



Understanding continuance intention of enterprise resource planning (ERP): TOE, TAM, and IS success model

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ABSTRACT

This paper aims to identify the key factors influencing the intention to continue using enterprise resource planning (ERP) systems. Extending the Technology-Organization-Environment framework, the model integrates variables from both the Technology Acceptance Model and the Information Systems Success Model. We employed Partial Least Squares Structural Equation Modeling to analyze empirical data collected from 237 participants who use ERP systems in their workplaces. Our findings suggest that perceived usefulness has a positive impact on the intention to continue using ERP. Both system quality and information quality are pivotal in shaping perceived usefulness and perceived ease of use. Additionally, we found that top management support is a crucial determinant of continuance intention. The integrated model combines technological factors, organizational context, and environmental components to explain the ongoing use of ERP systems. This research enriches the existing literature on information systems, offering academics and managers deeper insights into the mechanisms driving continued ERP usage.

1. Introduction

To secure a competitive advantage and improve management efficiency, most companies have introduced various types of management information systems (ISs) according to their intentions and environments. Enterprise resource planning (ERP) is a representative system among them. It has been embraced by most large and medium organizations worldwide [1]. ERP systems are all-inclusive, bundled software solutions that integrate all aspects of company operations and provide a comprehensive picture of the company from a single information technology (IT) architecture [2]. They support the operation of crucial corporate operations like manufacturing, supply chain management, human resources, and others [3,4]. Recently, along with the acceleration of the 4th industry, the operating system of ERP is becoming more sophisticated. Specifically, a multitude of organizations have adopted cloud ERP systems [5,6]. In 2022, the ERP software market expanded by 8%, reaching a total software revenue of \$44 billion. Most providers experienced growth in revenue because of new clientele, sales expansions, and renewal price hikes that were higher than usual [7]. Upgrading an ERP system is a significant decision, potentially \$500 million, for IT leaders, which will influence the business operating model for years to come [8]. Furthermore, the ERP market is still under rapid growth, with projections estimating its value to surpass \$49.5 billion by 2025 [9]. The ERP software market in South Korea is expected to grow by 4.56% between 2023 and 2028, leading to a market value of US\$0.90 billion by 2028 [10].

The adoption and operation of ERP is not a simple investment matter but involves complex management activities such as

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technology acceptance, organizational change, and project management [11,12]. Thus, it is difficult to successfully operate ERP systems. Many cases of failure of implementation are observed [13,14]. For ERP to successfully provide benefits to companies, actual users must adapt to the system and continue to use it effectively. For these reasons, this study intends to perform an empirical analysis with a multi-dimensional approach to explicate continuance intention more elaborately.

The current study integrates theoretical models to comprehensively understand the continued usage of ERP for the following reasons. ERP, as an IT, operates organization-wide and is influenced by environmental factors. Therefore, it is crucial to consider technological, organizational, and environmental aspects (TOE Framework) [15]. This rationale is grounded in the understanding that technologies like ERP are not just influenced by the technical intricacies but also by the organizational context in which they are implemented and the broader external environment that shapes their evolution. Furthermore, from the perspective of the end-users, the adoption and continuation process for ERP hinges on its perceived usefulness and ease of use (technology acceptance model: TAM) [16]. Users are more inclined to adopt and continue using systems that they find both beneficial and straightforward to use. Lastly, ERP systems are quintessential ISs. The success of such systems invariably increases the intent of users to continue using them. This brings into the fold the IS success model, which posits that system quality and information quality are pivotal for its success [17]. Central to this success are factors like system quality and information quality, which play a profound role in determining the overall efficacy and, in turn, the desirability of the system among its users. In essence, while the TOE framework provides a macro perspective encompassing external and internal organizational factors, the IS success model drills down on the system's quality aspects, and the TAM focuses on user perceptions. By integrating these three models, we aim for a comprehensive understanding that encompasses the environment, system, and user factors – capturing the full spectrum of influences governing ERP adoption and sustained usage.

The TOE framework has been extensively validated to explain ERP adoption and implementation [5,6,18]. The framework contains three core contexts that affect the acceptance of new technologies: technology, organization, and environment [19]. The technological context includes information and communication technology (ICT) skills and ICT infrastructure [6]. ICT skill serves as the key factor affecting the adoption intention of ERP. Members of a corporation lacking ICT capabilities would be dissatisfied and unmotivated to devote their time [20]. Higher-level ICT-skilled employees can continue using ERP without any issues. It has been determined that ICT infrastructure influences ERP adoption intentions favorably [6]. When the level of ICT infrastructure improves, users can use ERP more easily. Given the above, current research posits ICT skills and ICT infrastructure as the predominant factors influencing continuance intention. Although TOE is a theoretical foundation that can be applied to the implementation of technological innovation [15], several scholars have mainly applied it to the adoption intention [21,22]. This paper adds perceived usefulness and perceived ease of use from the TAM. TAM has been applied in numerous research to examine the variables determining a person's usage of new technology [16,23]. Perceived usefulness and perceived ease of use are indispensable predictors of satisfaction or behavioral intention toward ISs [24–27]. If ERP systems are not useful and easy to use, it could be challenging for consumers to use the system continuously. Accordingly, the current study postulates that the above two perceptual constructs are significantly related to continuance intention. The present work introduces the preceding factors into the research model to strengthen the explanatory power of perceived usefulness and perceived ease of use. These antecedents are system quality and information quality from DeLone and McLean (D&M) IS success model [17]. The model has been widely validated, refined, and extended in IT/IS literature [11,28,29]. System quality has been found to influence perceived ease of use or behavioral intention, or user satisfaction in the case of ERP [11,18,30]. Information quality is the key determinant of user satisfaction in the ERP context [11,18]. When ERP systems are more stable and provide more accurate information, ERP users will consider the systems more useful and easier to use. Hence, this study explores the effects of system quality and information quality in enhancing perceived usefulness and perceived ease of use. Organizational characteristics contain top management support. Top management support is the most predominant organizational characteristic [31]. It is a crucial component of the successful implementation of ERP [12,18,32]. Thus, this paper clarifies the effect of top management support on continuance intention. Environmental components cover service quality [18]. Service quality was presented as the main variable in D&M IS success model [17]. It positively affects the satisfaction of ERP users [18,33]. The target organization of this study was provided with the service by requesting an external professional institution to build the ERP system. Thus, this study classifies service quality into environmental factors. As users perceived a higher level of service quality, they would use the system longer. Therefore, this research posits service quality as the major enabler of continuance intention.

Although the existing literature has applied the IS success model [34–36], TAM [37–39], and TOE [40–42] independently to explain the user satisfaction or adoption intention of ERP users, the integrated approach to elucidating continuance intention remains surprisingly under-researched. This oversight is especially concerning given the sector's unique challenges and the critical role of ERP systems in enhancing its operations. Moreover, while most studies explore the immediate impacts of ERP system implementation [43–45], a limited number investigate its prolonged usage and the variables that drive sustained adoption in specialized sectors like this. To address these research gaps, this study stands out, as it comprehensively reflects multiple variables by integrating the IS success model, TAM, and TOE framework. This unified methodology provides a complete insight into the complexities at hand, tackling industry-specific obstacles and evaluating the wider consequences of adopting and using ERP systems. By merging these models, we gain a deeper understanding of the factors driving the sustained intention of ERP users within the shipbuilding and marine engineering industries.

In summary, this paper applied the TOE to examine the determinants of the intention to use ERP. As technological factors, this study introduced ICT skills and ICT infrastructure from existing TOE studies, perceived usefulness and perceived ease of use based on the extant literature on the TAM, and system quality and information quality from previous works on the IS success model, respectively. As an organizational factor, top management support was adopted from the prior research on TOE. As an environmental factor, service quality was reflected in the former studies on the IS success model.

