

Challenges Faced by ERP Systems in Middle East Region

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Abstract:

This is an era where every one of us is living in a world where data and information processing is a task in every organization. Data and information are integrated in such a way that multiple systems behave a single corporate system to benefit all entities in any organization. Gulf region is embarking to adopt ERP system implementation in all organizations but there are certain challenges involve being a diversified community. This paper highlights these digital challenges and suggests an innovative approach to somehow overcome these challenges that include cybersecurity concerns, cultural and regulatory diversities and integration with the legacy systems. The research paper facilitates the reader with primary research in which a questionnaire is formulated and relevant respondents are asked to validate the possible solutions that might be implemented in organizations to overcome such issues.

Keywords: *Cybersecurity, ERP, Corporate System, System Implementation, System integration*

I. INTRODUCTION

Enterprise Resource Planning (ERP) systems play a pivotal role in modern business operations, integrating various functions across an organization to streamline processes and enhance overall efficiency. In the Middle

East region, the adoption of ERP systems has been growing rapidly in response to the dynamic and competitive business landscape. However, this surge in implementation has brought forth challenges that need careful consideration and strategic solutions. Middle East region has been struggling since long to implement ERP systems properly in different organizations but they are still facing countable challenges in this field. There are multiple directions of issues related to diversity, language barriers, and multicultural environment.

II. BACKGROUND

Enterprise Resource Planning (ERP) systems are integrated software solutions designed to streamline and manage an organization's core business processes in real-time. Originating in the 1960s, ERP systems have evolved from simple inventory management tools to comprehensive suites encompassing finance, human resources, supply chain, and customer relationship management [1]. ERP systems eliminate data silos by centralizing information, enabling seamless communication across departments. This integration enhances decision-making, resource allocation, and overall operational efficiency. ERP adoption surged in the late 20th century as businesses sought to improve competitiveness. Today, ERP systems continue to transform industries, offering scalability, flexibility, and data-driven insights crucial for navigating the complexities of the modern business landscape [2].

III. PROBLEM STATEMENT

Despite the increasing uptake of ERP systems in the Middle East, organizations encounter several challenges that hinder the seamless integration and optimal utilization of these systems. These challenges are:

A. Cultural and Regulatory Diversities

The Middle East region is characterized by a diverse cultural and regulatory landscape, with each country having unique business practices and legal requirements. This diversity poses a significant challenge for the standardization of ERP systems, leading to difficulties in compliance and adaptability across different jurisdictions.

B. Integration with Legacy Systems

Many organizations in the Middle East still rely on legacy systems, and the integration of these systems with modern ERP solutions is often complex and resource-intensive. The coexistence of outdated technologies and new ERP systems poses a hindrance to achieving a cohesive and efficient information management framework.

C. Security Concerns

With the rising frequency and sophistication of cyber threats, security concerns surrounding ERP systems are becoming more pronounced. The Middle East, being a geopolitical hotspot, faces increased risks of cyberattacks, making it imperative for organizations to bolster the security of their ERP implementations.

IV. OBJECTIVES

To address the aforementioned challenges and ensure the successful implementation and utilization of ERP systems in the Middle East, the following objectives are identified:

A. Cultural Adaptability

Develop strategies and tools within ERP systems that enhance cultural and regulatory adaptability, ensuring compliance with diverse business practices and legal requirements across the Middle East region.

B. Seamless Integration Solutions

Facilitate the integration of ERP systems with existing legacy systems by providing robust and scalable solutions. This includes developing middleware, data

migration tools, and comprehensive training programs to ease the transition and promote interoperability.

C. Enhanced Cybersecurity Measures

Implement advanced cybersecurity measures within ERP systems, tailored to the unique security challenges faced in the Middle East. This involves continuous monitoring, threat intelligence integration, and the development of secure-by-design features to safeguard sensitive business information.

V. LITERATURE REVIEW

Enterprise Resource Planning (ERP) systems have become integral tools for managing business processes and resources globally. In the Gulf Region, comprising countries such as Saudi Arabia, the United Arab Emirates, Qatar, Bahrain, Oman, and Kuwait, the adoption and impact of ERP systems have garnered significant attention. This literature review aims to provide a comprehensive overview of the current state of ERP systems in the Gulf Region, examining their evolution, key features, benefits, challenges, and future trends [3].

A. ERP Systems Evolution

The Gulf Region has witnessed a gradual evolution in the adoption of ERP systems. Historically, organizations in the region have recognized the need for integrated solutions to streamline their operations. The early 2000s saw a surge in ERP implementation, driven by the booming oil and gas industry and the diversification of economies. The adoption trend has continued, with a notable shift towards cloud-based ERP solutions in recent years [4].

