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Challenges in Implementing Enterprise Resource Planning (ERP) System in Big Firms

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Abstract: ***Enterprise resource planning (ERP) system has been one of the greatest popular business management systems, by giving the advantages of real-time capabilities and medited by software and technology for business in big firms. Then also, not all implementations have been successful. Since Enterprise resource planning implementation has its greater effect on organizations such as process changes, people, and culture there are a no. of challenges that companies may encounter in implementing Enterprise Resource Planning systems.***

Now, some universities had started using their legacy systems instead of their old system with Enterprise Resource Planning systems for better managing the levels i.e. (Top level, middle level and the lower level) and administration. This thesis greatly focuses on the competition of Enterprise Resource Planning implementation between large company or group and university environment. I previously studied that showed Critical Successful Factors (CSFs) and risk factors to implement Enterprise Resource Planning in environments. I found that in some case studies emphasize the organizational positive in attitude and full of energy and new ideas involved in Enterprise Resource implementation by using Critical Successful Factors and three phases of framework by Miles and Huberman: antecedent condition, implementation process, and outcomes. This study uses findings from the case studies to assess readiness and CSFs' fulfilment. The results from this study contribute to a contextual understanding of distinctive challenges in implementation between corporate and university environment. Keywords— Include at least 5 keywords or phrases

I. INTRODUCTION

Enterprise resource planning is business way management S/W that allows an firms to use a system of combine applications to manage the business and automate many back office functions related to technology ,services and HR. Enterprise resource planning systems has camed through from manufacturing and production planning systems used in the manufacturing industry, Enterprise resource planning has waded its scope in the 1990's to other "back-office" functions such as HR, finance and production planning (Swartz & Orgill, 2001; Nieuwenhuyse, Boeck, Lambrecht, & Vandaele, 2011).Besides this, in last few years Enterprise resource planning has united other business range such as supply chain management and customer relationship management to develop more..

Figure 1-1. ERP Extension (Abbas, 2011)

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A. ERP in Business

The biggest aim of Enterprise resource planning is to expand managing efficiency by improving business processes and reducing price. Enterprise resource planning permits different departments with assorted needs to communicate with each other by sharing the same information in a single system. Enterprise Resource Planning thus expand combine effort and interaction between all business units in an organization on this ground (Harrison, 2004). On the conclusion of its betterment, Enterprise Resource Planning has become the determination of business brightness for organizations by giving managers an integrated view of business processes. Enterprise Resource Planning is designed to change to new business challenge easily. The continuous technological progress and the expanding difficult of Enterprise Resource Planning require organization to regularly update their systems. Most Enterprise Resource Planning vendors provide an chance to update procedures and align with perceived best practices to meet changing business needs more quickly

An expressing number of firms have changed Enterprise resource planning at the end, and the cash flow of the Enterprise resource planning market has developed from $17.2 billion in 1998 (O'Leary, 2000) to $39.7 billion in 2011 (Dover, 2012).

B. Challenges of ERP implementation in Business

Even though the ERP's significant progress from the late 1990s to the up-to-date, there are several competitions that companies may confront when performing ERP.

These lacks of success can be elaborate by the fact that ERP implementation forced companies to follow the principle of 'best practices' in most accomplished firms and form suitable related models. (Zornada & Velkavrh, 2005)Consistently to Harlow et al., (2008), "Unlike other known systems, the biggest difficulty of ERP implementation are not technology descriptive issues such as technological complexity, interference, standardization, etc., but mostly [about] organization and human related issues like force to change, organizational custom, decomposition business processes, project tincompetently, top management commitment, etc.". Huang, Chang, Li and Lin (2004) presented the top ten risk factors causing ERP implementation whivh tend to lack of sucess (See Table 1-1 below).

Priority	Name
1	Lack of senior manager commitment
2	Ineffective communications with users
3	Insufficient training of end-users
4	Failure to get user support
5	Lack of effective project management methodology
6	Attempts to build bridges to legacy applications
7	Conflicts between user departments
8	Composition of project team members
9	Failure to redesign business process
10	Misunderstanding of change requirements

Table 1-1. Top ten risk factors of ERP risk (Huang et al., 2004)

These danger factors clarify various organizational considerations: organization fit, signify mix, project management and control, software system plan, user involvement and pattern recognition, and technology formulating.

