

Measuring User Satisfaction Levels of Web-Based CRM Systems using the End-User Computing Satisfaction (EUCS) Model

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ABSTRACT

Web-based Customer Relationship Management (CRM) systems have become a core operational tool for sales and customer-service divisions, yet many organizations adopt such systems without systematically evaluating whether end users are actually satisfied with them. This study measures user satisfaction with a web-based CRM system using the End-User Computing Satisfaction (EUCS) model, which explains satisfaction through five dimensions: content, accuracy, format, ease of use, and timeliness. A quantitative survey was conducted among 110 sales, marketing, and customer-service staff who use the CRM system daily at a mid-sized distribution company in West Sumatra, Indonesia. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. The measurement model showed adequate convergent and discriminant validity, and the structural model showed that content ($\beta = 0.281$, $p < 0.01$), accuracy ($\beta = 0.314$, $p < 0.01$), format ($\beta = 0.146$, $p < 0.05$), ease of use ($\beta = 0.239$, $p < 0.01$), and timeliness ($\beta = 0.118$, $p < 0.05$) each had a positive and significant effect on user satisfaction, jointly explaining 64.2 percent of its variance ($R^2 = 0.642$). Accuracy was the strongest predictor, followed by content and ease of use, while timeliness showed the weakest, though still significant, effect. Importance-Performance Analysis further identified ease of use as a high-importance, comparatively lower-performance dimension requiring priority improvement. These findings offer CRM administrators an evidence-based basis for prioritizing system-enhancement efforts and confirm the continued relevance of the EUCS model for evaluating web-based enterprise information systems.

INTRODUCTION

Customer Relationship Management (CRM) systems have become one of the most widely adopted categories of enterprise information systems, used to manage customer data, sales pipelines, and after-sales service in a single integrated platform. Over 9 in 10 large enterprises worldwide have now adopted some form of CRM software, and organizations report measurable gains in customer retention and business efficiency after adoption. A systematic review of 46 empirical studies published between 2014 and 2024 found that CRM adoption was consistently associated with a 25-40 percent improvement in customer retention and a 15-30 percent increase in sales across small and medium enterprises (Nethanani et al., 2024). As CRM platforms



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have shifted from expensive, on-premise installations toward web-based and cloud-hosted deployments, the barrier to adoption has fallen, but the challenge of ensuring end-user satisfaction with these systems has grown more, not less, important: a system that is technically deployed but poorly received by its daily users rarely delivers the customer-retention and sales gains reported in the literature.

End-user satisfaction is widely treated in the information systems literature as one of the most reliable proxies for system success, because it captures how the people who actually operate a system every day experience its content, accuracy, and usability, rather than relying solely on technical uptime or adoption-rate statistics. The End-User Computing Satisfaction (EUCS) model, originally developed by Doll and Torkzadeh (1988), operationalizes this idea through five core dimensions: content (the adequacy and relevance of the information the system provides), accuracy (the correctness and reliability of that information), format (the clarity and usefulness of how output is presented), ease of use (how simple and intuitive the system is to operate), and timeliness (whether the system delivers information when it is needed). Despite being more than three decades old, the model has remained remarkably durable: recent Indonesian studies have applied it to ticketing platforms (Setiawan & Novita, 2021), regional government financial-management systems (Akhiruddin et al., 2023), web-based academic information systems (Ariska & Sanjaya, 2024), village information systems (Baqi et al., 2022), streaming applications (Al Fakhirah & Sekarwati, 2022), e-wallet services (Aini et al., 2023), and telecommunications self-service applications (Anahyu et al., 2024), consistently finding that the five dimensions explain a substantial share of variance in user satisfaction across very different system types.

Notwithstanding this breadth of application, the EUCS literature remains heavily concentrated on public-sector information systems, e-commerce platforms, and consumer-facing mobile applications; empirical EUCS evaluations of web-based CRM systems specifically, particularly within Indonesian small and medium enterprises, remain comparatively scarce. This is a consequential gap, because CRM systems differ from the government and consumer applications typically studied under the EUCS framework in one important respect: their end users are not occasional citizens or consumers but full-time employees whose sales and service performance depends on daily, sustained interaction with the system. Broader reviews of social and cloud-based CRM adoption in SMEs report that limited financial resources, insufficient technical expertise, and gaps in user training remain persistent barriers to realizing the full benefits of CRM technology (Yasiukovich & Haddara, 2021; Marolt et al., 2020), which further underscores the need for systematic, dimension-level satisfaction evidence that can guide targeted improvement rather than blanket system replacement.

