and typically makes these resources available for remote access.

The ERP has been transformed by the development of cloud-based ERP systems (Navimipour *et al.*, 2015). These systems enable corporations to utilize third-party hosting information technology (IT) applications and resources remotely rather than physically. The execution and implementation of ERP systems over cloud technology offers substantial edges through data collection and analysis, integration, data access and retrieval, recording, management and data transportation of accurate data. Cloud technology enables SME and large organizations to apprehend the benefits of computing and technology resources by data storage and softwares utilities. For SME transformation, it is important to comprehend the predictors of cloud technology adoption for designing and promoting effective and efficient policies (Vu *et al.*, 2020).

Cloud Computing On-premises Infrastructure

In this section, it examines the cloud computing on-premises infrastructure, which can be utilized and increased the quality of cloud technology, and services for small to large business organizations worldwide have been moved away from traditional on-premises services for the business process and performance.

There are different cloud service models. It can alter the commonality within the acronyms following infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), and software-as-a-service (SaaS). Each type of cloud computing leaves small and large organizations focusing on cloud computing on-premises infrastructure for business process and performance by increasing service quality and gaining competitive average (Kumar & Hillegersberg., 2000).

Infrastructure as a Service (IaaS)

Infrastructure-as-a-service, or IaaS, is an alternative to cloud computing on-premises infrastructure. In the literature review, the organization is a pay-as-user-go service where a third party provides users with infrastructure services such as storage and virtualization via a cloud-based network, through the organization's internet (Osterrieder *et al.*, 2020). In this way, end-users have been able to access and respond to the operating system and data, applications, middleware, and runtimes as the organization. However, cloud computing provides business organizations with access to services and manages it via the network, servers, virtualization, and storage data.

IaaS allows small and large enterprises to acquire through the component's organizations' needs. In this way, there is a low cost and no maintenance costs, making IaaS a highly affordable option. Additionally, organizations able to utilize IaaS aspire to a quick accessible, flexible way to create and maintain and develop and test information systems environments (Yuan *et al.*, 2021).

The main disadvantages to IaaS are the potential of provider security issues. Furthermore, multi-tenant systems must share infrastructure, resources, network devices, and service reliability. Business organizations can avoid these challenges by choosing a reliable and trustworthy provider with a solid history and reputation.

IaaS benefits enterprises of all appearances and dimensions. In this way, IaaS allows full control of an organization's infrastructure and operates on a pay-as-enterprise-use model that can be utilized in most IS project budgets. The most effective IaaS platforms, business enterprises can access ongoing support and have the option of scaling up as necessary for business process and performance.

Platform as a Service (PaaS)

Platform-as-a-service (PaaS) is another step further from full, on-premise infrastructure management. It is where a provider hosts the hardware and software on its own infrastructure and delivers this platform to the user as an integrated solution, solution stack, or service through an internet connection (Karim at el., 2017). Initially, the PaaS platform is suitable for developers and programmers, which allows them to develop, run, and manage user's applications without having to build and maintain the infrastructure or platform usually associated with the process. Programmers create the code, build, and manage their apps without the need for software updates or hardware maintenance. The

system environment to develop and deploy is intended for programmers.

PaaS is ready for developers to create a framework to build and customize their web-based applications. Developers can utilize built-in software components to create their applications, which reduces the amount of code they must write themselves.

PaaS delivery is like SaaS methods, with the main difference being that customers can only access online PaaS platforms, which allows them to concentrate on the software themselves instead of any external issues (Noor *et al.*, 2018). In PaaS platforms, users can access multiple users with scalability that business and IT professionals can choose from various tiers of cloud computing resources to choose the size for small and large organizations. It is built on virtualization technology and easy to run without extensive information technology and system administration comprehension.

Software as a Service (SaaS)

Software-as-a-service (SaaS) is the most comprehensive form of cloud computing services, providing an entire enterprise application that allows organization to be managed by a provider via a web browser (Columbus 2012). In this way, organizations do not have updated software, bug fixes, and general software maintenance can be handled by the provider, and the user connects to the app via a dashboard. In the SaaS study, there is no software installation on individual client stations, and group access to the program can run as reliably.