Until ERP implementation inevitably causes organizational replace, it requires the appointement of senior management from across the organization who is permitted to solve conflicts. Without the in charge of senior management, ERP implementation has a great risk of failure.

In other words, due to changes in business processes across an organization, there can be the capacity of approving the ERP system. ERP connects and completes all business functions within the organization. Therefore, it is criticizing that management staff be exclusive, and particularly that they services employees who are using business functions conducted by ERP with clear procedure of communication. Lack of end- user training expand risk by creating confusion and calibration, thereby reducing user satisfaction and the credibility of the system.

From the foresight of project management, the iron triangle can compare how important it is to aware the three corners of the triangle – scope, schedule and cost. (Lamer, 2002)

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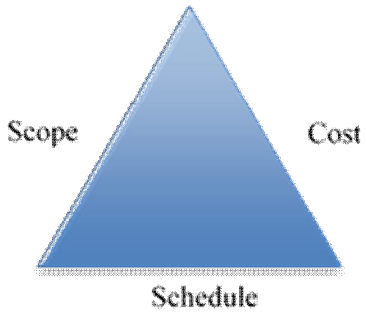

Figure 1-2. The iron triangle of project management (Lamers, 2002)

However, in Enterprise resource planning implementations, both schedule and price incline to be underestimated, while scope is overestimated (Aiken, 2002). Enterprise resource planning changes the entire firm environment by engineering the entire business process; after then implementation, it is not simple to reconsider last processes. so, Enterprise resource planning implementations need correct approximation, preparation with a holistic view, and systematic management of the entire implementation process.

C. ERP in Higher Education Institutions (HEIs)

Despite the difficult task of implementing ERP systems, organizations in the collective sector, which likely operate in more financially competitive environments than those in the non-profit sector, have experient numerous benefits from ERP systems during the last two decades. These outcome have motivated higher education institutions (HEIs) to accrpt ERP systems with the similar goals that popularized corporate sector adoption (Fisher, 2006) such as increasing operational quality and reducing costs.

HEIs have made major investments in ERP implementation to make better institutional business processes (Mehlinger, 2006). consequently, to Abugabah and Sanzogni (2010), HEIs spent more than $5 billion in ERP investment during the last few years. Recently, ERP vendors have expanded their commodity depth to include new commodities in reaction to relatively new groips of potential customer's needs. Examples of such products include student lifecycle manage ment software from ORACLE and SAP.

HEIs have assigned Enterprise resource planning acceptance as a processing of fulfil considerable evolution of their management systems to better handle intensity complex operations (Frantz, 2002). From reduce government funds to increasing seen forward by stakeholders, universities at this moment are under pressure to give best quality educational services for low price. Due to these reasons, Enterprise resource planning systems can be very appealing to HEIs as a potential route to meeting these standards.

Enterprise resource planning use in HEIs forms administrative functions that have been helped by separate legacy systems3 in the past (Zornada & Velkavrh, 2005).

II. ERP BENEFITS IN UNIVERSITY

Different legacy systems were "disparate" and have led to "duplicate resources and services" (Allen & Kern, 2001). ERP gives strength to HEIs to combine disparate data and legacy systems and to take best-of-breed processes and modern technology.

As different departments across an institution share an integrated database, end users can access data in real time. Best-of-breed information technology such as web technologies, mobile phones, and on-line services offer additional benefits not only to the administration within an institution, but also to people who constantly interact with the institution – faculty, students, and staff (Murphy, 2004; Zornada & Velkavrh, 2005).

According to King (2002), the main advantages of ERP in HEIs are (1) improved information access for planning and managing the institution, (2) improved services for the faculty, students and staff, (3) lower business risks, and (4) increased income and decreased expenses due to improved efficiency. Sabau, Munten, Bologa, Bologa and Surcel (2009) provide ERP benefits for universities in terms of business and technical point of views.