B. Key Features (GULF Based Systems)

Customization and localization are crucial considerations for ERP implementation in the Gulf Region. The diverse business landscape, encompassing industries such as oil and gas, construction, and finance, demands ERP systems that can adapt to specific requirements. Vendors offering industry-specific ERP modules have gained prominence, catering to the unique needs of organizations in the Gulf [5].

Cloud-based ERP solutions have gained traction due to their flexibility and scalability. Organizations in the Gulf Region are increasingly recognizing the advantages of cloud deployment, allowing for remote access, cost-effectiveness, and seamless updates. This shift reflects a broader global trend but is particularly pertinent in the Gulf, where connectivity and accessibility are paramount [6].

C. Benefits and Challenges of ERP Systems

ERP systems offer a range of benefits, including enhanced operational efficiency, improved decision-making processes, and streamlined communication across departments. In the Gulf Region, where competition is fierce and market dynamics are rapidly changing, these benefits are crucial for maintaining a competitive edge [7].

However, the implementation of ERP systems is not without challenges. Cultural factors play a significant role, with organizational hierarchies and communication styles influencing the acceptance and integration of ERP solutions. Additionally, the complexity of business processes and the need for extensive customization pose challenges, often leading to delays and cost overruns in implementation projects [8].

D. Cultural and Regulatory Influences on ERP Adoption

The Gulf Region's business environment is shaped by unique cultural considerations and regulatory frameworks. Understanding and navigating these factors are imperative for successful ERP adoption. Organizations must align ERP implementations with local business practices and adhere to regulatory requirements, making customization a critical aspect of ERP projects in the Gulf [9].

Government initiatives and support further impact ERP adoption. Several Gulf countries have implemented digital transformation agendas, encouraging businesses to embrace technology for increased efficiency and competitiveness. Such initiatives provide a conducive environment for ERP implementation, with financial incentives and regulatory support facilitating the integration of these systems [10].

E. Case Studies and Best Practices

Examining case studies of ERP implementations in the Gulf Region provides valuable insights into both successful and failed projects. Successful cases often highlight meticulous planning, stakeholder involvement, and a phased approach to implementation. On the contrary, failures underscore the importance of addressing cultural barriers, ensuring sufficient training, and managing expectations [11].

Best practices for ERP success in the Gulf Region include a thorough needs assessment, strong project management, and a focus on change management. Organizations that invest in comprehensive training programs and provide ongoing support to users tend to experience smoother ERP implementations [12].

F. Innovations and Future Trends

Looking ahead, several trends and innovations are expected to shape the future of ERP systems in the Gulf Region. The integration of artificial intelligence and machine learning into ERP solutions is anticipated to enhance automation, predictive analytics, and decision support. Moreover, the continued evolution of Industry 4.0 concepts, such as the Internet of Things (IoT) and blockchain, is likely to influence ERP functionalities, enabling organizations in the Gulf to further optimize their operations [13].

G. Research Gaps Further Exploration

While significant strides have been made in understanding ERP systems in the Gulf Region, there are still notable research gaps. Current literature often lacks in-depth analyses of the cultural nuances influencing ERP adoption and the specific challenges faced by industries such as healthcare and logistics. Future research could delve into these areas, providing a more nuanced understanding of the dynamics surrounding ERP systems in the Gulf [14].

VI. RESEARCH METHODOLOGY

Quantitative research involves the collection and analysis of numerical data to understand patterns, relationships, and trends in a population. Surveys, which are a common form of quantitative research, use structured questionnaires to gather data from a sample of participants. The responses are typically quantifiable, allowing researchers to analyze the data

statistically. Our primary research involves ten number of respondents working in organizations where EPR system is implemented and they are currently working on it. Our survey questionnaire is aligned with the research questions that include cultural diversity, legacy systems' integration and security concerns.

VII. SURVEY QUESTIONNAIRE

1. Cultural Diversity influences negatively on successful implementation of ERP systems.
 - a. Strongly Agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly Disagree
2. Integration capabilities of currently running ERP systems with legacy systems are sufficient and applicable.
 - a. Strongly Agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly Disagree
3. cultural awareness are essential components in ensuring effective utilization of ERP systems in a culturally diverse workplace.
 - a. Strongly Agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly Disagree
4. The security and data integrity issues are sufficiently handled in currently developed ERP systems.
 - a. Strongly Agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly Disagree
5. organization address the cultural and security aspects when implementing or upgrading ERP systems
 - a. Strongly Agree
 - b. Agree
 - c. Neutral
 - d. Disagree
 - e. Strongly Disagree

VIII. OUTCOMES

Following table shows the outcomes of respondents for the survey questionnaire. The respondents are chosen from different organizations working on ERP systems to answer the questionnaire. The questionnaire is measure on Likert scale for data analysis.

