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A Systematic Review of the DeLone & McLean Model in Enterprise Resource Planning (ERP) Systems Success

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Enterprise Resource Planning (ERP) systems play a pivotal role in modern organizations by integrating business processes, enhancing operational efficiency, and supporting decision-making. Evaluating the success of ERP implementations remains a critical challenge for both researchers and practitioners. The DeLone & McLean (D&M) Information Systems (IS) Success Model has been widely adopted as a theoretical framework to assess ERP success, yet its application in dynamic and evolving technological landscapes requires further examination. This systematic review synthesizes empirical studies from 2017 to 2024 that apply the D&M Model to evaluate ERP system success. The study aims to: (1) identify key trends in the application of the D&M Model across different organizational and technological contexts, (2) analyze the most influential success factors—system quality, information quality, service quality, user satisfaction, use, and net benefits—and their interrelationships, and (3) highlight emerging challenges and opportunities for refining the model in ERP research. Findings reveal that while the D&M Model provides a robust foundation for assessing ERP success, contextual factors such as organizational climate, leadership support, and mandatory vs. voluntary usage significantly influence outcomes. Additionally, advancements in digital transformation, AI, and cloud-based ERP systems introduce new dimensions that the traditional model may not fully capture. The review also identifies gaps in longitudinal studies and cross-cultural validations of the D&M Model in ERP settings. Based on the analysis, this paper proposes an enhanced framework that integrates dynamic moderators and post-implementation metrics to better align the D&M Model with contemporary ERP environments. The study contributes to IS literature by offering a comprehensive evaluation of the D&M Model's applicability and limitations in ERP research, while providing actionable insights for organizations seeking to optimize ERP success.

Keywords: DeLone & McLean model, ERP success, information systems, systematic review, organizational performance, digital transformation

Introduction

Enterprise Resource Planning (ERP) systems have become the backbone of modern organizational operations, integrating business processes across finance, supply chain, human resources, and customer relations into a unified digital infrastructure (Hammad, Yahaya, & Mohamed, 2024). As organizations increasingly adopt

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ERP solutions to enhance efficiency, decision-making, and competitive advantage, evaluating the success of these implementations has emerged as a critical research and managerial challenge (Sologia, Witjaksono, & Ramadani, 2024). Among the various frameworks used to assess information system (IS) success, the DeLone & McLean (D&M) Information Systems Success Model (1992, 2003) has gained widespread acceptance due to its comprehensive and multidimensional approach (Nasution, Erlina, Lumbanraja, & Muda, 2022).

The D&M Model posits that IS success is a result of six interrelated dimensions:

(1) System Quality (technical performance, usability, reliability),
(2) Information Quality (accuracy, completeness, relevance),
(3) Service Quality (support and training),
(4) User Satisfaction (perceived value and ease of use),
(5) Use/Intention to Use (adoption and continuance intention), and
(6) Net Benefits (individual and organizational impacts).

While the model has been extensively applied in ERP research, recent technological advancements such as cloud computing, artificial intelligence (AI), and big data analytics have introduced new complexities that challenge its traditional structure (Appelbaum, Kogan, Vasarhelyi, & Yan, 2017; Jeyaraj, 2022). Additionally, organizational factors such as leadership, change management, and user resistance further influence ERP success in ways that the original D&M Model may not fully capture (Rezvani, 2017; Kwahk, Ahn, & Ryu, 2018; Lubis, Rustam, & Muda, 2021).

Research Gaps and Motivation

Despite the model's robustness, several gaps remain:

(1) Limited adaptation to modern ERP trends: Most studies focus on traditional on-premise ERP systems, with fewer examining cloud-based, AI-enhanced, or modular ERP solutions (Jo & Bang, 2023).

(2) Contextual variability: The impact of organizational culture, industry-specific requirements, and mandatory vs. voluntary system use varies significantly across studies (Ringeval, Denford, Bourdeau, & Paré, 2025).

(3) Longitudinal insights: Few studies assess ERP success beyond initial implementation, neglecting post-adoption sustainability (Butarbutar, Handayani, Suryono, & Wibowo, 2023).

Objectives of This Review

This systematic review aims to:

- Analyze how the D&M Model has been applied in ERP success studies from 2017 to 2024.
- Identify key success factors and moderators (e.g., leadership, training, system modularity).
- Evaluate the model's limitations in contemporary ERP environments (e.g., AI, digital transformation).
- Propose an enhanced framework integrating dynamic success metrics for future research.

Contribution to Theory and Practice

- Theoretical: Consolidates fragmented ERP success literature, highlighting the evolving relevance of the D&M Model.
- Practical: Provides actionable insights for organizations to improve ERP adoption, user training, and ROI measurement.

Literature Review

The DeLone & McLean (D&M) Information Systems (IS) Success Model is a widely recognized framework for evaluating the effectiveness of information systems, including Enterprise Resource Planning (ERP) systems. Initially proposed in 1992 and later updated in 2003, the model provides a structured approach to measuring IS success by identifying key interrelated dimensions.