2. Literature review

Along with the development and introduction of ERPs, a large body of studies have been actively conducted in academia and industry [46,47]. Several works have investigated the adoption intention and implementation success by applying TOE theory [5,6,18,32,41,42]. Al-Zoubi [32] explored the role of TOE factors in ERP success. It is verified that ERP success is determined by technology adoption, top management support, and competitive advantage. Wibowo and Sari [18] integrated the TOE framework and the D&M IS success model to examine the deciding factors of satisfaction with the ERP system. They validated that system quality, information quality, and service quality are significantly related to user satisfaction. AlBar and Hoque [6] consolidated the theory of diffusion of innovation (DOI) and the TOE framework to clarify the preceding variables of adoption intention in the case of cloud ERP. They uncovered that ICT infrastructure, ICT skill, and top management support serve as the leading factors of adoption intention. Al-Shboul [48] found that top management support leads to cloud-based ERP adoption. Ahn and Ahn [5] developed an integrated model to account for the adoption of cloud ERP by combining TOE, model of innovation resistance (MIR), and DOI. The authors revealed that organizational culture positively influences adoption. The aforementioned studies have delved into adoption intention and implementation success, with a predominant use of TOE theory, but often in isolation from other complementary models [5,32]. A critical observation is that most studies, such as those by Al-Zoubi [32] and Wibowo and Sari [18], have prioritized ERP success or adoption but have somewhat overlooked the relevance of continuance intention, especially in the context of widespread ERP adoption. Since the adoption intention is a prerequisite to the continuance intention, the elements constituting the TOE can significantly affect the continuance intention. Therefore, this study employs the TOE framework which can reflect technology, organization, and environment. In addition, this study considers ICT skills and ICT infrastructure that have been repeatedly verified as technological factors in previous studies.

Numerous types of research have examined the behavioral intention and success of ERP based on TAM [44,49,50]. In TAM, perceived usefulness and perceived ease of use determine the behavioral intention of technology users [24,49,51]. Calisir and Calisir [52] extended TAM to investigate the antecedents of the behavioral intention of ERP users. They figured out that both perceived usefulness and perceived ease of use significantly form a behavioral intention. Mekadmi and Louati [50] revealed that ERP satisfaction is significantly correlated with ease of use, usefulness, and service quality. The main factors influencing ERP adoption in a developing nation were highlighted by Koksalmis and Damar [44]. They discovered that behavioral intention is positively influenced by perceived usefulness. To discover the determinants of satisfaction in the ERP domain, Klaus and Changchit [53] established the theoretical mechanism by adding some components to TAM. They unveiled that perceived ease of use and perceived usefulness affect attitudes toward ERP. TAM was first proposed to explain acceptance intention, but it was also verified in the process of describing the behavioral intention of use or the success of the system as in the studies mentioned above. While its adaptability across studies like those of Calisir and Calisir [52] is commendable, its application has been primarily siloed. This research attempts to embed TAM's foundational elements within the technological aspect of the broader TOE framework.

Numerous investigations have aimed to pinpoint the driving factors of ERP adoption and its success by leveraging the D&M IS success framework [11,30,52]. Costa and Ferreira [30] specifically incorporated the system quality from the D&M framework to delve into ERP adoption and its subsequent satisfaction. This quality has a positive correlation with perceived ease of operation and overall user satisfaction. Chaveesuk and Hongsuwan [11] modified the D&M IS success framework to elucidate the determinants of ERP success. Their findings robustly underscored the role of system quality, human-centric quality, and data quality as immediate fore-runners of user contentment. Notably, their research holistically encompassed elements like top managerial backing, IT proficiency, managerial approach, and corporate ethos under the umbrella of human-centric quality. In a different vein, Ghani and Yasin [54] adopted facets of the D&M framework, ascertaining that workforce efficacy is influenced by both the quality of the system and the quality of services provided. Similarly, Saleh and Tjhin [55] discerned the driving factors behind ERP utilization using a tweaked D&M framework, reinforcing that user contentment is swayed by both system and service qualities. Reflecting on these insights, both the system and data qualities emerge as tech-centric elements. These qualities are foundational to perceived utility and operability [18,56]. While studies using the D&M IS success model have highlighted various technical factors influencing ERP adoption and success [11,30], our study aims to streamline these findings. In this research, service quality is incorporated under the environmental scope since it pertains to the caliber of assistance provided by third-party experts. As such, this research segments system and information quality under the tech-sphere, while placing service quality under the environmental spectrum to shape the model.

Several studies have shown that top management support significantly influences the intention of ERP adoption [6,57]. Top management participation is validated to positively impact the degree of ERP usage [1]. Previous works have considered top management support as an organizational variable of the TOE framework [58,59]. A recurring theme, emphasized across multiple studies like AlBar and Hoque [6] and Liang and Saraf [1], is the profound influence of top management support on ERP adoption. This study synthesizes this perspective by analyzing top management support as a primary determinant of continuance intention.

While numerous prior studies have explored the behavior of ERP users utilizing various frameworks, there has been a limited attempt to amalgamate these models or theories in a single investigation. Additionally, the emphasis of past research has primarily been on adoption intention or success metrics. Given the current landscape where a majority of companies have not only introduced but are also actively operating ERP systems, the examination of continuance intention becomes more pertinent than just adoption intention. This research uniquely ventures into this area by introducing the TOE framework as an overarching model, covering a spectrum of influencing factors. The technological context of our study encompasses variables from the TOE, TAM, and IS success models, providing a comprehensive lens to measure the efficacy of the system. Our organizational context gives due emphasis to the pivotal role of top management support, a variable frequently alluded to in previous literature. Additionally, in the environmental context, we have incorporated the service quality aspect rooted in the D&M IS success model. Moreover, what truly sets our study apart

is our extensive surveying of diverse rank employees from leading global shipbuilding and marine enterprises that have universally adopted ERP. This unique approach ensures our study captures a broad spectrum of organizational, advanced enterprise, universal usage, and environmental variables, adding a novel dimension to our research.

3. Theoretical development and research hypotheses

Fig. 1 provides a comprehensive visualization of the research model adopted to understand the determinants of ERP users' continuance intention. The underlying structure is based on the TOE framework. In the context of technology, multiple variables are taken into consideration, including ICT skill, ICT infrastructure, perceived usefulness, perceived ease of use, system quality, and information quality. Among these, system quality and information quality are derived from the IS success model [17]. Meanwhile, perceived usefulness and perceived ease of use are sourced from the TAM [16]. The hypothesis is that system quality and information quality influence both perceived usefulness and perceived ease of use. Within the organizational context, top management support stands out as the pivotal variable. The environmental dimension is exemplified by service quality, emphasizing its significance particularly because this study involves ERP development and deployment outsourced to third-party experts.

3.1. ICT skill

ICT skill is defined as the extent of expertise that individuals possess in utilizing IT components, including computers, digital networks, and diverse software applications [5]. Individuals with lower ICT mastery often find themselves dissatisfied, which leads to a reduced inclination to delve deeper into the intricacies of ERP systems [20]. Prior research indicated that the prowess of ICT skill casts a positive shadow over the adoption of ERP systems [6]. Those endowed with elevated ICT proficiency tend to grasp and acclimatize to ERP frameworks with more ease. Such a familiarity subsequently elevates their intention to persistently engage with the system. In light of these observations, this research postulates that there exists a direct relationship between one's ICT skill and the propensity to persistently adopt the associated technology.

Hypothesis 1. ICT skill positively affects continuance intention.