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A. The ERP implementation process

In order to greater understand the process of ERP assuming, a number of researchers have developed conceptual ERP life cycle frameworks or process models. Ehie and Madsen (2005) suggested a five-stage ERP implementation process using various reviews of the previous literature: project preparation, business blueprint, realization, final preparation, "Go-Live" and support (See Figure 2-2 below). Project preparation refers to a comprehensive planning phase that forms a project team with leadership roles, sets budget aim, and defines the project intension and plan. In the business blueprint stage, the current business process is unberstand in detail in order to select an suitable Enterprise resource planning system. A project team then is trained on functionality and configuration of the selected Enterprise resource planning system. An understanding of the selected Enterprise resource planning system allows a project team to gain intuition to reengineering its business processes.

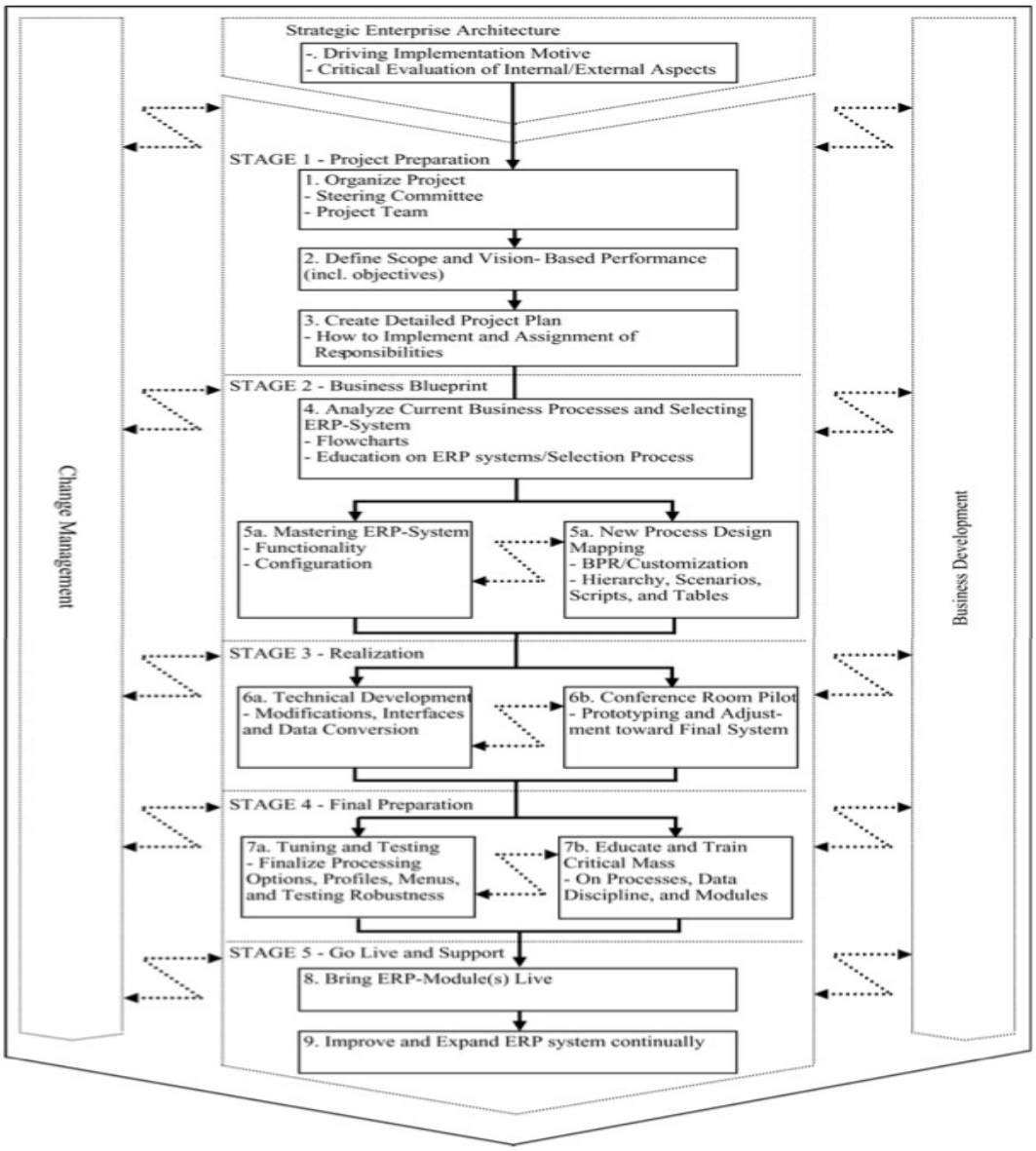

Figure 2-2. Five stage of ERP implementation process (Ehie & Madsen, 2005)