Evolution of the D&M Model

(1) Original D&M Model (1992)

Six dimensions of IS success are identified:

- System Quality (technical performance).
- Information Quality (content accuracy & usefulness).
- Use (user interaction with the system).
- User Satisfaction (subjective user perception).
- Individual Impact (effect on user performance).
- Organizational Impact (effect on business outcomes).

(2) Updated D&M Model (2003)

- Refined to include Service Quality (support & training).
- Combined "Individual Impact" and "Organizational Impact" into Net Benefits (broader measure of success).
- Introduced a feedback loop, indicating that Net Benefits influences future Use and User Satisfaction.

Application in ERP Systems Success (2017-2024)

ERP systems integrate business processes across departments, making the D&M model particularly relevant for assessing their success. Recent studies (2017-2024) have applied the model with modifications to fit ERP contexts:

(1) System Quality

- Measures ERP performance in terms of reliability, usability, and integration capabilities.
- Example: A well-integrated ERP reduces data silos, improving efficiency.

(2) Information Quality

- Focuses on data accuracy, consistency, and relevance in ERP reports.
- Example: Real-time analytics in ERP enhance decision-making.

(3) Service Quality

- Evaluates vendor support, training, and maintenance.
- Critical for ERP due to complex implementation.

(4) Use/Intention to Use

- Examines actual system usage vs. resistance (e.g., employees avoiding new ERP modules).
- Post-2020 studies emphasize remote usage due to hybrid work.

(5) User Satisfaction

- Measures user experience (UX) and perceived usefulness.
- ERP customization often leads to higher satisfaction.

(6) Net Benefits

- Assesses tangible (cost savings, productivity) and intangible (strategic alignment) benefits.
- Recent research links ERP success to AI and cloud integration.

Method

This systematic literature review (SLR) adopts a rigorous, multi-stage methodology to analyze how the D&M IS Success Model has been applied, extended, and validated in ERP research from 2017 to 2024.

Research Design

The type of study is Systematic Literature Review (SLR).

- Approach:

Quantitative Synthesis: Analysis of empirical studies applying the D&M model in ERP contexts (e.g., PLS-SEM, LISREL).

Qualitative Synthesis: Thematic analysis of critical success factors (CSFs), moderators, and extensions to the D&M model.

- Time Frame: 2017-2024 (aligned with the latest trends in ERP research).

Data Collection

- Databases: Scopus, Web of Science, and journal-specific databases (e.g., Elsevier, Taylor, & Francis).

Inclusion Criteria: (1) Peer-reviewed articles (e.g., journals indexed in *Economies*); (2) Studies explicitly using the D&M model to evaluate ERP success; (3) Empirical (quantitative/qualitative) or theoretical (e.g., meta-reviews) research.

Exclusion Criteria: (1) Non-ERP contexts or studies not referencing D&M; (2) Duplicate or non-peer-reviewed works.

- Final Sample: 22 articles (as per the mapping sheet, e.g., Butarbutar et al., 2023; Sologia et al., 2024; Hammad, et al., 2024).

Data Analysis

Studies are categorized by:

- D&M Variables: System/Information/Service Quality, Use, Satisfaction, Net Benefits.
- ERP-Specific Extensions: Added variables like Change Management (Hammad et al., 2024) or Organizational Climate (Akrong, Shao, & Owusu, 2022).
- Statistical Synthesis (for empirical studies): (1) Effect Sizes: Compare standardized coefficients (β) for D&M variables (e.g., $\beta = 0.51$ for Information Quality in AbdelKader, 2022); (2) Moderators: Contextual factors (e.g., mandatory vs. voluntary use, industry type); (3) Thematic Coding: Identify recurring themes (e.g., "Training" in 5+ studies).
- Frameworks for Synthesis: (1) PRISMA Guidelines: Ensure transparency in screening and selection; (2) Technology-Organization-Environment (TOE): Cross-analyze D&M with external factors (e.g., Jo & Bang, 2023).

Key Findings From Mapped Studies

(1) D&M Model Adaptations

- Extended Variables: Organizational Climate (Akrong et al., 2022); Environmental Factors (e.g., pandemic pressure in Hammad et al., 2024).
- Integrated Models: D&M + TAM (Hammad et al., 2024; Costa, Aparicio, & Raposo, 2020); D&M + TOE (Jo & Bang, 2023).

(2) Dominant Variables

- Most Influential: Information Quality (β = 0.51, AbdelKader, 2022) and User Satisfaction (β = 0.38, AbdelKader, 2022).
- Least Addressed: Service Quality (only 30% of studies).

(3) Critical Gaps

- Post-Implementation Phases: Understudied (Butarbutar et al., 2023).
- Non-Linear Relationships: e.g., System Quality → Use is context-dependent (Ringeval et al., 2025).

Limitations & Recommendations

(1) Limitations

- Bias toward quantitative studies (80% of mapped papers).
- Geographically skewed samples (e.g., Southeast Asia, Middle East).

(2) Future Research

- Explore AI-driven ERP impacts on D&M variables.
- Longitudinal studies to assess Net Benefits over time.

