Determinants of ERP System Success and Their Effects on Organizational Performance in Egyptian Tourism Organizations

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Abstract :

This study investigates the influence of critical factors—top management support, effective communication, training, and IT infrastructure—on Enterprise Resource Planning (ERP) systems and their subsequent impact on organizational performance. The research is situated within the Egyptian tourism sector, focusing on organizations that own and manage hotels, where ERP adoption has gained strategic importance. A survey-based methodology was employed, supported by an exploratory phase involving interviews with managers, IT professionals, and ERP users. Data were collected from 247 valid responses across tourism organizations in Greater Cairo and analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM). The findings demonstrate that top management support, training, and

IT infrastructure exert significant positive effects on ERP systems, which in turn enhance organizational performance. However, effective communication did not exhibit a statistically significant influence. The paper contributes to theoretical debates by extending critical success factor (CSF) frameworks into the service-intensive tourism sector, and offers practical guidance for managers and policymakers in aligning ERP adoption with Egypt's Vision 2030 goals.

Keywords: Enterprise Resource Planning, Organizational Performance, Top Management Support, Communication, Training, IT Infrastructure, Tourism Sector, Egypt

مستخلص:

تهدف هذه الدراسة إلى بحث أثر العوامل الحاسمة ـ دعم الإدارة العليا، فاعلية الاتصال، التدريب، والبنية التحتية لتكنولوجيا المعلومات ـ على أنظمة تخطيط موارد المؤسسة(ERP) ، وانعكاس ذلك على الأداء التنظيمي. وقد جرى تنفيذ البحث في إطار قطاع السياحة المصري، مع التركيز على المنظمات المالكة والمديرة للفنادق، حيث أصبح تبنّي أنظمة ERP ذا أهمية استراتيجية متزايدة. اعتمدت الدراسة على منهجية قائمة على المسح الميداني، مدعومة بمرحلة استكشافية شملت مقابلات مع مدراء، ومتخصصين في تكنولوجيا المعلومات، ومستخدمي أنظمة .ERP وقد تم جمع البيانات من (٢٤٧) استجابة صالحة من منظمات سياحية في القاهرة الكبرى، وتحليلها باستخدام أسلوب نمذجة المعادلات البنائية بالحد الأدنى للمربعات الجزئية (PLS-SEM). أظهرت النتائج أن دعم الإدارة العليا، والتدريب، والبنية التحتية لتكنولوجيا المعلومات لها تأثيرات إيجابية جوهرية على أنظمةERP ، والتي بدورها تسهم في تحسين الأداء التنظيمي. في المقابل، لم يثبت أن الاتصال الفعّال يُحدث أثراً

ذا دلالة إحصائية. تسهم هذه الورقة في إثراء النقاشات النظرية من خلال توسيع إطار العوامل الحرجة للنجاح (CSFs) ليشمل قطاع السياحة كثيف الخدمات، كما تقدّم توجيهات عملية للمديرين وصنّاع القرار في سبيل مواءمة تبنّي أنظمة ERP مع مستهدفات "رؤية مصر ٢٠٣٠."

الكلمات المفتاحية :تخطيط موارد المؤسسة(ERP) ، الأداء التنظيمي، دعم الإدارة العليا، الاتصال، التدريب، البنية التحتية لتكنولوجيا المعلومات، قطاع السياحة، مصر.

1. Introduction

1.1 Background

The tourism and hospitality sector has become a cornerstone of global economic growth, fostering cultural exchange, job creation, and service innovation. In Egypt, this industry plays a pivotal role in national development and is considered central to the country's long-term competitiveness. Organizations operating in this sector, particularly those owning and managing hotels, face mounting challenges including operational complexity, rising customer expectations, and financial sustainability pressures.

To address these challenges, many organizations have turned to Enterprise Resource Planning (ERP) systems. ERP solutions integrate business functions such as reservations, finance, procurement, human resources, and customer service into a unified platform. Successful ERP implementation improves

decision-making, reduces redundancies, and enhances service delivery. Nonetheless, ERP adoption remains complex, often requiring both organizational and technological alignment.

Prior research suggests that four factors are particularly influential: top management support, effective communication, training, and IT infrastructure. Top management provides strategic oversight and resource allocation; communication fosters alignment and reduces resistance to change; training equips users with necessary competencies; and IT infrastructure ensures technical feasibility and long-term sustainability.