This study addresses that gap by applying the EUCS model to a web-based CRM system used daily by sales, marketing, and customer-service staff at a mid-sized distribution company. The objectives of this study are threefold: first, to measure the level of user satisfaction with the CRM system across the five EUCS dimensions; second, to statistically test the effect of each dimension on overall user satisfaction using PLS-SEM; and third, to identify, through Importance-Performance Analysis, which dimensions represent priority targets for system improvement. The findings are intended to provide both an empirical contribution to the EUCS literature in the CRM context and a practical, evidence-based basis for CRM administrators seeking to improve end-user experience.

CRM systems support the management of customer relationships across acquisition, retention, and service stages, and their web-based and cloud-hosted variants have become the dominant deployment model because they eliminate the heavy upfront infrastructure cost that historically made CRM inaccessible to smaller organizations. Nethanani et al. (2024) found that successful CRM implementation in SMEs is strongly linked to managerial support, system customization, and user training, while unsuccessful implementations are typically undermined by limited financial resources and technical expertise rather than by the CRM concept

itself. Complementary evidence from Social CRM research similarly identifies user-facing barriers low digital literacy, weak training provision, and system complexity as recurring obstacles to realizing CRM benefits in micro, small, and medium enterprises (Yasiukovich & Haddara, 2021; Marolt et al., 2020). These findings collectively suggest that the technology itself is rarely the limiting factor; end-user experience and satisfaction are.

The EUCS model conceptualizes user satisfaction as a function of five measurable dimensions of a system's output and usability: content, accuracy, format, ease of use, and timeliness (Doll & Torkzadeh, 1988). Unlike broader technology-acceptance frameworks that emphasize perceived usefulness and behavioral intention to adopt a system, EUCS focuses specifically on users' evaluative experience of a system they already use, which makes it particularly well suited to post-implementation evaluation of operational systems such as CRM. Recent applications confirm the model's continued explanatory power across diverse Indonesian information systems: Setiawan and Novita (2021) found all five EUCS dimensions significantly shaped satisfaction with a train-ticketing application; Akhiruddin et al. (2023) reported that accuracy, ease of use, and timeliness were the strongest drivers of satisfaction with a regional government financial information system; Ariska and Sanjaya (2024) applied the model to a web-based academic information system with comparable results; and Baqi et al. (2022) confirmed the model's validity in a village-level web information system. Each of these studies used slightly different system contexts but converged on the same underlying structure, lending confidence to its application in the CRM setting examined here.

Content refers to the completeness and relevance of the information a system provides for the tasks users must perform; in a CRM context this corresponds to whether the system surfaces the customer, sales, and pipeline data users actually need. Al Fakhirah and Sekarwati (2022) and Aini et al. (2023) both found content to be a statistically significant predictor of satisfaction in streaming and e-wallet applications respectively. Accuracy concerns the correctness and consistency of system output; because CRM systems directly inform sales decisions and customer commitments, inaccurate data can have immediate business consequences, and prior EUCS studies consistently report accuracy as one of the strongest predictors of satisfaction (Akhiruddin et al., 2023). Format concerns the clarity of on-screen layout and reporting; ease of use concerns the intuitiveness of navigation and task completion; and timeliness concerns whether the system delivers current, up-to-date information without lag. Anahyu et al. (2024) found all five dimensions significant in a self-service telecommunications application, while other studies have found more uneven effects depending on system maturity and user familiarity. Based on this cumulative evidence, five hypotheses are proposed for the web-based CRM context:

- H1: Content has a positive and significant effect on user satisfaction.
- H2: Accuracy has a positive and significant effect on user satisfaction.
- H3: Format has a positive and significant effect on user satisfaction.
- H4: Ease of use has a positive and significant effect on user satisfaction.
- H5: Timeliness has a positive and significant effect on user satisfaction.