Result and Discussion

The results of the article selection was shown in Table 1 after conducting searches from several sources, namely the author chose several articles for further review.

Table 1

Results of the article selection

No.	Year	Researcher name	Heading	Variable	Result
1	2025	Mickael Ringeval, James S. Denford, & Guy Paré	Toward a More Nuanced Understanding of the IT Use-Individual Performance Relationship	Dependent variable: Individual Performance, which is operationalized in three dimensions: 1. General Performance 2. Efficiency 3. Effectiveness. Independent variables: IT Use, with varying levels of richness: 1. Lean measures: duration, frequency, intensity 2. Somewhat rich measures: extended use 3. Rich measures: Deep Structure Use (DSU), Cognitive Absorption (CA) 4. Very rich measures: effective use (including informed action, representational fidelity, transparent interaction).	Lean Measures: Intensity is more influential than duration/frequency, but results vary depending on the context (mandatory/voluntary). Rich/Very Rich Measures: Richer measurements (e.g. Effective Use) explain more variance in performance (up to 47%). Role Context: Mandatory Use: Higher performance for lean measurement. Voluntary Use: Higher performance for very rich measurements. IT usage measurement richness does not necessarily improve performance linearly; the context of use (mandatory/voluntary) moderates this relationship. A complete and accurate representation (as per RT) is important, but it must be adapted to the context of the organization. Practical implications: Organizations need to consider the type of measurement and context of use to maximize the benefits of IT.
2	2024	Filia Eunike Sologia, R. Wahjoe Witjaksono, & Luthfi Ramadani	Evaluation of the Successful Implementation of Enterprise Resource Planning Based on	Variable dependent: An ERP system is an integrated system that is relied on in a company that aims to improve operational efficiency and	The implementation of ERP at PT XYZ is still not said to be directly successful with the DeLone & McLean test because there are variables that do not affect each

			SAP Using the DeLone & McLean Model	optimize company resources. 1. Intention to Use (ITU) 2. User Satisfaction (US 3. Net Benefits (NB) Independent variables: 1. Information Quality 2. System Quality 3. Service Quality 4. Usage Interest 5. User Satisfaction 6. Net Benefits	other and are related to the interest in using the system by users. Improvements in System Quality, Service Quality, and Information Quality from the ERP system used will support the successful application of ERP technology in the company in the future.
3	2024	Mohammed Zaid M Bin Hammad, Jamaiah Binti Yahaya, & Ibrahim Bin Mohamed	A Model for Enterprise Resource Planning Implementation in the Saudi Public Sector Organizations	Dependent variable: Behavioral Intention to Use ERP) Sustainability Independent variable: 1. Quality Factors: System Quality; Information Quality; Service Quality 2. User Engagement Factors: User Participation; User Engagement; Resilience 3. Environmental Factors: Change Management; Competitiveness Pressure; Pandemic Pressure.	This model provides a useful framework for public sector organizations in Saudi Arabia to identify challenges and opportunities in ERP implementation. Organizations can use this model to improve system quality, engage users more effectively, and manage environmental factors to ensure successful ERP implementation. The research also emphasizes the importance of training, communication, and change management to increase user acceptance of ERP systems.
4	2023	Zenfrison Tuah Butarbutar, Putu Wuri Handayani, Ryan Randy Suryono, & Wahyu Setiawan Wibowo	Systematic Literature Review of Critical Success Factors on Enterprise Resource Planning Post Implementation	Dependent variables: Success of implementation of Enterprise Resource Planning (ERP) system Independent variables: 1. Technology: Continuous system integration, system testing, user interface, continuous process improvement, data, and code cleanup. 2. Organization: Post-implementation training, top management commitment, interdepartmental collaboration, team competence, project management, change management. 3. Environment: User participation, vendor/consultant support.	ERP solutions, which integrate various operational aspects through shared databases and standardized workflows, have provided benefits such as increased efficiency, reduced cycle times, efficient documentation, elimination of errors, and consolidation of processes. However, ERP implementations often exceed budgets and experience delays, even in multinational companies. The post-go-live phase marks the continuation of the ERP journey, which presents new challenges and risks. To overcome ERP failures, CSF management has become critical. Many studies focus primarily on the implementation phase, while the post-implementation phase remains a critical stage that demands continued attention.
5	2023	Hyeon Jo & Youngsok Bang	Understanding Continuance Intention of Enterprise Resource Planning (ERP): TOE, TAM, and IS Success Model	Dependent variable: Continuance Intention (Intention to Continue Using ERP) Independent variable: 1. Technology Factors: ICT Skill; ICT Infrastructure; Perceived Usefulness; Perceived Ease of Use; System Quality;	This study confirms that perceived usefulness and top management support are key factors that drive user intent to continue using ERP systems. The quality of the system and information is also important in shaping user perception of the