B. Challenges of ERP implementation in University

Heiskanen, Newman and Similä, (2000) suggest that ERP software, which incorporates best practices from the corporate business industry, is not appropriate for universities, since universities have unique structures and decision-making processes.

Organizational culture heavily affects Enterprise resource planning implementation. Tsichritzis (1999) indicates that today's universities have been forced to admit that "education is a business and students are the customers". Enterprise resource planning implementation encourages universities take a more business-like approach to education, resulting in cultural changes, including "the use of managerial language and techniques" (Allen, Kern & Havenhand, 2002). There can be resistance to Enterprise resource planning implementation implementation at universities because it involves not merely the adoption of a new information system, but a holistic change in firms culture.

C. Critical Success Factors for ERP implementation

Rabaa'i (2009) researched previous studies identifying censorious, success factors (CSFs) for Enterprise resource planning implementation. This research presents the top 12 most frequently cited CSFs from previous studies: Top management commitment and support, change management, project management, business process re- engineering and system customization, training, Enterprise resource planning implementation team , constitution, visioning and planning, adviser selection and relationship, communication plan, Enterprise resource planning system selection, Enterprise resource planning systems combine, and post-implementation evaluation measures.

1) *Top management commitment and support:* Successful Enterprise resource planning enactment based on management to arrange for challenges that might be faced (Motwani, Mirchandani, Madan & Gunasekaran, 2002), as well as senior management who are elaborate in the overall master plan of the firm and are not familiar with technical aspects (Yusuf, Gunasekaran & Abthorpe, 2004). Also, top management commitment and support lead to overall organizational commitment across an organization. It results in the successful Enterprise resource planning implementation (Umble & Umble, 2002).
2) *Change management:* Oh, and Madsen (2005) stated that Enterprise resource planning implementation involves more than changing software or hardware systems.
   Ideally, by reengineering business processes, implementation can help an organization to benefit from higher levels of efficiency and improved performance. Therefore, Enterprise resource planning implementation may cause changes that lead to resistance among employees (Glover, Prawitt & Romney, 1999). Consequently, balancing conflicting between staff and technology and effectively managing employees in the change process are key elements for the successful implementation (Ash & Burn, 2003).
3) *Project management:* Effective project management is critical for the successful implementation (Umble, Haft & Umble, 2003; Nah & Delgado, 2006). Bingi, Sharma, and Godla (1999) found that "a lack of proper understanding of the project needs and the inability to provide leadership and guidance to the project" are the main factors when Enterprise resource planning implementation fails. Thus, effective project management should define clear project objectives, develop a work and resource plan, and carefully track the project's progress.
4) *Business Process Re-engineering and system's customization:* There are two approaches to implementing Enterprise resource planning systems in an organization: reengineering business processes and Enterprise resource planning customization (Shehab, Sharp, Supramaniam & Spedding, 2004). Business process reengineering creates deep changes in organizational processes in order to fit them to Enterprise resource planning functions. On the other hand, when an organization wishes to maintain its existing processes using an Enterprise resource planning system, it can customize Enterprise resource planning functions. However, many researches indicate that Enterprise resource planning customization should be avoided or minimized in order to achieve the full of benefits offered by Enterprise resource planning systems (Shanks, Parr, Hu, Corbitt, Thanasankit & Seddon, 2000; Light, 2001; Bajwa, Garcia & Mooney, 2004).
5) *Training:* End user training has been recognized a critical factor for Enterprise resource planning implementation (Bajwa et al., 2004).
   Due to the complexity of the integrated Enterprise resource planning system, end user training is essential for a robust understanding of how the system works and how to use it. Consequently, appropriate end user education and training will maximize benefits and increase user satisfaction.