3.2. ICT infrastructure

ICT infrastructure encompasses the technological resources, such as hardware, software, and network resources, essential for an organization's IT operations [60]. Strong ICT infrastructure is crucial to support a seamless technological experience, enhancing user adaptability and integration [61]. When organizations are equipped with robust ICT infrastructure, employees and stakeholders find it easier to adopt, understand, and integrate systems like ERP into their daily tasks [62]. This eases the usage process, minimizing disruption, and enhancing user satisfaction. Satisfied users are more inclined to exhibit continuance intention, as they anticipate long-term benefits and smoothness in operations due to the foundational ICT infrastructure [63]. Past research has emphasized the significant role of high-level ICT infrastructure in influencing users to continue using technology [64,65]. Consequently, the interplay

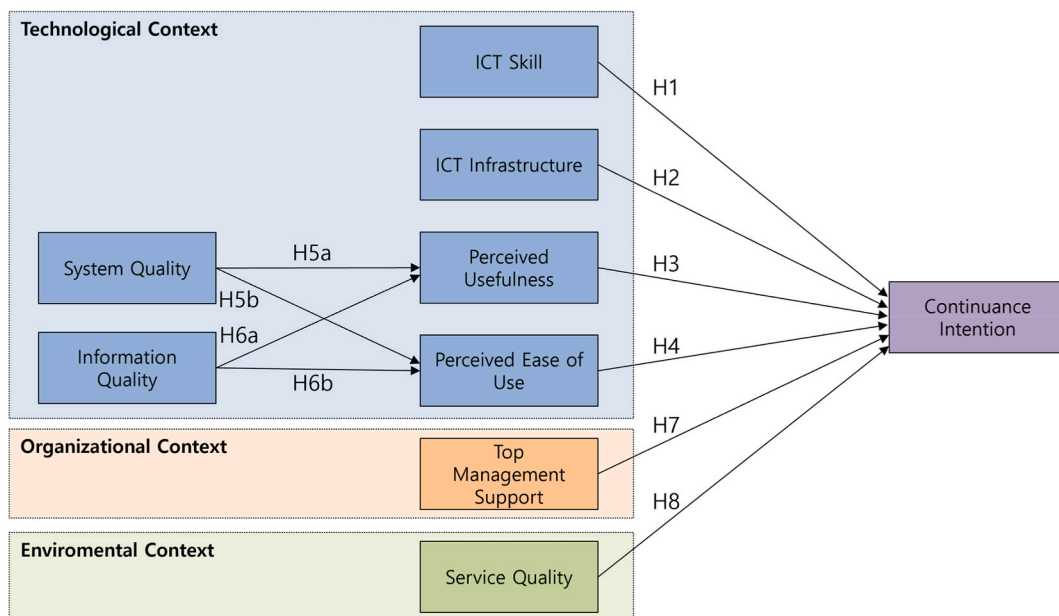


Fig. 1. Research model.

between ICT infrastructure and user behavior, specifically their intention to continue using a platform or technology, becomes evident. Thus, this study suggests the following hypotheses.

Hypothesis 2. ICT infrastructure positively affects continuance intention.

3.3. Perceived usefulness

Perceived usefulness is defined as the degree to which a user believes that using a particular system would enhance job performance [66]. In the context of ISs, the perceived usefulness of a system plays a pivotal role in user adoption and continued usage [25,67–73]. When users deem an ERP system beneficial and instrumental in improving their task performance, they are more inclined to accept and use the technology [74]. Furthermore, if users find a direct alignment between the system's utility and the efficiency and effectiveness of their job roles, their commitment to the technology deepens [39]. The theory of reasoned action posits that positive perceptions and attitudes, like perceived usefulness, guide behavioral intentions, including continuance intention [75]. Therefore, when ERP users perceive the system to be beneficial in their daily tasks, it drives their intention to continue using it. Thus, this study suggests the following hypotheses.

Hypothesis 3. Perceived usefulness positively affects continuance intention.

3.4. Perceived ease of use

Perceived ease of use refers to the extent to which a user believes that utilizing a specific system will be free from effort [66]. Comfort and ease associated with system use are pivotal determinants in the acceptance and integration of new technologies. In ISs, the easier a tool or system is perceived, the more likely users are to adopt and continue using it [67,76–78]. Within the context of ERP, when users find the system simple and intuitive, they are more likely to have a favorable attitude towards its continual use, minimizing the chances of resistance or abandonment [79,80]. Additionally, the TAM posits that perceived ease of use is directly related to the intention to use, as systems that require less cognitive effort are often preferred by users [16]. Several researchers have confirmed through empirical studies that the perceived ease of use enhances the ongoing intention to use ERP [2,30]. Therefore, if ERP users find the system easy and straightforward to operate, their intention to continue using it increases. Thus, this study suggests the following hypotheses.

Hypothesis 4. Perceived ease of use positively affects continuance intention.

3.5. System quality

System quality, as detailed in prior research, is the degree to which an ERP system provides desired outputs without defects or outages [29]. It addresses the anticipated characteristics of an ERP system, encompassing factors such as user-friendliness, responsiveness, and adaptability [17,81]. High-quality systems can reduce cognitive load, making tasks simpler and more efficient for users [18,82]. Specifically, when ERP users experience superior system quality, they are more likely to find the system useful to achieve their goals and tasks [83–85]. Furthermore, a system of higher quality tends to be easier to navigate, comprehend, and utilize [26,30,83]. This notion is supported by studies that highlight how users perceive such systems as more user-friendly and less complex to operate [81]. Therefore, an ERP system that is well-structured and functions effectively can potentially enhance the user's perception of its usefulness and ease of use. Thus, this study suggests the following hypotheses.

Hypothesis 5a. System quality positively affects perceived usefulness.

Hypothesis 5b. System quality positively affects perceived ease of use.

3.6. Information quality

Information quality refers to the relevancy, adequacy, and reliability of data provided by an ERP system [86]. When users find that the information obtained from ERP systems is of high quality, they are likely to consider the system to be more beneficial for their operations [87]. Reliable and pertinent information can streamline decision-making processes, leading users to perceive the system as useful in their tasks [36,88,89]. Furthermore, when the information rendered by ISs is precise and comprehensible, it simplifies user interactions with the system [90]. Users are likely to perceive a system that provides clear and accurate data as less challenging to operate [91]. Consequently, superior information quality can increase both perceived usefulness and ease of use associated with ERP systems. Thus, this study suggests the following hypotheses.

Hypothesis 6a. Information quality positively affects perceived usefulness.

Hypothesis 6b. Information quality positively affects perceived ease of use.

3.7. Top management support

Top management support is the provision of the necessary assistance to an operational procedure and the giving of clear

instructions for the implementation of a business [92]. It underscores the commitment and involvement of senior executives in championing and steering organizational initiatives, such as ERP implementations [93]. Such backing from leadership is instrumental in signaling the strategic importance of the ERP project to the rest of the organization [94]. Previous research has found that when employees perceive a strong endorsement from top executives, their motivation to adopt and continuously use the ERP system amplifies [6,12,48]. This commitment from the leadership not only ensures the allocation of necessary resources but also bolsters the morale and engagement of users. The confidence and assurance derived from top management's backing play a pivotal role in fostering users' intentions to continually utilize the ERP system. Thus, this study suggests the following hypothesis.

Hypothesis 7. Top management support positively affects continuance intention.

3.8. Service quality

Service quality is a determinant measure of the degree to which a service meets or exceeds the expectations of users [86]. It assesses the effectiveness of assistance provided to users by the IT support staff and IS department [17]. In the context of ERP, the provision of top-notch service quality ensures that system users receive the necessary assistance and guidance, enhancing their overall experience with the system [36]. When users encounter challenges or seek clarifications, the caliber of service quality can dictate their overall satisfaction [18,95] and trust [96] in the system. Past research has illustrated that high service quality engenders a positive user experience and paves the way for continued system utilization [97,98]. Specifically, when users perceive that they are provided with timely, efficient, and knowledgeable support for their ERP-related concerns, their intent to continually use the ERP system is strengthened. Thus, this study suggests the following hypothesis.