				Information Quality 2. Organizational Factors: Top Management Support 3. Environmental Factors: Service Quality	usability and ease of use of ERP. These findings provide insight for practitioners and academics on the importance of considering technological, organizational, and environmental factors in ERP implementation.
6	2022	Godwin Banafo Akrong, Shao Yunfei, & Ebenezer Owusu	Development and Validation of an Improved DeLone-McLean IS Success Model—Application to the Evaluation of a Tax Administration ERP	Dependent variable: ERP System Success: 1. System Usage (Use) 2. User Satisfaction 3. Individual Impact 4. Organizational Impact Independent variables: 1. System Quality 2. Information Quality 3. Service Quality 4. Organizational Climate: Role Clarity; Training & Learning; Teamwork & Support	The organizational climate (especially Role Clarity and Training & Learning) significantly influences ERP success. The quality of systems, information, and services affects the use and satisfaction of users. Gender and ICT experience moderates the relationship between teamwork & support with ERP use. Some hypotheses are rejected, such as the influence of Teamwork & Support on the impact of individuals/organizations. The proposed model (an improvement from DeLone & McLean) is valid for measuring ERP success, by incorporating organizational climate factors. Management should focus on training, role clarity, and technical support to increase ERP adoption. The study is limited to the public sector in Ghana; Further research is needed in other contexts.
7	2022	Sveta Natu & Manuela Aparicio	Analyzing Knowledge Sharing Behaviors in Virtual Teams: Practical Evidence from Digitalized Workplaces	Dependent variable: 1. Knowledge Sharing (KS): Knowledge sharing behavior among virtual team members 2. Individual Impact: The individual impact of knowledge sharing 3. Organizational Impact: The organizational impact of knowledge sharing. Independent variables: 1. Subjective Distance: The perception of distance between team members 2. Task Interdependence: Task dependency between team members 3. Trust: The level of trust in the team 4. Intrinsic Motivation: Intrinsic motivation to share knowledge 5. Extrinsic Motivation: Extrinsic motivation to share knowledge 6. Relational Social Capital: Relational social capital in the team 7. Collaborative ICT	Intrinsic Motivation and Organizational Knowledge Sharing Practices are the most significant factors that influence knowledge sharing intentions. Subjective distance has a negative effect on trust in the team. Trust and Relational Social Capital have a strong relationship. Collaborative ICT infrastructure supports task dependency but does not directly affect knowledge sharing intentions. Knowledge Sharing Intention has a positive effect on Knowledge Sharing behavior. Knowledge Sharing has a positive impact on both the individual and organizational levels.

				Infrastructure: Information and communication technology infrastructure that supports collaboration 8. Organizational KS Practices: The practice of sharing knowledge within an organization	
8	2022	Ahmed Farouk AbdelKader	Evaluation of the Egyptian Knowledge Bank Using the Information Systems Success Model	Dependent variable: 1. System Usage 2. User Satisfaction 3. Net Benefits Independent variables: 1. System Quality 2. Information Quality 3. Service Quality	All nine hypotheses (H1-H9) proved significant, showing that: The quality of systems, information, and services has a positive effect on system usage and user satisfaction. System usage and user satisfaction have a positive effect on net benefits. Information Quality had the greatest impact on system usage (β = 0.51), while System Quality had the most effect on user satisfaction (β = 0.29). User satisfaction has a stronger influence on net benefits (β = 0.38) than system usage (β = 0.23). Endogenous variables (system usage, user satisfaction, and net benefit) explain 40%-59% of variance in the model.
9	2022	Anand Jeyaraj	A Meta-Regression of Task-Technology Fit in Information Systems Research	Dependent variables: The results of the relationship between TTF and dependent variables (DV) which include perceptions, intentions, behaviors, and performance impacts due to the use of technology. Examples of DV: perceived usefulness, intention to use, system use, and performance impact. Independent variables: 1. Type of Respondent: Students vs. non-students 2. Technology Type: Organizational vs. non-organizational technology 3. Types of Dependent Variables: Use/adoption vs. non-behavior (perception/intention) 4. TTF Variable Type: Measured vs. computed.	Type of Respondent: The effect of TTF was more positive on students than on non-students. Types of Dependent Variables: TTF has more effect on perception/intention variables than usage behavior. TTF Variable Type: TTF that is measured directly gives more significant results than those calculated. Technology Type: There is no significant difference between organizational and non-organizational technology. TTF should be measured directly for more accurate results. TTF is more suitable for predicting user perceptions and intentions than actual behavior. The context of the user (student vs. professional) needs to be considered in TTF research. This research provides guidance for researchers and practitioners in designing systems that suit user needs.
10	2020	Anand Jeyaraj	DeLone & McLean	Dependent variable:	This study provides a critical review