1.2 Research Problem and Gap

Despite extensive research on ERP in manufacturing and IT-intensive sectors, studies in the tourism and hospitality industry remain limited. Hotel-owning organizations present unique operational characteristics, such as service orientation, seasonal fluctuations, and reliance on customer experience, that differentiate them from industrial settings. Moreover, while many tourism organizations in Egypt have implemented ERP systems, failures and underperformance remain frequent, often linked to weak support mechanisms and limited understanding of sector-specific success factors.

This study addresses the following research problem:

"What are the critical factors influencing ERP system success, and how do they affect organizational performance in hotel-owning tourism organizations in Egypt?"

1.3 Objectives

The study pursues the following objectives:

- To assess the effect of top management support on ERP success.
- To evaluate the role of effective communication in ERP implementation.
- To examine the influence of training on ERP system functionality.
- To analyze the importance of IT infrastructure in supporting ERP systems.
- To investigate the impact of ERP systems on organizational performance.

1.4 Research Questions

1. How does top management support affect ERP implementation?
2. To what extent does communication influence ERP system success?
3. What role does training play in ERP adoption?
4. How does IT infrastructure shape ERP effectiveness?

5. What is the overall impact of ERP on organizational performance?

1.5 Significance

Theoretically, this research extends the resource-based view (RBV) and technology adoption frameworks by situating ERP success factors in a service-oriented sector. Empirically, it provides context-specific evidence from Egyptian tourism organizations, an under-researched setting. Practically, the findings inform policymakers, IT consultants, and hotel managers in aligning ERP strategies with Egypt's Vision 2030 agenda, which emphasizes digital transformation, efficiency, and competitiveness in tourism.

2. Literature Review and Hypotheses Development

2.1 Theoretical Background

2.1.1 Evolution of ERP

ERP systems have undergone significant evolution over six decades. Initial developments in the 1960s centered on inventory control. By the 1970s, Material Requirements Planning (MRP) systems enabled organizations to manage procurement and scheduling. The 1980s introduced Manufacturing Resource Planning (MRP II), integrating production with finance and HR functions. In the 1990s, ERP emerged as a comprehensive solution, integrating multiple functions into a centralized

database. The 2000s witnessed vendor consolidation and the expansion of cloud-based ERP platforms. Today, ERP systems increasingly focus on sustainability (S-ERP), supporting organizational goals aligned with global sustainability agendas.

2.1.2 Definitions of ERP

ERP is widely defined as a modular, configurable, and integrated software platform that streamlines business processes across functional domains through shared data and standardized practices (Estébanez, 2021). Other scholars highlight ERP's ability to unify core processes, automate workflows, and enhance data visibility (Bahssas, 2018; Li, 2024). For this study, ERP is understood as an integrated system that consolidates financial, operational, and administrative processes, serving as both a technical and strategic tool.

2.1.3 Components and Characteristics

ERP systems typically comprise modules such as finance, human resources, supply chain management, sales, and project management, all connected through a centralized database. Their characteristics include modularity, adaptability, integration, and scalability. By unifying processes, ERP reduces data redundancy and fosters real-time decision-making. Modern ERP systems also support cloud hosting, customization, and industry-specific

adaptations, making them highly versatile for diverse organizational settings.

2.1.4 ERP Usage: Benefits and Limitations

ERP systems offer numerous benefits, including operational efficiency, improved decision-making, cost reduction, and enhanced customer service. They also provide strategic benefits by enabling global integration and supporting innovation. However, ERP implementation is costly, complex, and often met with resistance. Customization challenges and vendor lock-in are also common drawbacks. Thus, ERP's success depends on aligning technical capabilities with organizational culture, resources, and leadership.

2.2 Critical Success Factors

2.2.1 Top Management Support

Scholars consistently rank top management support as the most critical determinant of ERP success (Lin, 2021; Mahmood et al., 2019). Leaders allocate resources, resolve conflicts, and set strategic priorities. Sustained managerial involvement fosters user buy-in and reduces resistance to change (Aremu et al., 2021). Hence:

H1: Top management support has a significant positive impact on ERP systems.