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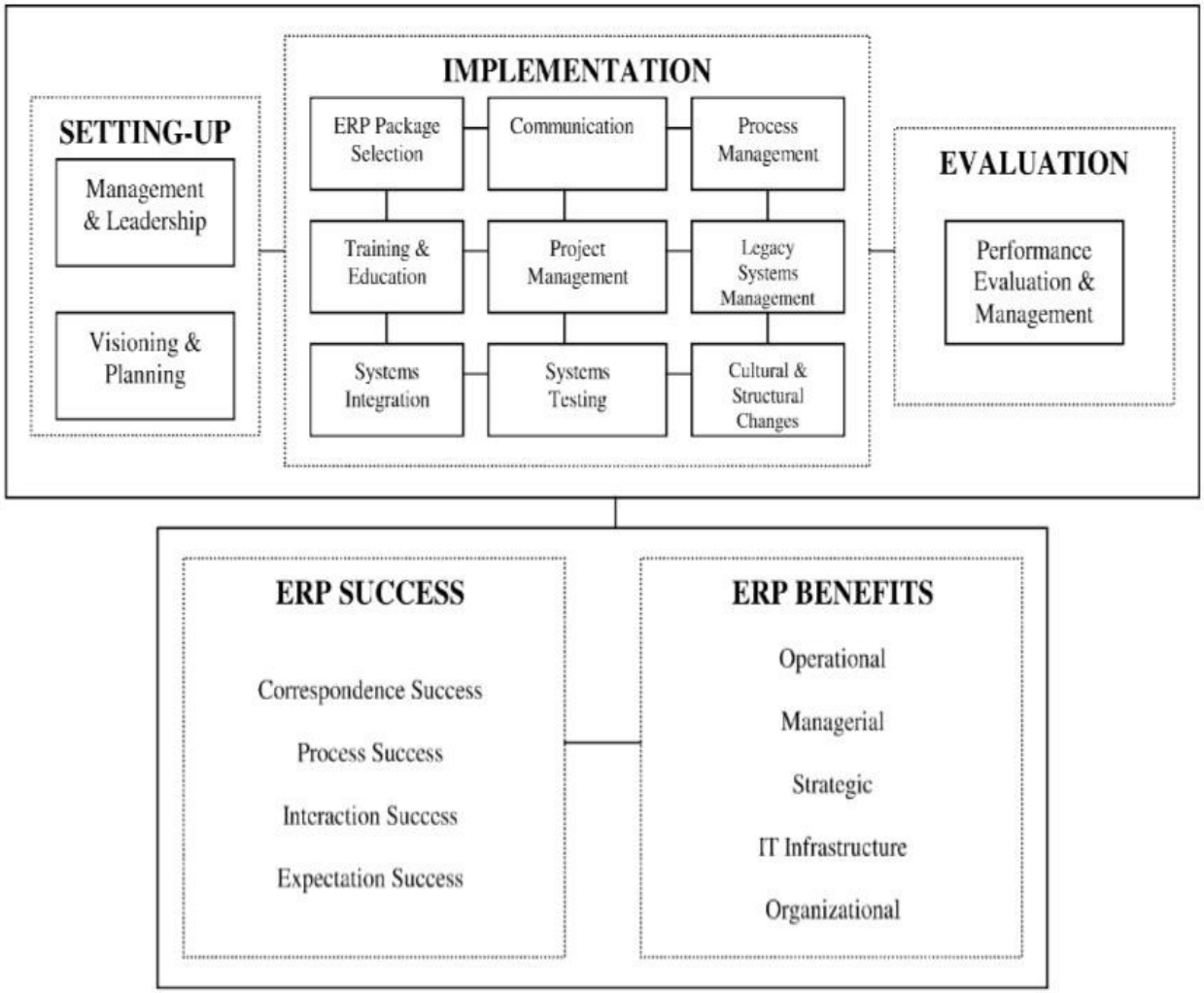

Figure 2-3. Taxonomy for ERP critical factors (Al-Mashari et al., 2003)