Table 1: Data Collection (Likert Scale)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Q1	2	6	0	1	1
Q2	2	2	1	3	2
Q3	4	2	0	2	2
Q4	4	3	1	1	1
Q5	3	3	1	2	1

Above table displays the data for the questions answered.

IX. ANALYSIS AND DISCUSSION

There are number of respondents who believe that cultural diversity negatively effects on implementation of EPR system. This might be because language issues, understanding people's behavior and the way policies and procedures are defined.

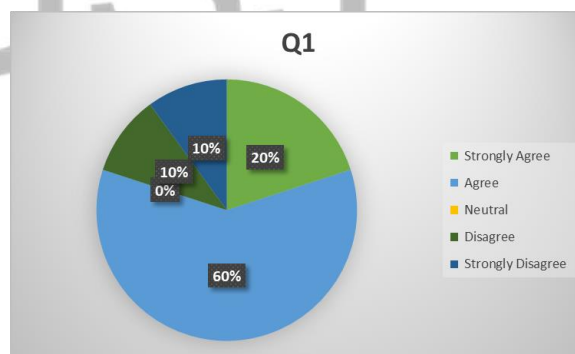


Figure 1

Second question's response justifies that it is hard process to integrate previous systems with new system and data migration is always a big issue. However, being an economically strong region, manual data migration is adopted. But still, new systems are hard to accommodate data import possibilities.

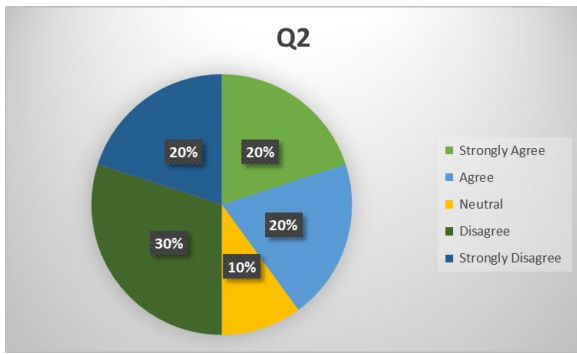


Figure 2

In response to third question, it is found that there are a smaller number of people who believe that cultural awareness is one of the requirements to implement ERP system properly. It might be because systems don't need to users to be aware of cultural awareness but to know the local legislation.

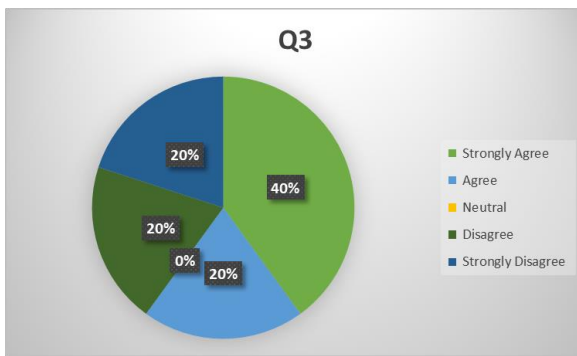


Figure 3

Gulf countries have spent enough funds to maintain the security and integrity of implemented systems because data and information is the main thing for all organizations working here. However, it is highly dangerous to keep the data centralized and organizations should adopt scalable and distributed systems to avoid security issues.

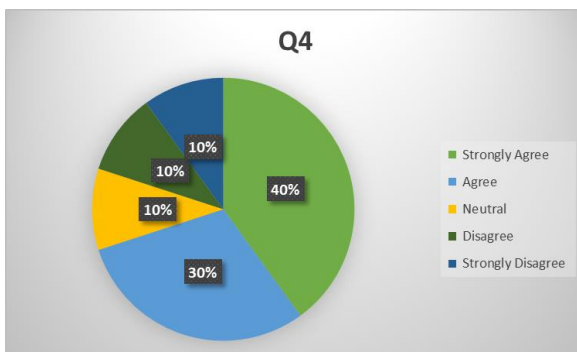


Figure 4

Respondents of the last questions justify that this is an important point to take care of cultural and security issues while implementing any systems. Factors

including language issues, intruders' attacks and transformation of legacy systems into new systems.