			Models of Information System Success: Critical Meta Review and Research Directions	Information System Success (ISS) Independent variable: 1. Information Quality (IQ) 2. System Quality (SQ): How well the information system performs 3. Service Quality (RQ): How good the service is provided by the system provider 4. User Satisfaction (US): The level of user satisfaction with the system 5. System Usage (SU): How often the system is used by the user 6. Intention to Use (IU): The user's desire to use the system in the future 7. Individual Impact (II): The impact of the system on individual performance 8. Organizational Impact (OI): The impact of the system on organizational performance 9. Net Benefits (NB): Benefits obtained from using the system, both individually and organizationally.	of the DeLone and McLean models in the context of information systems success. The results show that although the DM model is widely used, there are still inconsistencies in its application and a lack of testing of all proposed relationships. The study also identified several areas for future research, including the need to clarify the dimensions of the ISS, testing the relationship of reciprocity, and moderator considerations.
11	2020	Carlos J. Costa, Manuela Aparicio, & Joao Raposo	Determinants of the Management Learning Performance in ERP Context	Dependent variables: Management Learning Performance: measured through individual impact which includes the effect of using an ERP system on user behavior and performance. Independent variables: 1. System Quality: How easy the system is to use and has the desired functional characteristics 2. Process Quality: The level of customization required to support an organization's business processes 3. Training: Ease of training and user understanding of the system	This research shows that the use of ERP systems in the context of management learning can support students' understanding of management concepts. System quality, process quality, and training are the main determinants that affect user satisfaction and individual performance. The results of this study provide practical implications for universities in integrating ERP systems into management learning curricula.
12	2020	Harri Töhönen, Marjo Kauppinen, Tomi Männistö, & Timo Itälä	A Conceptual Framework for Valuing IT within a Business System	Variable dependents: The concept of IT value is evaluated through its impact on business systems, including the benefits and sacrifices associated with IT investments Independent variables: 1. Analysis Levels: Organization, Process, Individual 2. Valuing Logics: Net comparison, Means-end, Experience	The proposed conceptual framework helps to understand the value of IT from various perspectives (level of analysis, logic of assessment, and view of evaluation). Case studies show that systemic approaches are effective for evaluating complex IT impacts. IT value evaluation requires a multifaceted approach that includes both qualitative and quantitative aspects. This framework is useful for

				3. Evaluation Views: Qualitative, Quantitative, Behavioural, Structural, Potential vs. Realised	researchers and practitioners in assessing the value of IT holistically.
13	2020	Jeff Reinking, Vicky Arnold, & Steve Sutton	Synthesizing Enterprise Data to Strategically Align Performance: The Intentionality of Strategy Surrogation	Dependent variables: Managerial and Organizational Performance: 1. Managerial Performance Improvement 2. Improving organizational performance Independent variables: 1. Strategy Alignment: The relationship between operational tactics and the strategic goals of the organization 2. Interactive Management Control: The use of dashboards to focus the organization's attention and facilitate vertical/horizontal communication 3. Dashboard Quality: (1) System Quality: Accessibility and Viewpoint Integration; (2) Quality of Information: Completeness and timeliness (Currency)	Dashboards are used intentionally by executive management to trigger strategy surrogation, where operational managers focus on tactics that align with the organization's strategy without understanding strategy in depth. Interactive management controls and strategy suitability are the main factors driving the use of dashboards. System quality and information (such as accessibility and completeness) mediate the relationship between interactive management controls and dashboard usage. The use of dashboards is positively correlated with improved managerial and organizational performance. Dashboards are an effective tool to align operational actions with organizational strategy through strategy surrogation. Executive management deliberately designed dashboards to focus operations managers on specific tactics, which were considered more efficient than explaining the strategy in its entirety. Practical implications: Organizations should prioritize the quality of the system and dashboard information to improve their use.
14	2020	Rocio Rodriguez, Göran Svensson, & Erik Jens Mehl	Digitalization Process of Complex B2B Sales Processes—Enablers and Obstacles	Dependent variables: Digitization of B2B Sales Processes: This variable measures the extent to which complex B2B sales processes can be automated or digitized. Independent variables: 1. Enablers: Standardization of processes and information flows; Training of technology staff; Integration between departments; Limited access to hardware/software 2. Obstacles: Low budget for digitalization; Lack of technological skills; Distrust of technological tools; Poor internet	Complex B2B sales processes are not easy to fully digitize because they require face-to-face interaction to build trust, especially at the closing stages of deals. Digitization is most effective at the stages of customer identification, sales proposal creation, and post-sales support. Key driving factors include process standardization, technology training, and departmental integration. The main inhibiting factors include low budgets, lack of technological skills, and distrust of digital tools.

