Review Article

The use of contemporary Enterprise Resource Planning (ERP) technologies for digital transformation

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Abstract: Our lives are becoming more and more digital, and this has an impact on how we work, study, communicate, and interact. Businesses are currently digitally altering their information systems, procedures, culture, and strategy. Existing businesses and economies are severely disrupted by the digital revolution. The Internet of Things, microservices, and mobile services are examples of IT systems with numerous, dispersed, and very small structures that are made possible by digitization. Utilizing the possibilities of cloud computing, mobile systems, big data and analytics, services computing, Internet of Things, collaborative networks, and decision support, numerous new business prospects have emerged throughout the years. The logical basis for robust and self-optimizing run-time environments for intelligent business services and adaptable distributed information systems with service-oriented enterprise architectures comes from biological metaphors of living, dynamic ecosystems. This has a significant effect on how digital services and products are designed from a value- and service-oriented perspective. The evolution of enterprise architectures and the shift from a closed-world modeling environment to a more flexible open-world composition establish the dynamic framework for highly distributed and adaptive systems, which are crucial for enabling the digital transformation. This study examines how enterprise architecture has changed over time, taking into account newly established, value-based relationships between digital business models, digital strategies, and enhanced enterprise architecture.

Keywords: Digital Technologies, Enterprise Business Application, Enterprise Resource Planning, Internet of Things, Big Data, S/4 Hana

1. Introduction

The advent of modern digital technologies, commonly referred to as SMACIT (Social, Mobile, Analytics, Cloud, and Internet of Things [IoT]), has given rise to the emergence of digital business. Consequently, enterprises that have long relied on various digital technologies for their operations are now confronted with the inevitable need for digital transformation [1]. Generally, latest technologies identifies seven content categories that can be digitally transformed within an organization: offer (the goods and services the company provides), engagement model (the way the company interacts with its clients and other stakeholders), business model (how the organization makes money), organizational structure, people, processes, and IT capacities (how information is managed). These are the most crucial components of the digital transformation organizational value chain. Businesses across all industrial sectors are under pressure to digitize, and they realize that they must act fast to avoid slipping behind competitors that are ahead of the curve or entirely new participants in the market [2]. An integrated information system is a comprehensive software package that complies with the company's overall business model, supports and unifies all of its organizational components and business operations, and

links them to both internal business processes and external business processes that link the company to its partners. Modern businesses that rely on electronic business models and are defined by digital technology must have an integrated information system in order to succeed. The organization's internal business activities as well as external business processes directed at business partners are supported by the integrated information system. ERP is the most significant integrated software solution that modern businesses should use as the foundation for their more productive operations. Employees in each organizational division of the company can access a unique database and information integrity is guaranteed via the use of the ERP system. In order to ensure competitiveness in the contemporary market and make appropriate and timely judgments, corporate data must be of a high standard of timeliness, integrity, and quality. The company's business procedures must be improved in order to implement ERP systems. This involves carefully examining current procedures and redesigning them whole or in part to find the most effective approach to put them into practice and improve process performance metrics. Cost, quality, and speed are a few of them [3].

In the context of developing ERP systems under the influence of contemporary digital technologies, redesigning business processes and making changes to entire business models are even more imperative. The impact of contemporary digital technology. Small businesses can now employ cutting-edge ERP systems, like cloud and mobile ERP systems, thanks to the digital transformation period, even though using them has decreased the cost of maintaining servers and other essential hardware and software infrastructure [4].

2. The time frame of technological revolution

Digitization is a component of the massive worldwide movement known as "Industrie 4.0," which offers businesses amazing prospects for business transformation but also poses a risk to their survival in the event that the transformation is unsuccessful. Because of this, businesses across all sectors of the economy are under pressure to get digital or risk lagging behind their more creative and tech-savvy rivals or unidentified competitors. Digitization has a number of potential advantages, such as boosting revenue, enhancing productivity, encouraging value-creation innovation, and developing novel consumer engagement strategies [5]. The term "digital transformation" refers to any transformation that occurs in company as a result of the use of new SMACIT technologies. Digital transformation is the process of using contemporary technology to significantly raise an organization's performance or accomplishments. The ways in which a firm uses and integrates digital technologies can impact several aspects of its operations, such as the products itself, sales channels, and supply chain as a whole. It is frequently possible to alter or replace entire business models. Digital business transformation is a big task that can only be successful and efficient if the organization knows why it wants to change and has a clear vision for the change. There are a number of external and internal elements that can spur enterprise digital transformation. Sometimes, consumers seeking better value, more affordable prices, and superior quality may be the driving force. A stronger service, a better business plan, or cheaper prices from the competitors could also be the driving force for the transformation. The new prospects presented by contemporary digital technology also serve as a strong driver for change. If digital technologies are first embraced or integrated in novel ways, they might give a business a competitive edge. Compared to earlier changes stemming from information technologies, the digital transformation is significantly more complex.