Hypothesis 8. Service quality positively affects continuance intention.

4. Research methodology

4.1. Measurements

To validate the conceptual model, a survey was conducted. Validated measurement indicators were drawn from the existing literature to measure the model's constructs. To fit the ERP framework, the measurement items were adjusted. All of the indicators were graded on a 7-point Likert scale (1 = very strongly disagree to 7 = very strongly agree). Before the survey was conducted, professionals in the field of IS assessed the questionnaire items to look for issues with organization, simplicity, and layout. In [Appendix A](#), a list of the measures and relevant sources is provided.

4.2. Sample

The dataset for this study was sourced from employees actively using ERP systems, specifically within a prominent shipbuilding and marine engineering company located in South Korea. Established in 1973, this company has grown significantly over the decades, boasting sales of \$5939 million in 2020 and employing a workforce of 9439 as of the same year. Our rationale for selecting this particular company stems from its impressive historical context and scale of operations. Given its prominence in the industry, understanding ERP usage in such an environment could offer valuable insights. Furthermore, the company has shown a commitment to modernization and process improvement, evident from the establishment of a process innovation team back in 2001. By 2002, they had a consulting firm onboarded to initiate the introduction of an ERP system, which went live in August 2004. Despite being nearly two decades into its operation, the ERP system remains an active and integral tool within the company. Assessing continuance

Table 1
Demographics of respondents (N = 237).

	Item	Subjects		Item	Subjects		
		Frequency	Percentage		Frequency	Percentage	
Gender	Male	211	89 %	ERP Usage Experience	Less than 6 months	5	2 %
	Female	26	11 %		6 months–1 year	6	3 %
	Total	237	100 %		1 year–2 years	9	4 %
Age	20s	5	2 %	2 years–5 years	42	18 %	
	30s	99	42 %	More than 5 years	175	74 %	
	40s	98	41 %	Total	237	100 %	
	50s	35	15 %	Modules	Operation Management	28	12 %
	Total	237	100 %		Design	32	14 %
Position	Clerk	20	8 %		Sales/Business Management	11	5 %
	Assistant Manager	55	23 %		Materials/Procurement	35	15 %
	Manager	45	19 %		Quality Management	32	14 %
	Deputy Manager	65	27 %	Management/Human Resource	32	14 %	
	General Manager	45	19 %	Finance Accounting	39	16 %	
	Executive Director	7	3 %	Other	28	12 %	
	Total	237	100 %	Total	237	100 %	

intention, in this case, is of utmost significance. Considering the system’s long-standing implementation, it becomes crucial to understand whether employees still find the system to be beneficial, especially in the context of evolving technological and business landscapes. The long-term usage of the ERP system offers a rich backdrop to explore current user sentiments and intentions, potentially highlighting areas of improvement or reaffirming its sustained relevance.

Participants who used the ERP system were contacted via email, which contained a direct link to the online survey platform. The questionnaire is described in [Appendix B](#). Following the initial data collection, a preliminary analysis was conducted to identify any missing responses or anomalies. After this meticulous screening process, a total of 237 responses were deemed suitable and retained for subsequent analysis.

[Table 1](#) provides a comprehensive breakdown of the demographics and professional characteristics of the respondents. Of the 237 participants, 89 % were male and 11 % female. In terms of age distribution, the largest group was in their 30s (42 %), closely followed by those in their 40s (41 %). Respondents in their 50s constituted 15 %, while only 2 % were in their 20s. Examining their positions within the company, Assistant and Deputy Managers made up a significant portion, with 23 % and 27 %, respectively. In relation to ERP usage experience, a significant 74 % had been using the system for more than five years. Lastly, when looking at the ERP modules the respondents worked with, Finance Accounting had the highest percentage at 16 %, followed by Materials/Procurement, Quality Management, Design, Management/Human Resources each at 14 %, and others varied between 12 % and 5 %.

In the context of our study, the high male participation rate of 89 % in the survey corresponds to the industry-specific characteristics of the shipbuilding and marine engineering sector. The nature of jobs in this sector often entails on-site construction activities that predominantly involve intense physical labor. Historically and culturally, these roles have been predominantly occupied by men, leading to a male-dominated workforce in this particular industry. Consequently, the demographic profile of the survey respondents accurately mirrors the gender distribution of the industry.

5. Analysis and results

The partial least squares (PLS) method, which is based on structural equation modeling, was used to evaluate the data for this study (SEM). PLS-SEM is a contemporary method that combines features from principal component analysis and multiple regression. Its utilization in the study is underpinned by several reasons: First, PLS-SEM is effective for complex models with multiple constructs and indicators, making it especially apt for our integrated framework that bridges various theoretical models [99]. Second, as our research lies at the intersection of several established models, it is essentially exploratory in nature. PLS-SEM is often recommended for exploratory research as it is oriented towards predicting key target constructs or identifying key driver constructs [100]. Third, unlike CB-SEM (covariance-based SEM), PLS-SEM does not make strict assumptions about data distribution, making it more flexible in dealing with real-world data that may not always be distributed normally [101]. Last, PLS-SEM can seamlessly handle both reflective and formative measurement models, which is crucial when studying multifaceted constructs like the ones in our study [102].

This study described the analysis results using CB-SEM in [Appendix C](#) to enhance the understanding of the readers.

Table 2
Scale reliabilities.

Construct	Items	Mean	St. Dev.	Factor Loading	Cronbach’s Alpha	CR	AVE
Continuance Intention	COI1	5.131	1.199	0.946	0.927	0.954	0.873
	COI2	4.667	1.300	0.911			
	COI3	5.089	1.171	0.946			
ICT Skill	ISK1	4.464	1.304	0.946	0.939	0.961	0.892
	ISK2	4.295	1.298	0.956			
	ISK3	4.224	1.258	0.931			
ICT Infrastructure	IFR1	4.705	1.245	0.934	0.911	0.944	0.849
	IFR2	4.759	1.231	0.936			
	IFR3	4.713	1.233	0.893			
Perceived Usefulness	PUS1	4.848	1.373	0.946	0.945	0.965	0.901
	PUS2	4.848	1.332	0.957			
	PUS3	4.684	1.404	0.944			
Perceived Ease of Use	PEOU1	3.688	1.391	0.882	0.837	0.902	0.754
	PEOU2	4.236	1.436	0.882			
	PEOU3	3.654	1.466	0.840			
System Quality	SYQ1	4.688	1.304	0.884	0.804	0.884	0.719
	SYQ2	4.291	1.373	0.882			
	SYQ3	4.430	1.293	0.773			
Information Quality	INQ1	4.498	1.101	0.815	0.845	0.907	0.765
	INQ2	4.869	1.294	0.886			
	INQ3	4.684	1.288	0.919			
Top Management Support	TMS1	5.025	1.337	0.941	0.932	0.956	0.880
	TMS2	4.869	1.339	0.921			
	TMS3	4.983	1.312	0.951			
Service Quality	SEQ1	4.527	1.069	0.863	0.882	0.927	0.810
	SEQ2	4.620	1.098	0.916			
	SEQ3	4.506	1.168	0.920			

5.1. Measurement model

Reliability and validity were checked to evaluate the measurement model. Utilizing Cronbach's alpha coefficient and composite reliability (CR), the responsibility was assessed. The Cronbach alpha and CR estimations of all constructs were higher than the recommended threshold of 0.7 [103], demonstrating a high degree of construct reliability. Convergent validity and discriminant validity were taken into account when evaluating validity. The two most widely used metrics for convergent validity are average variance extracted (AVE) and factor loading. AVE values were higher than the threshold value of 0.5, ranging from 0.719 to 0.901 [104]. Factor loadings ranged from 0.773 to 0.957. These findings provide solid evidence for convergent validity at a satisfactory level [105]. Table 2 shows the scale reliabilities.