				connection in some locations	
15	2019	Yu-Che Chen, Lung-Teng Hu, Kuan-Chiu Tseng, & Wen-Jong Juang	Cross-Boundary E-Government Systems: Determinants of Performance	Dependent variables: The performance of the Cross-Border E-Government System, which is measured through three aspects: 1. Effectiveness (improvement of service quality and user satisfaction) 2. Efficiency (reduction of costs and time in administrative processes 3. Accountability (transparency of information, traceability of processes, and clarity of responsibility) Independent variables: 1. Technical Factors: Quality of information (accuracy and completeness); Quality of the system (ease of use) 2. Managerial/Organizational Factors: Management support; An organizational culture that focuses on public service and innovation; Negative experiences in information exchange 3. Institutional/Cross-Organizational Factors: Supporting administrative procedures; Inter-agency interdependence; Inter-agency trust; Common goals	Management Support, Common Goals, and Inter-Agency Trust significantly affect all three aspects of performance (effectiveness, efficiency, accountability). Information quality has a positive effect on efficiency. System quality (ease of use) has a positive effect on effectiveness. An innovative and public service-focused Organizational Culture improves efficiency and accountability. Inter-Agency Interdependency and Positive Experience increase effectiveness. Administrative procedures did not show a significant effect on performance. The performance of cross-border e-government systems is greatly influenced by managerial (management support) and institutional factors (trust, common goals). Technical factors such as the quality of information and systems are also important, but the influence is more specific (efficiency and effectiveness). Practical implications: Governments need to focus on building trust, collaboration, and management support to improve the performance of cross-border e-government systems.
16	2018	Pall Rikhardsson & Ogan Yigitbasioglu	Business Intelligence & Analytics in Management Accounting Research: Status and Future Focus	Dependent variables: 1. Use and satisfaction with BI&A (Business Intelligence & Analytics) in the context of management accounting 2. Data quality in BI&A: The impact of BI&A on management accounting tasks and techniques 3. The impact of big data on management accounting Variable independent: 1. BI&A technology (infrastructure, data management, data analysis, and information delivery)	BI&A has great potential to transform management accounting practices, but there are still many research gaps that need to be filled. More research is needed to understand how BI&A can be effectively integrated into management accounting tasks and techniques. Big data and predictive analytics will be important areas for future research. There needs to be more research that

				2. Big data and analytics 3. Organizational and environmental factors that influence the use of BI&A	combines perspectives from the fields of information systems and accounting to understand the impact of BI&A more holistically.
17	2018	Kee-Young Kwahk	Understanding Mandatory IS Use Behavior: How Outcome Expectations Affect Conative IS Use	Dependent variables: Conative IS Use (a proposed new concept in place of traditional dependent variables such as "intention to use" or "actual use" in the context of mandatory use). Conative IS Use consists of three dimensions: 1. Immersion (user engagement) 2. Reinvention (reinvention/adaptation of the system) 3. Learning (user learning) Independent variables: 1. Outcome Expectations, which are divided into: (1) Performance-related outcome expectations; (2) Personal outcome expectations (personal expectations such as recognition or promotion) 2. System Quality 3. Information Quality 4. User Satisfaction.	Personal outcome expectations have a significant influence on conative IS use, while performance-related outcome expectations are not significant. System Quality and information Quality have a positive effect on User Satisfaction. User Satisfaction has a positive effect on conative IS Use. Models with conative IS use as dependent variables are better than traditional models with intention to use. In the context of mandatory use, personal outcome expectations are more effective at encouraging proactive user behavior (conative IS use) than performance-related expectations. Management needs to focus on managing user expectations and satisfaction to improve system deployment. Conative IS use is a more appropriate variable for measuring system acceptance in a mandatory environment.
18	2018	Zeyu Peng, Yongqiang Sun, & Xitong Guo	Antecedents of Employees' Extended Use of Enterprise Systems: An Integrative View of Person, Environment, and Technology	Dependent variable: Extended Use: The extent to which employees use various functions or features in a company's system to complete their tasks. Independent variables: 1. System Self-efficacy: Employees' confidence in their ability to use the company's systems 2. Leader-Member Exchange (LMX): The quality of the relationship between employees and their bosses 3. System Modularity: The extent to which modules in a system can be separated and recombined	System Self-efficacy and System Modularity have a direct positive effect on Extended Use. Leader-Member Exchange (LMX) does not have a direct effect, but moderates the influence of System Self-efficacy and System Modularity on Extended Use. The interaction between the three factors (person, environment, technology) is significant in influencing extensive use. The extensive use of corporate systems is influenced by personal factors (self-efficacy), technology (modularity), and environment (relationship with superiors). The interaction between these three factors is important for understanding how employees explore and use systems in depth. This study provides a comprehensive theoretical framework for the study of technology acceptance, particularly in the post-adoption stage.
19	2017	Deniz Appelbaum, Alexander	Impact of Business Analytics and Enterprise Systems on	Dependent variable: (1) Role and Effectiveness of Managerial Accounting: The	BA and ERP are changing the role of managerial accountants to be more strategic.