2.2.2 Effective Communication

Communication ensures project transparency, fosters collaboration, and reduces misunderstandings during ERP implementation (AlShamsi et al., 2022; Nofal & Yusof, 2016). However, evidence on its impact is mixed. While some studies highlight strong positive effects, others note limited influence on performance outcomes (Misra et al., 2016). Therefore: **H2: Effective communication has a significant positive impact on ERP systems.**

2.2.3 Training

ERP systems are complex, and inadequate training is a frequent cause of failure (Lee & Chang, 2021). Effective training improves user confidence, reduces resistance, and ensures accurate system utilization (Guimaraes et al., 2015). Ongoing training further supports long-term system adaptation. Thus: **H3: Training has a significant positive impact on ERP systems.**

2.2.4 IT Infrastructure

Robust IT infrastructure underpins ERP success by providing necessary hardware, networks, and security systems (Loon et al., 2017; Paoki et al., 2021). Infrastructure scalability ensures

continuity, data integrity, and adaptability to future upgrades. Therefore:

H4: IT infrastructure has a significant positive impact on ERP systems.

2.2.5 ERP and Organizational Performance

ERP systems enhance performance by streamlining processes, enabling real-time decision-making, and supporting customer service (Ruivo, 2014; Qureshi & Abdulkhalaq, 2015). Nonetheless, poor planning and inadequate training can undermine these benefits. The prevailing view supports a positive ERP–performance relationship. Hence:

H5: ERP systems have a significant positive impact on organizational performance.

3. Methodology

3.1 Research Design

This study employed a quantitative, cross-sectional design, supported by an exploratory qualitative phase. The exploratory stage, conducted through interviews with managers, IT specialists, and ERP users, helped refine the variables and contextualize the research within Egyptian tourism organizations. The main study adopted a survey-based approach, consistent with prior ERP research, to test hypothesized relationships empirically.

3.2 Research Model

Based on the literature review, a conceptual model was developed linking four independent variables—top management support, effective communication, training, and IT infrastructure—to ERP system success, which in turn influences organizational performance. Structural Equation Modeling (SEM) using the Partial Least Squares (PLS-SEM) technique was chosen for hypothesis testing, as it accommodates complex models and smaller sample sizes while focusing on prediction.

3.3 Population and Sampling

The study targeted employees working with ERP systems in Egyptian tourism organizations that own and operate hotels. Due to the absence of an official population frame, non-probability judgmental sampling was adopted, supplemented by snowballing to reach qualified respondents. A total of 300 online questionnaires were distributed; 247 valid responses were obtained, yielding a high response rate of 83.3%. Participants represented diverse organizational levels, including top management, IT staff, and operational employees.

3.4 Data Collection and Measures

Data were collected using a structured questionnaire, consisting of two main parts: demographic information and scale items measuring the constructs of interest. All constructs were adapted

from validated scales in previous ERP studies and measured using a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

- **Top Management Support (TMS):** Adapted from Haleem et al. (2020), covering leadership commitment, resource allocation, and strategic oversight.
- **Effective Communication (EC):** Items measured clarity, frequency, and cross-departmental collaboration during ERP projects (AlShamsi et al., 2022).
- **Training (TR):** Questions assessed adequacy, relevance, and continuity of training programs (Ruivo et al., 2014; Lee & Chang, 2021).
- **IT Infrastructure (IT):** Indicators included hardware adequacy, network reliability, and security mechanisms (Loon et al., 2017).
- **ERP System Success:** Items measured system integration, data reliability, and user satisfaction (Davenport, 1998; Ruivo, 2014).
- **Organizational Performance (OP):** Operational efficiency, service quality, and financial improvements served as indicators (Haleem et al., 2020).

The questionnaire was reviewed by experts for content validity and pre-tested with a small group of ERP users to ensure clarity.

3.5 Data Analysis Techniques

Data were analyzed using SPSS and SmartPLS software. Preliminary analysis included descriptive statistics, normality testing, and outlier detection. Harman's single-factor test was used to examine common method bias. The main analysis involved two stages: (1) evaluating the measurement model for reliability and validity, and (2) assessing the structural model to test hypotheses. Additional independent sample t-tests were performed to examine differences across job positions.

4. Results

4.1 Descriptive Analysis

The sample consisted of 247 valid respondents. The demographic breakdown revealed that participants represented both public and private hotel-owning tourism organizations. Respondents included executives, IT managers, and end-users, ensuring perspectives from multiple organizational levels. The majority had more than three years of ERP experience, indicating substantial familiarity with the systems under study.

4.2 Measurement Model Assessment

4.2.1 Reliability and Convergent Validity

All constructs demonstrated strong internal consistency. Cronbach's alpha and composite reliability values exceeded the threshold of 0.70, confirming reliability. Convergent validity was supported as all Average Variance Extracted (AVE) values surpassed 0.50. Factor loadings were above 0.70 after refinement, ensuring item relevance.