Lastly, discriminant validity was confirmed by Fornell and Lacker's criteria [104] and HTMT. As shown in Table 3, all of the diagonal entries (the square root of AVE) are higher than the correlation coefficients for that column or row, indicating a satisfactory level of discriminant validity [104].

According to Henseler and Ringle [106], if the HTMT value is below 0.90, it suggests a satisfactory level of discriminant validity. Referring to Table 4, all HTMT values are below the threshold of 0.90, indicating acceptable discriminant validity among the constructs. Additionally, most of the values fall below the stricter 0.85 threshold, further underscoring the distinctness of the constructs.

5.2. Testing of hypotheses

Through the path coefficient and *t*-statistics, the link between endogenous and exogenous variables was examined in this research. The relevance of the pathways within the theoretical framework was ascertained using a bootstrap resampling method with 5000 resamples. The results of the analysis are shown in Fig. 2.

Surprisingly, ICT skill does not show a notable link with continuance intention, leading to a non-confirmation of H1. Similarly, ICT infrastructure does not present a notable association with continuance intention, leaving H2 unsupported. As anticipated, perceived usefulness plays a pivotal role in affecting continuance intention, giving credence to H3. On the contrary, perceived ease of use does not exert an impact on continuance intention, indicating that H4 is not corroborated. As hypothesized, system quality exerts a positive force on both perceived usefulness and perceived ease of use, validating H5a and H5b. Additionally, information quality shows a beneficial effect on both perceived usefulness and perceived ease of use, affirming H6a and H6b. Aligning with predictions, top management support is positively tied to continuance intention, backing H7. However, contrary to the anticipations, service quality does not shape continuance intention, making H8 unsupported. The suggested framework accounts for a 67.9 % variance in continuance intention, 63.8 % in perceived usefulness, and 36.0 % in perceived ease of use. The outcomes from the hypothesis evaluation are encapsulated in Table 5.

6. Discussion

The central tenet of our study was to delineate the factors influencing the continuance intention among ERP users. This objective was rooted in the fusion of the TAM and IS success models under the ambit of the TOE framework.

One of our significant observations was the diminished influence of ICT skills on continuance intention. This contrasts with the findings of AlBar and Hoque [6], who underlined the imperative nature of ICT skills for ERP adoption. A plausible interpretation for this divergence hinges on the tenure of ERP usage. A substantial majority of our respondents, comprising 74 %, have been using ERP for more than five years. Throughout this period, they probably have developed and refined their ICT skills to a proficient degree, which could explain why further improvement in skills has a minimal influence on continuance intention. Moreover, ERP users might have viewed ICT skills as a foundational requirement, thus normalizing its importance. As a result, while their proficiency in ICT may be assumed, it does not play a decisive role in their continuance intention, which could be influenced more by system functionality or organizational support.

Furthermore, while the preceding literature accentuates the pivotal role of ICT infrastructure in ERP adoption [6,40], our research unveiled its limited impact on continuance intention. One possible reason for the result could be the standardization and maturation of such infrastructures over time. As organizations adopt and integrate ERP systems, it is likely that they've already achieved a certain

Table 3
Correlation matrix and discriminant assessment.

Construct	1	2	3	4	5	6	7	8	9
1. Continuance Intention	0.934								
2. ICT Skill	0.598	0.944							
3. ICT Infrastructure	0.636	0.706	0.921						
4. Perceived Usefulness	0.772	0.664	0.648	0.949					
5. Perceived Ease of Use	0.540	0.524	0.499	0.584	0.868				
6. System Quality	0.591	0.574	0.528	0.566	0.516	0.848			
7. Information Quality	0.691	0.580	0.613	0.792	0.559	0.614	0.874		
8. Top Management Support	0.646	0.471	0.650	0.546	0.441	0.526	0.637	0.938	
9. Service Quality	0.601	0.490	0.592	0.609	0.612	0.548	0.716	0.569	0.900

Note: Diagonal elements are the square root of AVE.

Table 4
HTMT.

Construct	1	2	3	4	5	6	7	8	9
1. Continuance Intention									
2. ICT Skill	0.629								
3. ICT Infrastructure	0.685	0.751							
4. Perceived Usefulness	0.820	0.700	0.697						
5. Perceived Ease of Use	0.602	0.588	0.571	0.663					
6. System Quality	0.678	0.651	0.604	0.639	0.613				
7. Information Quality	0.773	0.641	0.689	0.879	0.668	0.728			
8. Top Management Support	0.701	0.505	0.707	0.585	0.502	0.602	0.718		
9. Service Quality	0.654	0.524	0.652	0.677	0.723	0.638	0.846	0.632	

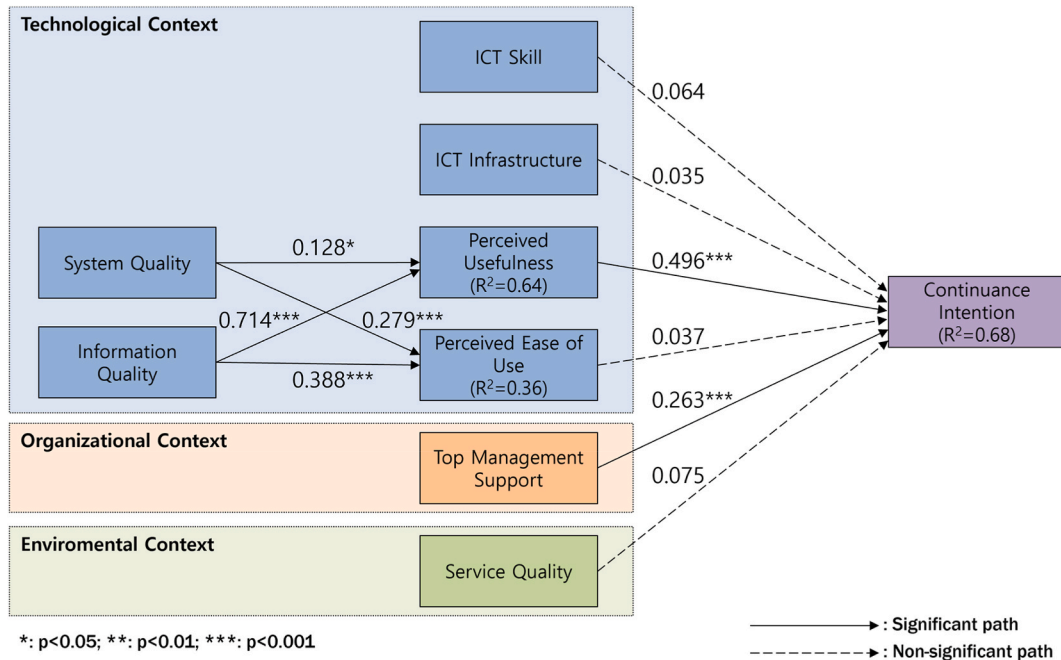


Fig. 2. Analysis results.

Table 5
Summary of the results.

H	Cause	Effect	Coefficient	t-value	p-value	Hypothesis
H1	ICT Skill	Continuance Intention	0.064	0.855	0.393	Not Supported
H2	ICT Infrastructure	Continuance Intention	0.035	0.414	0.679	Not Supported
H3	Perceived Usefulness	Continuance Intention	0.496	7.318	0.000	Supported
H4	Perceived Ease of Use	Continuance Intention	0.037	0.568	0.570	Not Supported
H5a	System Quality	Perceived Usefulness	0.128	2.192	0.029	Supported
H5b	System Quality	Perceived Ease of Use	0.279	3.957	0.000	Supported
H6a	Information Quality	Perceived Usefulness	0.714	14.273	0.000	Supported
H6b	Information Quality	Perceived Ease of Use	0.388	6.020	0.000	Supported
H7	Top Management Support	Continuance Intention	0.263	4.321	0.000	Supported
H8	Service Quality	Continuance Intention	0.075	1.259	0.209	Not Supported

threshold of ICT infrastructure competency that meets users’ basic expectations. Consequently, the differentiating factor influencing users’ intention to continue using the ERP might shift from mere infrastructure adequacy to other dimensions such as system performance, user training, or support mechanisms. In essence, while a robust ICT infrastructure is foundational, it might not be the primary driver of users’ continuance intention once a satisfactory level is achieved.