Even though businesses understand how important it is, most still find it extremely difficult to get started and, moreover, to get to a point where they can take advantage of its advantages. According to the authors, only a select few businesses acquire the necessary technological and managerial know-how to take advantage of the game-changing

advantages of emerging digital technologies. As a result, a company's digital transformation might take many different shapes, thus it's important to clearly define the transformation's priorities.

2. Digital technology's impact on ERP systems

The term "Digital Radar" refers to the classification of all digital technologies into four groups: networking, automation, digital data, and digital client access. One of the most widely used digital technologies is the cloud. Its availability and openness are its main advantages because using it is dependent simply on an Internet connection.

3. Adopting Cloud Technology in the ERP System

Data security is its major flaw and the main reason why businesses aren't using it more extensively. Because of this, there are various kinds of cloud technologies available: Three types of clouds exist: Private (located on a private network), Public (located on the Internet), and Hybrid (a hybrid of the first two clouds) [6]. Huge firms who could afford to invest in massive software solutions have been the primary users of ERP systems. The development of cloud computing has made ERP solutions accessible to small businesses as well [7]. Cloud-based business solutions enable data access from any location. Software packages that are tailored to an organization's needs can be obtained as business-facilitating software modules. One benefit of IoT is the significantly increased and quicker availability of data, enabling access to this information from any department or location inside the organization. Managers can now have an overview of inventory data without relying on employees' productivity thanks to real-time communication. If the business provides courier services, then the Internet of Things can be used to track the shipment's full path in real time from source to receiver.

4. Internet of Things (IoT) and ERP systems

IoT technologies facilitate device-to-device connectivity. Data is then sent over the Internet to the manufacturer, or company. Large-scale database collections from IoT have an impact on modifications to business processes and how they are managed through ERP systems. Companies are unable to analyze all of the data they have because there aren't enough professionals in the subject, and doing so takes a lot of time and money. Direct communication between physical devices lowers the cost of data transmission [8]. Particular drawbacks of IoT technology include its relationship to infrastructure, data security, and human resources. In the event of plant failures or company disruptions, there would be enormous losses. Data security is dangerous since this technology is comprised of several smart gadgets that are interconnected [9]. Data security is one of the main reasons businesses don't employ this technology more. Another drawback is that fewer people are employed because data is transferred between devices automatically. Changes in the company's workforce could result from the way the business model operates, which could be problematic. The conclusion is that the data obtained from the Internet of Things will serve as the foundation for a new generation of business systems that will alter the methods that ERP systems presently utilize to gather, process, and analyze data [10].

5. Adopting Artificial Intelligence in the ERP systems

Artificial intelligence (AI) acquires algorithms that aim to incorporate AI into software that will carry out specific kinds of activities [11]. Most websites have "chatbots" (digital assistants) that may respond to frequently asked queries from users or prospective buyers. Businesses can use artificial intelligence (AI) to impact business management through ERP systems by developing a learning algorithm that uses previous data to estimate what should be produced and how much inventory to make. If AI is used by ERP

systems, reports based on vast volumes of data of various kinds can be generated, potentially resulting in lower costs or resource waste as well as the removal of pointless linkages in the business process/model, etc. The biggest corporations in the world use artificial intelligence (AI) to operate its geographically dispersed plants. From manufacture to sales, the complete production process can be managed. Procurement firms are able to monitor massive product volumes. Real-time monitoring of turnover, customer behaviour, and the ability to create offers of goods and services that align with consumer preferences make it easier to track the flow of items [12]. The fact that artificial intelligence (AI) consists of robots or machines that are restricted to specific jobs and accomplish specific activities is the source of the technology's drawbacks. The high cost of implementing this technology in businesses further restricts its use there [13]. To obtain the correct information, the business needs to examine every layer of data. Massive amounts of data from original formats and distinct sources must first be grouped, filtered, and then "cleaned" before analysis can begin. For businesses to compete in the market and gain an edge over rivals who do not utilize this digital technology, they must work to provide the analysis's findings first [14].

6. Adopting Big Data in the ERP systems

Big data is a vast database that gathers information from many sources, and numerous scientists and specialists analyze it [15]. The primary purpose of this digital technology is to enable prompt decision-making based on the data gathered. This reduces expenses associated with making poor decisions, increases productivity, provides transparency for all data pertaining to assets and processes, etc. To obtain the correct information, the business needs to examine every layer of data [16]. Massive amounts of data from original formats and distinct sources must first be grouped, filtered, and then "cleaned" before analysis can begin. For businesses to compete in the market and gain an edge over rivals who do not utilize this digital technology, they must work to provide the analysis's findings first. When professional analysts thoroughly examine the data obtained from the ERP system, businesses can use big data to learn a great deal about client preferences and modify their offerings (much like with IoT). Digital data is served by ERP systems. Big Data is an additional resource that can be used to extract data for analysis, as ERP systems' platforms aren't meant to handle huge data sets. The inaccessibility of this technology in terms of finances is one drawback. Database analysts and miners are expensive professionals whose work can take a long time to complete. Because of this, a lot of businesses lack the resources to store massive volumes of data and the equipment necessary to handle and analyze it. The largest problem facing big data in digital transformation is to minimize the time and expense needed to extract actionable insights from the massive databases that are generated on a regular basis. Cloud technology is a technology that can assist Big Data overcome its inadequacies. It solves issues by giving the business access to only the data it needs, and the fees are commensurate with the services rendered. It's now lot easier and faster to get new data, and the organization doesn't need to have a big infrastructure to evaluate the information.