6) *Enterprise resource planning team composition:* Since Enterprise resource planning covers diverse functional areas across an organization, Enterprise resource planning team composition is also important for the successful Enterprise resource planning implementation; an Enterprise resource planning project team should consist of representatives from all functional units related to Enterprise resource planning.
7) *Consultant selection and relationship:* Enterprise resource planning consultants play a critical role in Enterprise resource planning implementation. Consultants can be essential knowledge resources for Enterprise resource planning's hardware, software, and personnel. They also can help staff, have responsibility for project management, and audit the project. On the other hand, in order to be successful system maintenance after post-implementation, knowledge transfer from consultants is crucial for the organization.
8) *Communication plan:* Strong communication inside the entire firm during the implementation process increases success for implementation. It allows the firm's stakeholders to understand the aim and the expected benefits of the project as well as to share the progress of the project. An "open information policy" protects the various communication failures for the project. (Al-Mashari, Al-Mudimigh, and Zairi, 2003)

While the critical success factors can lead to success of implementation, they do not guarantee it. Al- Mashari, Al-Mudimigh, and Zairi (2003) state that the delivery of the critical success factors is one major condition to lead to benefits from Enterprise resource planning implementation, and they suggests that IT projects can be considered successful as according to the following terms:

a) Correspondence success, which occurs when there is a match between IT systems and the specific planned objectives.

b) Process success, which occurs when IT project is completed within time and budget.

c) Interaction success, which occurs when users attitudes towards IT are positive.

9) *Expectation success, which occurs when IT systems match user's expectations:* In addition, the taxonomy represented in Figure 2-2 (Al-Mashari et al., 2003) illustrates the interplay between core business strategy aspects in the Enterprise resource planning implementation and explains how the role of IT and associated systems can play in supporting the effective deployment.

III.CONCLUSIONS

Based on the case studies' discovery, several conclusions were make and are given below.

First, both corporate sector firms and universities are pursue the advantages of Enterprise resource planning systems as recognize in the literature, including much simple access to authentic information by combine unlike bequest systems and reengineered business processes. But, the firm in the corporate sector reengineered their business processes simpler than universities. This can be describe that compared to the corporate sector, universities incline to have small importance given the time value of money. Beside, income of universities incline to be straight interconnected to its academic character preferably than an well organied administration. Therefore, universities seldom change their work replica, which may lift risks on their operations, and even embrace new technology less fast than the corporate sector normally does. On the other hand, in a rapidly alter business environment, contestant continuously menace firms in the corporate sector. The firms stand to lose their competitive advantage or lag behind when they move later than their competitors.

Found on the literature analisys, top management carry was one of the most regularly reproduce censorious success element during Enterprise resource planning execution (Al-Sehali, 2000). This conclusion was also supported in both the case studies in this study. Even though both companies changed their real plan for "go-live" schedule during excution, implementation would have create detain or invade cost even more without powerful top management support.

Comapnise Models and culture also highly affected Enterprise resource planning execute. while both organizations dispense, general discontent with more complex Enterprise resource planning systems than await, the ENGCO's stakeholders were pleased with the conclusion to acquire an Enterprise resource planning system to support their firms fast growth. A hierarchical and ceremonial decision-making process in the corporate sector assist the ENGCO to use systematize processes and to finished reengineer processes more than at MIT which was collegial and had autonomy environment. In this sense, change management and adviser link should play more significant roles to implement Enterprise resource planning in university setting (Derrian Jones and Bob Mayville, May 7, 2013). Universities should ready detailed communication plan to share the aim, supposition and limitations of the Enterprise resource planning project throughout organizations. At the same time, adviser who have a deep comprehension of the unique environment should behaviour deferent roles in the project with an suitable leadership – as an auditor, project manager, and knowledge resources from diverse experience.

Overall, both firms felt they did not achieve their expected return on Enterprise resource planning system investment. Full Enterprise resource planning system implementation was much more costly than expected, and the systems also required significant secondary resources and ongoing maintenance efforts.