Our findings resonate with the prevailing literature regarding the primacy of perceived usefulness in fostering continuance intention [71,72]. This correlation is rooted in the premise that enhanced utility perception of the ERP system fortifies users’ commitment to its sustained usage. Drawing from TAM [16], this relationship suggests that when users discern tangible benefits from

the ERP system, their commitment to its sustained use intensifies. Essentially, beyond functionality, ERP systems must cater to user-recognized benefits for enduring adoption and utilization.

Regarding perceived ease of use, our results diverge from the conventional understanding [78,107]. The non-significant relationship between perceived ease of use and continuance intention suggests that once users surpass the initial adoption phase, their ongoing commitment to the system might be influenced more by other factors than just its simplicity. Drawing from technology adoption theories, it is conceivable that long-term users have grown accustomed to the system's complexities, rendering ease of use less pertinent [67]. Over time, factors like the system's utility, integration with tasks, or organizational support might overshadow its user-friendliness in dictating sustained use.

Consistent with prior studies [18,56], we corroborate the direct correlation between system quality and both perceived usefulness and ease of use. The significant association aligns with the theoretical underpinnings of the TAM which postulates that system characteristics directly influence user perceptions [16]. This suggests that when ERP systems exhibit higher levels of reliability, efficiency, and responsiveness, users are more likely to find them beneficial (useful) for task completion and easy to interact with (ease of use). DeLone and McLean [17] further emphasize that system quality is foundational for IS success. Thus, for organizations aiming to enhance user acceptance, investments in system quality appear paramount, as this directly shapes how users evaluate the system's value and navigability.

Similarly, information quality emerged as a pivotal precursor for both perceived parameters, reinforcing earlier observations in the literature [36,88–90]. The strong correlation also echoes the framework presented by the IS success model [17]. Information quality, encompassing accuracy, timeliness, relevancy, and completeness, is pivotal as users gauge the utility (usefulness) and intuitiveness (ease of use) of a system based on the caliber of information it delivers. When users discern that an ERP system provides reliable and pertinent information, their perception of the system's practical value intensifies, enhancing its perceived usefulness [108]. Concurrently, a high-quality information display can streamline user interactions, boosting perceived ease of use. Therefore, organizations striving for optimal system adoption should prioritize maintaining superior information quality.

Endorsement from top management was discerned as a substantial enabler for continuance intention. This observation is parallel to previous studies [1,6] that highlight the role of top management in ERP assimilation. The positive relationship between top management support and continuance intention is a finding deeply rooted in organizational theory and IS research. Top management's endorsement and commitment often translate to providing essential resources, ensuring strategic alignment, and fostering a culture receptive to technology adoption [109]. Their support not only underscores the significance of a particular system, like ERP, but also motivates employees by demonstrating leadership's commitment to the system's long-term success [110]. When employees perceive that technology is championed by their leaders, they are more likely to believe in its sustained relevance and are thus more inclined towards continued use. In the context of ERP, which often necessitates organization-wide changes and ongoing training, the endorsement from top management can significantly bolster users' continuance intention.

Lastly, while service quality's influence on continuance intention was anticipated [97,98], the results of this study revealed that service quality was not significantly associated with continuance intention. The observation could be attributed to the evolving expectations of users in a matured technological environment. Over time, users might become more focused on the intrinsic functionalities of a system rather than the accompanying service quality. For many, core functionalities and the overall utility of the system can overshadow service aspects. Additionally, as users become more proficient with a system, their dependency on support services may be reduced, diminishing the perceived significance of service quality [87]. Hence, while service quality is critical during the initial stages, its impact may wane as users become more familiar with the system.

7. Conclusion

7.1. Theoretical implications

This study presents a pivotal shift in the literature surrounding the continuance intention to use ERP. By intertwining the TOE framework, TAM, and IS success model, it bridges the gaps between previously fragmented research streams, offering a more holistic understanding of the topic. Before this work, the academic had numerous isolated studies focused on individual models, but the confluence of these pivotal frameworks in a single empirical study was notably absent. By adopting this multi-pronged approach, our research not only offers richer insights but also sets a precedent for comprehensive examinations in future IS investigations. This fusion of models creates a platform for deeper and more integrated exploration, challenging scholars to look beyond singular models. Hence, our findings do not merely contribute; they redefine the discourse, significantly enriching the literature and providing a solid foundation for subsequent research in the domain.

Our research notably reshapes the narrative set by past literature, offering transformative insights that carry profound implications for scholars. While earlier studies underscored the crucial role of ICT skills in the realm of adoption intention [5,6], our findings provocatively suggest a divergent path. We highlight that the direct influence of both ICT skills and infrastructure on continuance intention might be more nuanced than previously believed. A significant determinant of this shift appears to be the demographic disparities of our study's respondents and the unique nature of the dependent variables we utilized. The implications for academia are twofold: first, it underscores the need for scholars to adopt a more multifaceted approach when considering continuance intention, taking into account broader demographic factors. Second, this revelation invites further research to decode the underlying reasons for this variance, ensuring that the academic discourse remains robust, dynamic, and reflective of evolving real-world scenarios.

This research notably advances the discourse in the IS domain by revealing a relationship between perceived usefulness and continuance intention within the realm of ERP. Historical literature, notably from sources such as Hong, Thong [107] and Jo, Nam

[111], has perpetuated the idea that perceived usefulness and ease of use were twin pillars, equally influencing the intention to continue using a system. However, our findings present a paradigm shift, suggesting that within ERP environments, the value or utility that users derive from the system may considerably outweigh the simplicity of its use. Such a revelation challenges established norms and provides scholars with a fresh perspective that requires further exploration. The results raise essential questions for future research: Why does perceived usefulness gain predominance in ERP contexts? And how can ERP designers leverage this insight to maximize user engagement and satisfaction?

Our study offers a deeper affirmation of the interplay between system and information quality, echoing previous studies by Chandra [112] and Nirwanto and Andarwati [56]. These quality dimensions emerge as robust determinants of perceived usefulness and ease of use, consolidating their status in the annals of IS literature. Particularly in the context of ERPs, our findings emphasize that maintaining high quality is not just about system functionality, but critically shapes user perceptions and interactions. This reaffirmation of the literature not only emphasizes the enduring importance of these quality metrics but also invites scholars to delve deeper: How can ERP developers enhance these quality aspects more innovatively? What are the evolving benchmarks of quality in the rapidly changing landscape of ISs? These are critical avenues for future research, stressing the indispensable nature of quality in the domain of ERPs and beyond.

Our study illuminates the indispensable role of top management's backing in shaping continuance intention, echoing and fortifying AlBar and Hoque's assertions [6]. We provide empirical emphasis on the power dynamics and decision-making of upper echelons, showcasing their profound influence on the sustenance and success of IT projects. This contribution to the literature is salient, underlining that beyond mere implementation, a leader's support significantly impacts the long-term utilization and value extraction from IT solutions. It serves as a clarion call to scholars to further investigate the complicated interplay between strategic leadership and IT project outcomes. Furthermore, for organizations venturing into IT initiatives, these findings accentuate the pivotal need for consistent top-tier backing, from inception through to maturity.