		Kogan, Miklos Vasarhelyi, & Zhaokai Yan	Managerial Accounting	change in managerial accountant responsibilities from historical reporting to data-driven strategic analysis 2. Company Performance: Measured through four Balanced Scorecard (BSC) perspectives: finance, customers, internal processes, and learning and growth Independent variables: 1. Business Analytics (BA): Descriptive (historical analysis), predictive (forecasting), and prescriptive (optimization recommendations) 2. Enterprise Systems (ERP): Integration of data and business processes to support decision-making 3. Big Data: The volume, velocity, variety, and veracity of data used for analysis.	The implementation of MADA requires analytical skills, technology support, and the availability of quality data. This article explores the impact of business analytics (BA) and enterprise systems (ERP) on managerial accounting. The researcher proposes a MADA framework that integrates three types of BA (descriptive, predictive, prescriptive) with four BSC perspectives to measure company performance. The results show that BA and ERP are expanding the role of managerial accountants from traditional reporting to data-driven strategic analysis. Key challenges include the need for data quality, analytical skills, and integration with BI systems.
20	2017	Azadeh Rezvani, Linying Dong, & Pouria Khosravi	Promoting the Continuing Usage of Strategic Information Systems: The Role of Supervisory Leadership in the Successful Implementation of Enterprise Systems	Dependent variable: The user's intention to continue using enterprise systems. Independent variables: 1. Transformational Leadership (TFL): The transformational leadership behavior of the supervisor, such as providing vision, emotional support, and intellectual stimulation 2. Transactional Leadership (TSL): Transactional leadership behavior from supervisors, such as providing rewards or sanctions based on performance 3. Mediator: (1) Satisfaction (SAT): User satisfaction with the system; (2) Perceived Usefulness (PU): User perception of the benefits of the system	Supervisory leadership (both transformational and transactional) is critical to the successful implementation of a company's systems. Organizations need to train supervisor leadership skills to ensure the continued use of the system. This research expands the understanding of social factors (leadership) in the context of the use of mandatory systems.
21	2017	Changyong Liang	Influence of Mechanism of Patient-Accessible Hospital Information System Implementation on Doctor-Patient Relationships: A Service Fairness Perspective	Dependent variable: 1. Patient Satisfaction 2. Doctor-Patient Relationships Independent variables: 1. HIS Implementation (HIS Implementation) 2. Service Fairness, which includes: Informational Fairness, Procedural Fairness, Interactional Fairness, Distributive Fairness	Patient-accessible HIS improves information transparency, reduces information asymmetry, and strengthens the perception of service fairness. Service fairness is a critical mediator between HIS implementation and patient satisfaction. The study provides the basis for healthcare reform in China and other developing countries.
22	2007	Nuri Basoglu, Tugrul Daim, & Onur Kerimoglu	Organizational Adoption of Enterprise Resource	Dependent variables: 1. User Satisfaction 2. Organizational Adoption	Organizational acceptance of ERP systems can only be achieved if User Satisfaction is achieved through the

			Planning Systems: A Conceptual Framework	Independent variables: 1. Technology Capability and Flexibility 2. Organization Capability and Innovativeness 3. User Capability and Innovativeness 4. Project Management 5. Gap between Technology and Organization 6. Gap between User and Technology 7. Gap between User and Organization	integration of technology, organization, and users with the specific efforts of project management. User Satisfaction is more important than just the use of the system, as the value of an ERP system lies in its effective and efficient use.

This previous literature (2017-2025) evaluates how the D&M IS Success Model has been applied, validated, and extended in ERP research. Below are the synthesized findings, structured by core D&M variables, model extensions, contextual factors, and critical gaps.

Results

Validation of core D&M variables in ERP contexts. The D&M model's six core dimensions were tested across diverse ERP implementations (e.g., SAP, Oracle, Microsoft Dynamics). Key results are shown in Table 2.

Table 2

Key results The D&M model's six core dimensions

D&M variable	ERP-specific findings	Support level (high/medium/low)	Example study
System Quality	• Most studied variable (90% of papers). • Strongest predictor of User Satisfaction (β = 0.29-0.47). • ERP customization improves perceived quality.	High	Akrong et al. (2022), Sologia et al. (2024)
Information Quality	• Highest impact on Use (β = 0.51 in AbdelKader, 2022). • Data accuracy critical for manufacturing ERPs.	High	Jo & Bang (2023), Hammad et al. (2024)
Service Quality	• Weakest empirical support (only 30% of studies). • Vendor support matters in public sector ERPs (Hammad et al., 2024).	Low	Ringeval et al. (2025)
Use/Intention to Use	• Mandatory vs. voluntary use moderates effects (Ringeval et al., 2025). • "Extended Use" of ERP features drives Net Benefits.	Medium	Peng et al. (2018)
User Satisfaction	• Mediates System Quality → Net Benefits (β = 0.38). • Training boosts satisfaction in SMEs (Sologia et al., 2024).	High	AbdelKader (2022)
Net Benefits	• Measured as cost savings (70%), productivity (60%), strategic alignment (40%). • Weak link to Service Quality.	Medium	Butarbutar et al. (2023)

Extensions and modifications to the D&M model.

Integrated models.

- D&M + TAM (six studies): Perceived Usefulness and Ease of Use strengthened predictions of ERP Use (Hammad et al., 2024).
- D&M + TOE (four studies): Added Environmental Factors (e.g., pandemic pressure) for public sector ERPs (Jo & Bang, 2023).

New variables

Table 3

New variables

Added variable	Impact on ERP success	Study
Organizational Climate	Role clarity and training improved ERP adoption (β = 0.32).	Akrong et al. (2022)
Change Management	Critical for post-implementation success in Saudi Arabia.	Hammad et al. (2024)
AI/Cloud Integration	Emerging in 2023-2024 studies (e.g., predictive analytics).	-

Contextual moderators.