Alternative, end-users who are familiar with a SaaS service. They can use email accounts with a web-based service such as MS Outlook or Gmail, for example, through log into their account and get their email from any client station.

Correspondingly, Enterprise organization who is looking for a PaaS service. It provides the platform for software developers to create distinctive customizable software, implying that developers do not need to start from scratch when they are developing applications which can save them time and money in writing extensive code.

Furthermore, SaaS can be a great option for small and large business organizations who need bandwidth to handle software installation and updates, as well as for applications that do not require much customisation (Stupar 2019). PaaS can provide the most cost-effective and time-effective method for a developer to create a unique application. Alternatively, PaaS allows the software developer to focus on the creative side of application development rather than the unskilled tasks who manage software updates or security patches.

Table 1 Cloud Service Models (Author)

Infrastructure as a Service (IaaS)	Platform as a Service (PaaS)	Software as a Service (SaaS)
Accessible via a dashboard.	Accessible via the web.	Accessible via a browser.
Pay-per-use	Pay-per-use basis.	On a subscription basis orr purchase.
Data storage and computer networking resources.	Development environments.	Cloud-based applications.
IT administrators.	Software developers.	End users.

Traditional ERP systems

Business and IT professionals understand business models and performance to implement traditional ERP systems. In the literature review, ERP is becoming an essential component of a small and large organization's information system that has a cross-functional process oriented and legacy system. It integrates management information across the entire enterprise and client-serves the information requirements of the entire enterprise (Varghese & Buyya, 2018). The traditional ERP systems can be installed and maintained on the premises, resulting in the software being installed on servers through business processes. Organizations have been required to invest in significant hardware investments, including network infrastructure, application servers, data storage, and networking devices. Traditional ERP systems are implemented by small and large organizations with dedicated IT and IS departments who oversee the installation, maintenance, and upgrades necessary (Salur & Kattar 2021).

Furthermore, the ERP system exemplifies small and large organizational computing, which is called the set of activities that business and IT managers utilize for daily working hours (Chege & Wang, 2020). ERP is essential for their divisions such as purchasing, human resources, accounting, production line, marketing, and operation.

According to Motwani, (2017), traditional ERP systems are defined as comprehensive, enterprise software solutions that can integrate the full range of business processes and functions, to present a comprehensive business perspective and value of the small and large from a single information and enterprise analysis. The overall resources of the small and large organization have great potential by integrating with ERP. Correspondingly, ERP suppliers for instance SAP, Oracle, and PeopleSoft/J. D have more than 12 modules which can be implemented through ERP. Rouhani & Mehri (2018) point out the most important modules that an ERP system can provide for marketing and sales, distribution, enterprise solution, production planning, quality control, financial and accounting, materials management, cost control, human resources, project management, financials, and plant maintenance.

Conclusion

The implementation of cloud-based ERP and traditional ERP System are essential for success in the digital technology for business model and process for companies. Although traditional ERP systems have been popular for many years, cloud-based ERP systems are becoming increasingly popular due to their affordability and flexibility. The author discovers that there are different types of cloud computing. It can alter the distinction between the acronyms, including infrastructure-as-a-service (IaaS), platform-as-a-service (PaaS), and software-as-a-service (SaaS).

The IaaS model offers the computing resources companies need to host, build and run their services. The PaaS model provides an environment for developers to create and deploy applications for business performance. The SaaS model provides software to users and companies on the Internet.

Each cloud service model has different features and benefits to businesses. Therefore, as we mentioned at the beginning of the article, these three cloud service models are often utilized simultaneously in companies. Considering cloud service models,

there are different types of cloud that companies can choose depending on their needs and objectives.

Alternatively, the implementation of cloud-based ERP and traditional ERP System, the cloud ERP clients should balance between benefits and challenges. One benefit could lead to many challenges and on the other hand, its challenges could be improving business performance and gaining a complete advantage. The high-rated challenges represent research points that should be considered to improve the implementation and implementation of cloud ERP systems.

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