Our investigation challenges the conventional wisdom derived from prior studies such as those by Hu and Brown [113] and Kim [114], which posited the salience of service quality in influencing continuance intention. Instead, we present a counter-narrative, indicating that service quality may not be as central a determinant as previously believed. This pivot in understanding hints at the possibility that service providers might fall short of addressing the dynamic and evolving requirements of users. Such a finding significantly enriches the literature by inviting a reevaluation of the role of service quality. For scholars, this revelation prompts an exploration into the nuances of service quality, suggesting a need to consider variables like the size of the service provider and their operational milieu. Consequently, this provides a roadmap for future research endeavors to further demystify and understand this unexpected outcome.

7.2. Practical implications

The present study also has some practical implications. Firstly, this research underscores the pivotal role of personalizing ERP solutions, emphasizing the metric of perceived usefulness as a central touchstone. A critical takeaway for industry practitioners lies in the continuous and proactive engagement with end-users. By actively seeking and analyzing feedback, developers can gain in-depth insights into the specific features, tools, and information users anticipate from the ERP system. Take, for example, a scenario where a substantial portion of the user base consistently voices a demand for real-time data analytics. In such a situation, developers would have to designate this feature as a high-priority development area. Furthermore, the design elements of the ERP, from the user interface aesthetics to the intricate backend logic, should be meticulously aligned with the discerned user needs. Drawing a parallel from the world of consumer tech, just as the architects of major social media platforms iterate and refine their algorithms in response to shifting user behaviors and preferences, ERP developers should be perpetually attuned to their user base, recalibrating their solutions to guarantee both relevance and optimal utility.

Second, the efficacy and robustness of ERP systems are anchored in two elemental tenets: the integrity of the system and the quality of the information it provides. For ERP service providers, the maintenance of a seamless, unbroken service should be paramount, especially when one considers the profound implications and potential fallout of system downtimes. To draw an analogy from the world of digital services, just as premier cloud service providers zealously guarantee near-perfect uptime, ERP providers must similarly channel investments into state-of-the-art server management solutions and resilient network architectures. These backend infrastructural enhancements not only safeguard against systemic failures but also serve to inspire confidence among the user base. By cultivating an environment where users can trust in the reliability and consistency of the ERP platform, service providers can significantly mitigate the risks of disruptions that could precipitate considerable operational setbacks and financial losses.

Third, the influence of the upper management echelons in securing the triumphant rollout and long-term use of ERP systems is of paramount importance. Their steadfast support, both in word and deed, casts a decisive impact on the organizational milieu, modulating employee perceptions and inclinations towards the system. To illustrate, when a company's CEO or top executive routinely accesses, engages with, and discusses the ERP during corporate meetings or presentations, it resonates as a potent cue to the broader organization about the system's significance. Equally crucial is the strategy of actively seeking, considering, and implementing feedback from all organizational tiers, from the senior leadership to the grassroots level personnel. Adopting such an inclusive approach not only facilitates the refinement of ERP functionalities but also engenders a collective spirit, instilling a communal sense of commitment and loyalty towards the platform. In doing so, the system transitions from being just a tool to being an integral part of the company's operational fabric.

Finally, the findings reiterate the idea that ERPs transcend their mere functional utility to become pivotal strategic linchpins. Leadership, spanning various organizational tiers, ought to spearhead its adoption zealously. This involves not just endorsing its use

but also orchestrating platforms for knowledge-sharing, akin to how marketing departments conduct frequent tool-specific workshops. Instituting regular ERP-centric forums or seminars can serve dual purposes: they can highlight optimal utilization techniques while also unearthing innovative applications. For everyday users, the responsibility is twofold. First, they should actively pursue avenues for skills augmentation, ensuring that they harness the system's capabilities to the fullest. Second, they should be dynamic contributors to the system's evolutionary trajectory. Just as ecosystems thrive on biodiversity, the ERP environment flourishes when infused with multifaceted inputs. Each user's feedback, ranging from pinpointing glitches to presenting avant-garde application ideas, can considerably amplify the platform's holistic efficacy, transforming it into a dynamic entity that evolves in tandem with organizational needs.

7.3. Limitations and future research

This study, while contributing significantly to the existing body of research, does present a few limitations that are worth noting. Firstly, our research focused solely on surveying participants from one specific country. This geographical limitation might influence the generalizability of the findings. For a broader and more in-depth understanding of the phenomena at hand, future studies would benefit greatly from collecting and analyzing data across multiple countries, allowing for a more robust validation of the model on a global scale. Secondly, it is worth acknowledging that recent academic contributions have increasingly focused on the intention to switch or adopt novel iterations of ERP systems. While our research predominantly delved into the continuance intention of extant ERP systems, there is a burgeoning academic interest in understanding the dynamics between persisting with current systems and transitioning to more advanced ERP platforms. A comprehensive study that simultaneously evaluates both the continuance intention of prevailing systems and the switch intention towards more sophisticated ERP platforms would undoubtedly add immense academic value and provide a more holistic view of organizational behavior in the context of ERP evolution.

Ethical approval

This study was approved by the Institutional Review Board (IRB) of HJ Institute of Technology and Management (HJITM), ethical committee of HJITM (HJITM-IRB-20-08-0007). The ethical considerations and protocols for conducting this study were reviewed and approved by the committee to ensure that the research adheres to the highest ethical standards. The research was conducted in compliance with the National Health and Medical Research Council's ethical standards for research involving human participants. In accordance with the ethical guidelines provided by the committee, we ensured to obtain in written form informed consent from all the study participants. All participants were informed about the purpose and the nature of the study, their rights to anonymity and confidentiality, and their freedom to withdraw from the study at any time without penalty.

Informed consent

Informed consent was obtained from all individual participants included in the study.

Consent to participate

Consent to participate was obtained from all individual participants included in the study.

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Data availability

The data used in this study is available at <https://doi.org/10.5281/zenodo.8417717>. The data used in this study is also available from the corresponding author upon reasonable request.

CRedit authorship contribution statement

Hyeon Jo: Conceptualization. **Youngsok Bang:** Formal analysis.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, the author(s) used ChatGPT in order to improve language and readability. After using this tool/service, the author(s) reviewed and edited the content as needed and take(s) full responsibility for the content of the publication.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Lists of Measurement Items

Continuance Intention is derived from Bhattacharjee [63].

COI1: I intend to continue my use of ERP in the future.

COI2: I intend to increase my use of ERP in the future.

COI3: I will keep using the ERP as regularly as I do now.

ICT skill is derived from Lin and Lin [115].

ISK1: I am generally aware of the functions of ERP.

ISK2: I am well trained in ERP.

ISK3: I am supported by specialized or knowledgeable personnel for ERP.

ICT Infrastructure is derived from Premkumar and Ramamurthy [60].

IFR1: Our organization has a good ICT infrastructure for implementing ERP.

IFR2: Our organization has the available IT resources (i.e., computer, internet, etc.) to implement ERP.

IFR3: There is an alignment between IT and business strategy in implementing ERP in our organization.

Perceived usefulness is derived from Davis and Bagozzi [66].

PUS1: Using ERP helps me accomplish things more quickly.

PUS2: Using ERP increases my productivity.

PUS3: Using ERP increases the quality of output for the same amount of effort.

Perceived ease of use is derived from Davis and Bagozzi [66].

PEOU1: Learning how to use ERP is easy for me.

PEOU2: It is easy for me to become skillful at using ERP.

PEOU3: Overall, using ERP is easy for me.

System quality is derived from Tam and Oliveira [29].

SYQ1: ERP is well structured.

SYQ2: ERP offers appropriate functionality.

SYQ3: ERP allows me to easily use it whenever I want.

Information quality is derived from Urbach and Müller [86].

INQ1: The information provided by ERP is necessary.