4.2.2 Discriminant Validity

As shown in table 4.1 , and table 4.2 both the Fornell–Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio confirmed discriminant validity. Each construct was empirically distinct, ensuring that the model measured unique dimensions of ERP success.

Item/Variable	EC	ERP	IT	OP	TMS	TR
EC	0.843					
ERP	0.504	0.846				
IT	0.508	0.665	0.783			
OP	0.431	0.644	0.613	0.865		
TMS	0.614	0.601	0.527	0.457	0.802	
TR	0.642	0.703	0.637	0.636	0.587	0.799

Table 4.1 *Discriminant Validity Using the Fornell–Larcker Criterion*

Table 4.2 *Discriminant Validity Using Heterotrait–Monotrait Ratio (HTMT)*

Item/Variable	EC	ERP	IT	OP	TMS	TR
EC						
ERP	0.622					
IT	0.634	0.804				
OP	0.504	0.757	0.733			
TMS	0.758	0.738	0.668	0.534		
TR	0.771	0.841	0.778	0.717	0.701	

4.3 Structural Model Assessment

4.3.1 Hypotheses Testing

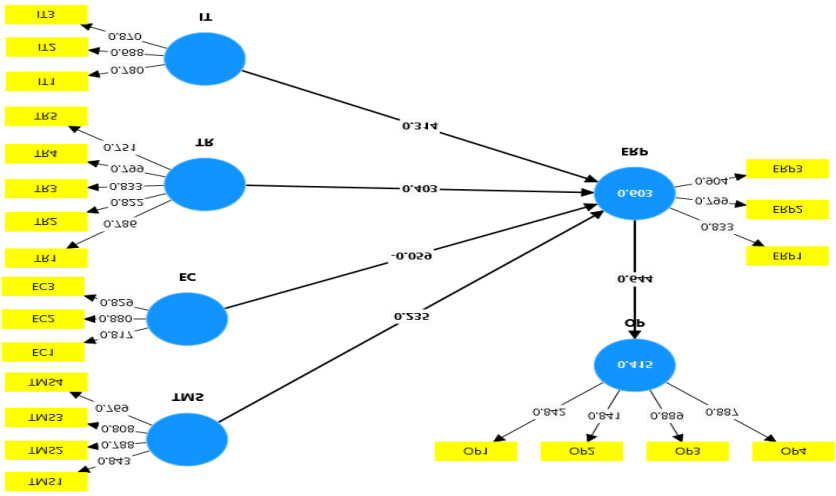

Figure 4.1The Structural Model

Source: Statistical analysis results according to Smart PLS result

Path coefficients and significance levels were estimated through bootstrapping (5,000 resamples).

- **H1 (Top Management Support → ERP):** Supported. TMS exerted a strong, significant positive effect on ERP success.
- **H2 (Effective Communication → ERP):** Not supported. Communication showed a positive but statistically insignificant relationship.
- **H3 (Training → ERP):** Supported. Training had a significant positive impact on ERP implementation.
- **H4 (IT Infrastructure → ERP):** Supported. IT infrastructure was a strong predictor of ERP system success.
- **H5 (ERP → Organizational Performance):** Supported. ERP success significantly enhanced organizational performance.

4.3.2 Model Fit and Predictive Power

The coefficient of determination (R^2) for ERP success indicated substantial explanatory power. ERP success explained a significant portion of variance in organizational performance, confirming the model's predictive validity.

Table 4.3 Coefficient of Determination for the Dependent Variables

Variable	(R^2)	Adjusted R^2	Interpretive Power
ERP	0.603	0.597	Moderate
OP	0.415	0.412	Moderate

Source: Statistical analysis results

As shown in Table 4.3, the R^2 and adjusted R^2 values for both ERP and organizational performance (OP) are statistically acceptable, indicating moderate explanatory power. Specifically, the R^2 value for ERP is 0.603, meaning that the four factors account for approximately 60.3% of the variance in ERP system implementation. The R^2 value for OP is 0.415, meaning the proposed model explains 41.5% of the variance in organizational performance

4.4 Additional Analysis: T-Tests

Independent sample t-tests were conducted to examine differences across job levels (e.g., managers vs. non-managers). Results revealed variations in perceptions of top management support and training, with managers rating these factors higher than non-managerial employees. However, differences in perceptions of IT infrastructure and ERP success were less pronounced.

5. Discussion

This study set out to examine the impact of critical success factors—top management support, effective communication, training, and IT infrastructure—on ERP systems and their subsequent effect on organizational performance in Egyptian tourism organizations that own hotels. The findings highlight several important insights, both theoretical and practical.