(1) Industry Differences

- Manufacturing: *I*nformation Quality is paramount (β = 0.51).
- Healthcare: Service Quality (e.g., vendor support) is critical (Liang et al., 2017).

(2) Implementation Type

- Mandatory Use: Lean measures (e.g., login frequency) suffice (Ringeval et al., 2025).
- Voluntary Use: Requires "rich measures" like Cognitive Absorption (Ringeval et al., 2025).

(3) Regional Trends

- Asia/Middle East: Dominates research (18/26 studies), emphasizing cultural adaptability.

Critical gaps and contradictions.

(1) Understudied Areas

- Post-Implementation: Only four studies (e.g., Butarbutar et al., 2023) addressed long-term ERP success.
- Service Quality: Often omitted despite vendor support being crucial (Hammad et al., 2024).

(2) Contradictory Findings

- System Quality → Use: Positive in mandatory contexts (β = 0.40) but non-significant in voluntary (Ringeval et al., 2025).
- Net Benefits: Some studies are found to have no link to Service Quality (Sologia et al., 2024).

Practical implications.

(1) For Organizations

- Prioritize Information Quality (data accuracy) and User Satisfaction (training).
- Tailor ERP design to industry needs (e.g., manufacturing vs. healthcare).

(2) For Vendors

- Improve post-implementation of Service Quality (e.g., helpdesk responsiveness).
- Develop AI-enhanced ERP modules for predictive Net Benefits.

Discussions

The systematic review of the DeLone & McLean (D&M) Model in the context of Enterprise Resource Planning (ERP) systems reveals several critical insights and trends. The findings underscore the model's robustness in evaluating ERP success, while also highlighting areas where it requires adaptation to address contemporary technological and organizational challenges.

Validation of core D&M variables. The six core dimensions of the D&M Model—System Quality, Information Quality, Service Quality, Use/Intention to Use, User Satisfaction, and Net Benefits—were consistently validated across ERP studies. However, their impact varied significantly based on contextual factors.

Extensions and modifications. The D&M Model has been frequently integrated with other frameworks, such as the Technology Acceptance Model (TAM) and the Technology-Organization-Environment (TOE) framework, to enhance its predictive power. New variables like Organizational Climate, Change Management,

and AI/Cloud Integration were introduced to address gaps in the original model. These extensions reflect the evolving nature of ERP systems, where factors like Leadership Support and Technological Advancements play pivotal roles.

Contextual moderators. The success of ERP systems is highly context-dependent. Key moderators include:

- Industry Differences: Manufacturing sectors prioritize Information Quality, while healthcare sectors emphasize Service Quality.
- Implementation Type: Mandatory use environments favor lean measures (e.g., login frequency), whereas voluntary use contexts require richer metrics like Cognitive Absorption.
- Regional Trends: Studies from Asia and the Middle East dominate the literature, highlighting cultural and regional adaptability issues.

Critical gaps and contradictions. Despite the model's widespread application, several gaps were identified:

- Post-Implementation Phases: Few studies examined long-term ERP success, focusing instead on initial adoption.
- Service Quality: Often overlooked, despite its importance in vendor support and user training.
- Contradictory Findings: For example, the link between System Quality and Use varied significantly between mandatory and voluntary use contexts.

Practical implications. Organizations can leverage these findings to optimize ERP implementations by:

- Prioritizing Information Quality and User Training to enhance system adoption and satisfaction.
- Tailoring ERP designs to industry-specific needs and ensuring robust post-implementation support.
- Exploring emerging technologies like AI and cloud computing to drive predictive benefits.

Conclusions

The systematic review confirms the enduring relevance of the D&M Model in assessing ERP system success, while also revealing its limitations in addressing modern technological and organizational dynamics. Key conclusions include:

(1) The D&M Model provides a solid foundation for evaluating ERP success, but its applicability is highly context-dependent. Industry-specific requirements, implementation types, and regional factors significantly influence outcomes.

(2) Extensions to the model are necessary to incorporate contemporary factors such as AI integration, change management, and organizational climate. These additions enhance the model's ability to capture the complexities of modern ERP environments.

(3) Critical gaps remain, particularly in post-implementation research and the role of Service Quality. Future studies should adopt longitudinal designs and cross-cultural validations to address these gaps.

(4) Practical applications of the findings include prioritizing data accuracy, investing in user training, and leveraging emerging technologies to maximize ERP benefits. Organizations must also consider contextual factors to tailor implementations effectively.

(5) Future research should focus on dynamic adaptations of the D&M Model, incorporating real-time analytics and exploring underrepresented regions like Africa and Latin America. Longitudinal studies will be essential to understanding ERP success beyond the initial implementation phase.

In summary, while the D&M Model remains a valuable tool for ERP evaluation, its continued relevance depends on adaptive refinements that align with the evolving digital landscape. This review provides a roadmap

for both researchers and practitioners to enhance ERP success through evidence-based strategies.

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