7. Conclusion

Digital business transformation refers to adjustments made to the traditional methods of conducting business as a result of the use of contemporary digital technology in order to improve an organization's performance and accomplishments. The most widely used digital technologies are discussed, along with how they have affected the creation of contemporary ERP systems. The empirical research findings indicate that a smaller proportion of small businesses in Serbia have modern ERP systems installed compared to those that have older ERP systems. More specifically, just 24% of small businesses that responded to the poll do so with a cloud-based ERP system. Sixty-eight percent of the studied organizations use traditional ERP systems. Small businesses' seemingly irrational

decision to employ traditional ERP systems to a greater extent is backed by the fact that nearly half of these businesses have no intention of switching from the traditional ERP system they currently use due to infrastructure limitations and worries about the security of company data. The other half of the businesses are in the process of switching from their traditional ERP systems to cloud-based ones, which will soon cause a change in how small businesses currently depict modern ERP systems.

References

[1]   Global Center for Digital Business Transformation, Bradley, J., Loucks, J., Macaulay, J., Noronha, A., & Wade, M. (2015). Digital vortex: How digital disruption is redefining industries. Global Center for Digital Business Transformation.

[2]   Von Leipzig, T., Gamp, M., Manz, D., Schöttle, K., Ohlhausen, P., Oosthuizen, G. & von Leipzig, K. (2017). Initialising customer-orientated digital transformation in enterprises. Procedia Manufacturing, 8, 517-524.

[3]   Picek, R., Mijac, M., & Androcec, D. (2017). Acceptance of Cloud ERP systems in Croatian companies: Analysis of key drivers and barriers. Economic and Social Development: Book of Proceedings, 513-522.

[4]   Juturi, V. P. K. (2023). Role of Enterprise Applications for Pharmaceutical Drug Traceability. Universal Journal of Pharmacy and Pharmacology, 41-46.

[5]   Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. Business & information systems engineering, 57, 339-343.

[6]   Elbahri, F. M., Al-Sanjary, O. I., Ali, M. A., Naif, Z. A., Ibrahim, O. A., & Mohammed, M. N. (2019, March). Difference comparison of SAP, Oracle, and Microsoft solutions based on cloud ERP systems: A review. In 2019 IEEE 15th International Colloquium on Signal Processing & Its Applications (CSPA) (pp. 65-70). IEEE.

[7]   Nofal, M. I., & Yusof, Z. M. (2013). Integration of business intelligence and enterprise resource planning within organizations. Procedia technology, 11, 658-665.

[8]   H. Elazahary (2019). Disambiguation and research directions for new computing paradigms: fog, mobile edge, edge, cloudlet, mobile IoT, IoT cloud, and mobile edge. Network and computer applications journal, 128: 105–140.

[9]   Dornean, A. D. I. N. A., & Rusu, V. D. (2019). A case study on CSR practices in Romania in the context of EU legislation. European Union Financial Regulation and Administrative Area, EUFIRE, 85-98.

[10]   Mandava, H. (2023). How Digital Technologies Improving Business Enterprise Applications. Universal Journal of Computer Sciences and Communications, 15-19.

[11]   Paschek, D., Luminosu, C. T., & Draghici, A. (2017). Automated business process management–in times of digital transformation using machine learning or artificial intelligence. In MATEC web of conferences (Vol. 121, p. 04007). EDP Sciences.

[12]   Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. Business horizons, 62(1), 15-25.

[13]   Assunção, M. D., Calheiros, R. N., Bianchi, S., Netto, M. A., & Buyya, R. (2015). Big Data computing and clouds: Trends and future directions. Journal of parallel and distributed computing, 79, 3-15.

[14]   Khan, N., Yaqoob, I., Hashem, I. A. T., Inayat, Z., Mahmoud Ali, W. K., Alam, M. & Gani, A. (2014). Big data: survey, technologies, opportunities, and challenges. The scientific world journal, 2014.

[15]   Mandava, H. (2024). Critical Success Factors of Cloud ERP in the Enterprise Business. Universal Journal of Computer Sciences and Communications, 1-5.

[16]   Juturi, V. P. K. (2023). Success Factors of Adopting Cloud Enterprise Resource Planning. Universal Journal of Computer Sciences and Communications, 9-14.