5.1 Interpretation of Findings

First, **top management support** emerged as a decisive factor in ERP success. This aligns with prior studies (Lin, 2021; Mahmood et al., 2019), underscoring that strong leadership provides vision, allocates resources, and reduces resistance to change. Within the Egyptian tourism context, managerial commitment was particularly vital, given the sector's high sensitivity to economic and political fluctuations.

Second, contrary to expectations, **effective communication** did not exert a significant influence on ERP systems. While earlier studies emphasized communication as essential (AlShamsi et al., 2022; Nofal & Yusof, 2016), this study suggests that communication alone may not suffice in service-intensive industries such as tourism. It is possible that communication must be coupled with trust, cultural adaptation, and strong leadership to yield tangible outcomes.

Third, **training** was confirmed as a major determinant of ERP success. Adequate training equips users with technical and procedural knowledge, reducing stress and resistance, thereby enhancing adoption. This echoes findings by Ruivo et al. (2014) and Guimaraes et al. (2015). In practice, Egyptian tourism organizations with structured training programs experienced higher ERP acceptance rates.

Fourth, **IT infrastructure** demonstrated a strong positive relationship with ERP success. Modern ERP systems require reliable networks, secure databases, and scalable architecture (Loon et al., 2017). Inadequate infrastructure could undermine the benefits of ERP adoption. The Egyptian context—where infrastructure investments vary widely between public and private organizations—highlighted the centrality of this factor.

Finally, the results confirmed that **ERP systems positively affect organizational performance**. Improved efficiency, better resource allocation, and enhanced service quality were among the reported benefits. This aligns with earlier works (Ruivo, 2014; Haleem et al., 2020), confirming ERP as a strategic enabler of competitiveness when effectively implemented.

5.2 Theoretical Contributions

The study extends ERP research into the tourism and hospitality industry, a sector underrepresented in ERP literature. By applying

the resource-based view (RBV), it highlights how organizational resources such as leadership, training, and IT infrastructure, when aligned with ERP capabilities, enhance performance. Moreover, the study refines the critical success factors framework, demonstrating that communication, though widely cited, may not always exert direct significance across contexts.

5.3 Managerial Implications

For managers in hotel-owning tourism organizations, the results suggest:

- **Leadership involvement is indispensable**: ERP initiatives should be visibly championed by top management.
- **Investment in training yields long-term gains**: Continuous, tailored training programs build user confidence and maximize system utilization.
- **Robust IT infrastructure is non-negotiable**: Hardware, networks, and security protocols must be prioritized.
- **Communication requires depth, not just frequency**: Beyond information sharing, communication should build trust and align cultural values with ERP goals.

6. Conclusion

This study provides empirical evidence that ERP system success in Egyptian tourism organizations is primarily driven by top

management support, training, and IT infrastructure. ERP systems, in turn, significantly enhance organizational performance. However, effective communication did not show a direct significant effect, suggesting that communication may serve as a complementary rather than primary success factor.

6.1 Recommendations

1. **Strengthen top management commitment** by ensuring leaders actively participate in ERP planning, implementation, and evaluation.
2. **Institutionalize continuous training** across all organizational levels to enhance adoption and reduce resistance.
3. **Prioritize infrastructure investments**, especially in public-sector organizations where resources may be limited.
4. **Reconceptualize communication strategies** to emphasize trust-building, cultural alignment, and active engagement rather than mere information dissemination.
5. **Adopt ERP systems as strategic tools**, aligning them with Egypt's Vision 2030 to achieve digital transformation and improve competitiveness in tourism.

6.2 Limitations and Future Research

This study faced limitations related to sample size and geographic scope, as the data were restricted to Greater Cairo. Future research should extend to other regions in Egypt and compare results across different service sectors. Additionally, qualitative research could provide deeper insights into why communication failed to demonstrate significant influence in this study. Comparative studies across developing countries would also enrich understanding of ERP dynamics in tourism industries globally.

6.3 Action Plan for Vision 2030

In alignment with Egypt's Vision 2030, tourism organizations should integrate ERP systems into their digital transformation roadmaps. Key steps include:

- Establishing cross-sector partnerships to share ERP expertise.
- Leveraging cloud-based ERP solutions to reduce costs and enhance scalability.
- Embedding sustainability modules (S-ERP) to align with global sustainability standards.
- Enhancing collaboration between public and private organizations to standardize ERP best practices in the tourism sector.

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