Through the two case studies presented, this study provides and confirms distinctive challenges in Enterprise resource planning system implementation for the corporate sector and universities. Especially, universities chosen by this study – MIT (the main case study), University of California, San Francisco, and University of Wisconsin- Madison are classified as research universities conducting very high research activities in the Carnegie Classification of Institutions of Higher Education.5 Other universities classified as teaching universities may give us different challenges in implementation. Further research could shift the focus onto what different challenges universities may have in terms of their characteristics, and how to increase the benefits of Enterprise resource planning systems in spite of noted challenges. Acknowledgment

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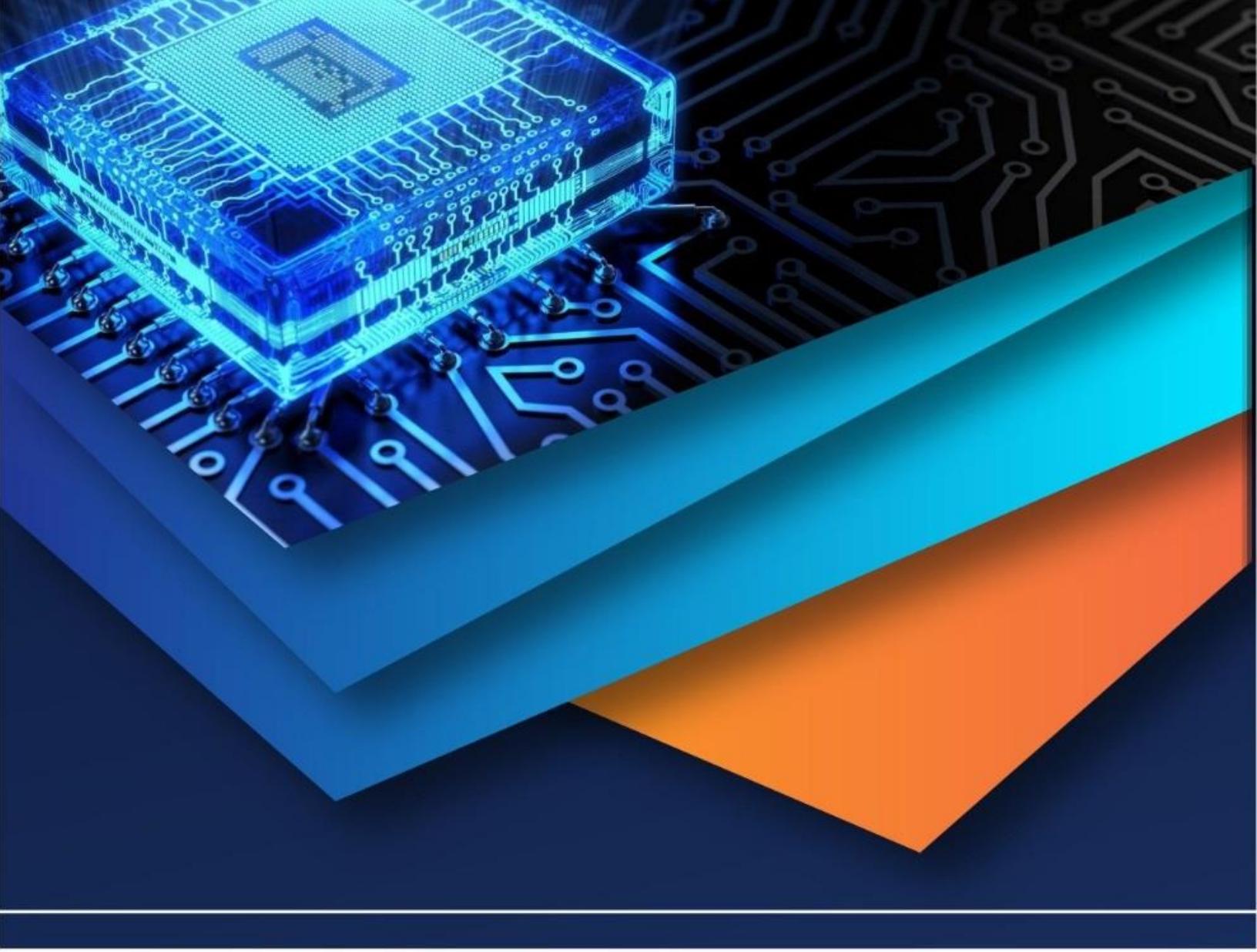

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