INQ2: The information provided by ERP is adequate.

INQ3: The information provided by ERP is reliable.

Top management support is derived from Swink [93], Hsu and Liu [116,117].

TMS1: In recent years, top management has committed to making an ERP project successful.

TMS2: In recent years, top management has defined the aims of the ERP project explicitly.

TMS3: In recent years, top management has been involved throughout the ERP project process.

Service quality is derived from Urbach and Müller [86].

SEQ1: The responsible service personnel has sufficient knowledge to answer my questions concerning the ERP.

SEQ2: The responsible service personnel provides personal attention when I experience problems with the ERP.

SEQ3: The responsible service personnel provides services related to the ERP at the promised time.

Appendix B. Questionnaire

Title: Enterprise Resource Planning (ERP) Usage Intentions Survey.

Your responses will be kept confidential in accordance with the Statistics Act.

Thank you for your participation in this survey. The purpose of this survey is to gather insights from business users of Enterprise Resource Planning (ERP) systems. ERP is an enterprise information system that integrates and manages various aspects of an organization's resources to enhance management efficiency and streamline operations. Many organizations have implemented ERP systems to improve their management processes and achieve significant financial benefits.

Your input in this survey is valuable in analyzing the factors that contribute to the continued success of ERP systems, including usage intentions and overall satisfaction. The findings will aid in the dissemination of ERP and inform future strategic improvements at the organizational level.

Please note that the information provided in this questionnaire will only be used for the purpose of improving our services. The survey is anonymous, and no confidential information regarding the identity of participants will be disclosed under any circumstances.

If you are interested in receiving the results of this survey, kindly provide your email address, and we will share the findings with you.

Please answer the following questions.

- Q1. Do you agree to participate in this study?
- Q2. The results of this study may be published academically. Do you agree with this?
- Q3. What is your gender?
- Q4. How many years have you worked at the company?
- Q5. How long have you been using ERP in your organization?
- Q6. How old are you?
- Q7. Which department or team are you currently a part of?
- Q8. What is your job title?
- Q9. What are the main functions (ERP modules) that you handle with your current ERP system? (Please select only one option)
- Q10. Please provide any recommendations for improving your current ERP system.

Below is a questionnaire regarding your current ERP system. Please carefully read each item and select the appropriate box that reflects your response. Each item is rated on a seven-point scale, ranging from strongly disagree (1) to strongly agree (7).

No.	Question	1	2	3	4	5	6	7
1	I intend to continue my use of ERP in the future.							
2	I intend to increase my use of ERP in the future.							
3	I will keep using the ERP as regularly as I do now.							
4	I am generally aware of the functions of ERP.							
5	I am well trained in ERP.							
6	I am supported by specialized or knowledgeable personnel for ERP.							
7	Our organization has a good ICT infrastructure for implementing ERP.							
8	Our organization has the available IT resources (i.e., computer, internet, etc.) to implement ERP.							
9	There is an alignment between IT and business strategy in implementing ERP in our organization.							
10	I intend to continue my use of ERP in the future.							
11	I intend to increase my use of ERP in the future.							
12	I will keep using the ERP as regularly as I do now.							
13	I am generally aware of the functions of ERP.							
14	I am well trained in ERP.							
15	Using ERP helps me accomplish things more quickly.							
16	Using ERP increases my productivity.							
17	Using ERP increases the quality of output for the same amount of effort.							
18	Learning how to use ERP is easy for me							
19	It is easy for me to become skillful at using ERP.							
20	Overall, using ERP is easy for me.							
21	ERP is well structured.							
22	ERP offers appropriate functionality.							
23	ERP allows me to easily use it whenever I want.							
24	Using ERP helps me accomplish things more quickly.							
25	Using ERP increases my productivity.							
26	The information provided by ERP is necessary.							
27	The information provided by ERP is adequate.							
28	The information provided by ERP is reliable.							
29	In recent years, top management has committed to making an ERP project successful.							
30	In recent years, top management has defined the aims of the ERP project explicitly.							
31	In recent years, top management has been involved throughout the ERP project process.							
32	The responsible service personnel has sufficient knowledge to answer my questions concerning the ERP.							
33	The responsible service personnel provides personal attention when I experience problems with the ERP.							
34	The responsible service personnel provides services related to the ERP at the promised time.							

Thank you for your cooperation.

Appendix C. Results of CB-SEM

Table C1
Scale reliabilities (CB-SEM)

Construct	Items	Mean	St. Dev.	Factor Loading	Cronbach's Alpha	CR	AVE
Continuance Intention	COI1	5.131	1.199	0.911	0.928	0.893	0.747
	COI2	4.667	1.300	0.787			
	COI3	5.089	1.171	0.890			
ICT Skill	ISK1	4.464	1.304	0.899	0.938	0.939	0.837
	ISK2	4.295	1.298	0.956			
	ISK3	4.224	1.258	0.888			
ICT Infrastructure	IFR1	4.705	1.245	0.907	0.913	0.914	0.781
	IFR2	4.759	1.231	0.925			
	IFR3	4.713	1.233	0.816			
Perceived Usefulness	PUS1	4.848	1.373	0.909	0.945	0.938	0.836
	PUS2	4.848	1.332	0.937			
	PUS3	4.684	1.404	0.897			
Perceived Ease of Use	PEOU1	3.688	1.391	0.819	0.835	0.818	0.603
	PEOU2	4.236	1.436	0.825			
	PEOU3	3.654	1.466	0.677			
System Quality	SYQ1	4.688	1.304	0.819	0.810	0.816	0.596
	SYQ2	4.291	1.373	0.839			
	SYQ3	4.430	1.293	0.642			
Information Quality	INQ1	4.498	1.101	0.697	0.851	0.858	0.659
	INQ2	4.869	1.294	0.831			
	INQ3	4.684	1.288	0.895			
Top Management Support	TMS1	5.025	1.337	0.915	0.934	0.934	0.826
	TMS2	4.869	1.339	0.862			
	TMS3	4.983	1.312	0.947			
Service Quality	SEQ1	4.527	1.069	0.744	0.882	0.889	0.723
	SEQ2	4.620	1.098	0.896			
	SEQ3	4.506	1.168	0.901			

Table C2
Correlation matrix and discriminant assessment (CB-SEM)

Construct	1	2	3	4	5	6	7	8	9
1. Continuance Intention	0.865								
2. ICT Skill	0.055	0.915							
3. ICT Infrastructure	0.078		0.884						
4. Perceived Usefulness	0.674			0.915					
5. Perceived Ease of Use	0.347			0.488	0.777				
6. System Quality	0.109			0.153	0.326	0.772			
7. Information Quality	0.579			0.856	0.511		0.812		
8. Top Management Support	0.364							0.909	
9. Service Quality	0.008								0.850

Table C3
Summary of the results (CB-SEM)

H	Cause	Effect	Coefficient	t-value	p-value	Hypothesis
H1	ICT Skill	Continuance Intention	0.043	0.603	0.546	Not Supported
H2	ICT Infrastructure	Continuance Intention	0.063	0.720	0.471	Not Supported
H3	Perceived Usefulness	Continuance Intention	0.511	6.930	0.000	Supported
H4	Perceived Ease of Use	Continuance Intention	0.020	0.241	0.810	Not Supported
H5a	System Quality	Perceived Usefulness	0.170	2.133	0.033	Supported
H5b	System Quality	Perceived Ease of Use	0.334	3.044	0.002	Supported
H6a	Information Quality	Perceived Usefulness	1.275	7.517	0.000	Supported
H6b	Information Quality	Perceived Ease of Use	0.701	5.113	0.000	Supported
H7	Top Management Support	Continuance Intention	0.273	4.335	0.000	Supported
H8	Service Quality	Continuance Intention	0.010	0.106	0.915	Not Supported

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