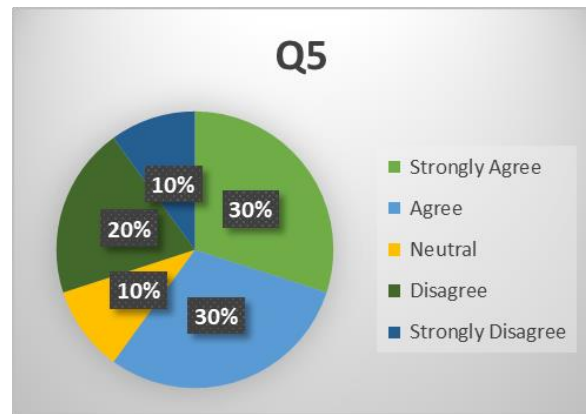


Figure 5

X. SUMMARY

This research paper provides a deep insight of understanding challenges and issues of implementing the ERP systems in Gulf region. There are multiple factors involve that organizations face such challenges and these factors are cultural and regulatory diversities and cybersecurity and maintainability issues. There are organizations suffering to maintain and appropriate data integration policy for transferring data from legacy systems to newly developed system. System upgrading from many different systems is also not found easy. This paper suggests suitable procedures to overcome these issues somehow.

XI. CONCLUSION AND RECOMMENDATIONS

ERP systems' implementation in the Gulf region requires some improvements and innovations in policies and procedures so that implementation of ERP systems should be easy, validate and smooth for every organization. Being a place for diversified business processes, it is required to adopt diversified business processes so that easy implementation and data migration should be possible. Organizations' regulatory authorities should review and validate the data transformation process easy, convenient and approachable to all in such a way that every entity should be valuable and relevant.

REFERENCES

- [1] M. Shakir, "ERP trends, opportunities, and challenges: A focus on the Gulf region in the Middle East," *Enterp. Inf. Syst. Concepts*,

- Methodol. Tools Appl.*, pp. 1797–1815, 2011.
- [2] M. M. Nkasu, “Investigation of the effects of critical success factors on enterprise resource planning (ERP) systems implementation in the United Arab Emirates,” in *Smart Intelligent Computing and Applications: Proceedings of the Third International Conference on Smart Computing and Informatics, Volume 1*, Springer, 2020, pp. 611–623.
- [3] S. Mouakket, “Investigating the utilisation of ERP systems in the UAE,” *Int. J. Internet Enterp. Manag.*, vol. 8, no. 1, pp. 46–65, 2012.
- [4] U. M. Al-Turki, “An exploratory study of ERP implementation in Saudi Arabia,” *Prod. Plan. Control*, vol. 22, no. 4, pp. 403–413, 2011.
- [5] F. Albataineh, “ERP Implementation in Kuwait O&G: Issues, Problems, and Concerns,” in *Cases on Enterprise Information Systems and Implementation Stages: Learning from the Gulf Region*, IGI Global, 2013, pp. 1–26.
- [6] M. Abu Ghazaleh, S. Abdallah, and A. Zabadi, “Promoting successful ERP post-implementation: a case study,” *J. Syst. Inf. Technol.*, vol. 21, no. 3, pp. 325–346, 2019.
- [7] A. I. ALdayel, M. S. Aldayel, and A. S. Al-Mudimigh, “The critical success factors of ERP implementation in higher education in Saudi Arabia: A case study,” *J. Inf. Technol. Econ. Dev.*, vol. 2, no. 2, 2011.
- [8] F. Albadri, “ERP Upgrade vs. ERP Replacement: The Case of Gulf Telecom,” in *Cases on Enterprise Information Systems and Implementation Stages: Learning from the Gulf Region*, IGI Global, 2013, pp. 84–109.
- [9] A. Fayez, “The Selection and Deployment of System in Gulf Private School: Issues, Challenges, and Lessons Learnt,” in *Cases on Enterprise Information Systems and Implementation Stages: Learning from the Gulf Region*, IGI Global, 2013, pp. 128–143.
- [10] A. O. Ahmad, S.-F. Fam, S. I. Wahjono, and F. N. M. Nusa, “TQM practices and ERP system to enhance the UAE DP world innovative work behavior through innovation culture: A review,” *Qual. to Success*, vol. 24, no. 194, 2023.
- [11] A. H. Al-Badi and A. Khan, “Enterprise Resource Planning Systems Development in Omani Higher Education Institutions from the Perspectives of Software Project Managers and Developers,” *J. Business, Commun. Technol.*, vol. 1, no. 1, pp. 14–23, 2022.
- [12] A. Shajrawi and F. Aburub, “Impact of ERP usage on service differentiation: role of mediating effect of organizational agility,” *Arab Gulf J. Sci. Res.*, vol. 41, no. 3, pp. 359–375, 2023.
- [13] A. Elragal and M. Haddara, “The Future of ERP Systems: look backward before moving forward,” *Procedia Technol.*, vol. 5, pp. 21–30, 2012.
- [14] F. Mahmood, A. Z. Khan, and R. H. Bokhari, “ERP issues and challenges: a research synthesis,” *Kybernetes*, vol. 49, no. 3, pp. 629–659, 2020.