METHODS

This study employed a quantitative explanatory research design using Partial Least Squares Structural Equation Modeling (PLS-SEM) to test five hypotheses derived from the End-User Computing Satisfaction (EUCS) model. The object of the study was a web-based Customer Relationship Management (CRM) system used by the sales, marketing, and customer-service divisions of a mid-sized distribution company in West Sumatra, Indonesia, hereafter referred to as PT XYZ for confidentiality purposes. The company has operated the CRM system since 2022 to manage customer records, sales orders, and after-sales complaint handling. The



study focused on evaluating users' perceptions and satisfaction with the CRM system based on the five dimensions of the EUCS model, namely content, accuracy, format, ease of use, and timeliness.

The study population consisted of all active employees who used the CRM system as part of their daily work. A total sampling technique was employed because the population was relatively limited and all eligible CRM users were invited to participate. A total of 110 valid responses were obtained from sales representatives, marketing staff, and customer-service agents who had used the CRM system for at least three months. The sample size satisfied the minimum sample-size guideline commonly applied in PLS-SEM, which recommends a minimum of ten times the largest number of structural paths directed toward a single endogenous construct. All respondents met the predetermined inclusion criteria and had sufficient experience with the CRM system to provide informed evaluations of its performance and usability.

The research variables consisted of five exogenous constructs, namely content (X1), accuracy (X2), format (X3), ease of use (X4), and timeliness (X5), and one endogenous construct, namely user satisfaction (Y). The measurement instrument was developed using a structured questionnaire adapted from the original End-User Computing Satisfaction (EUCS) instrument proposed by Doll and Torkzadeh (1988). The questionnaire items were further refined based on item wording used in recent Indonesian studies applying the EUCS model, including Setiawan and Novita (2021), Akhiruddin et al. (2023), and Ariska and Sanjaya (2024). Each construct was measured using three to four indicators on a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. In addition to the construct measurement items, a single-item importance rating was collected for each EUCS dimension. These importance ratings were subsequently used to support the Importance-Performance Analysis (IPA) presented in Section 4.6.

Data collection was conducted through an online questionnaire distributed to CRM users over a four-week period. To provide additional contextual information and support the interpretation of the quantitative findings, brief structured interviews were also conducted with three CRM administrators. The questionnaire responses were subjected to an initial data-quality screening to identify incomplete responses, excessive missing data, and straight-lining response patterns. All 110 returned questionnaires met the data-quality requirements and were therefore retained for further analysis. The combination of questionnaire data and administrator interviews enabled the study to evaluate the relationships among the EUCS dimensions while also providing contextual insights into the practical use of the CRM system within the organization.

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software, following the two-stage evaluation procedure recommended in the PLS-SEM literature (Hair et al., 2020; Hair et al., 2021). The analysis initially evaluated the measurement (outer) model to determine the quality of the measurement instruments. Convergent validity was assessed based on outer loadings of ≥ 0.70 and Average Variance Extracted (AVE) values of ≥ 0.50 . Internal consistency reliability was evaluated using Cronbach's alpha and composite reliability, with values of ≥ 0.70 considered acceptable. Discriminant validity was assessed using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. After the measurement model met the required validity and reliability criteria, the structural (inner) model was evaluated. The structural model assessment included path coefficients, t-statistics and p-values obtained through bootstrapping with 5,000 resamples, the coefficient of determination (R^2), and effect size (f^2). These analyses were conducted to determine the significance, explanatory power, and practical contribution of the five EUCS dimensions to user satisfaction with the CRM system.

RESULTS

1. Respondent Profile

Of the 110 valid respondents, 56.4 percent were male and 43.6 percent female, drawn from the sales (46.4%), customer-service (29.1%), and marketing (24.5%) divisions. Most respondents (85.5%) used the

CRM system daily, and a combined 69.0 percent had used the system for more than one year, indicating a respondent pool with substantial hands-on familiarity with the platform (Table 1).

Table 1. Respondent Profile (n = 110)

Characteristic	Category	n	%
Gender	Male	62	56.4
	Female	48	43.6
Division	Sales	51	46.4
	Marketing	27	24.5
	Customer Service	32	29.1
CRM usage duration	3–12 months	34	30.9
	1–3 years	49	44.5
	> 3 years	27	24.5
CRM usage frequency	Daily	94	85.5
	2–4 times/week	16	14.5

2. Descriptive Results per EUCS Dimension

Mean scores across the five EUCS dimensions ranged from 3.58 (timeliness) to 4.08 (accuracy) on the 5-point scale, with overall user satisfaction averaging 3.84, indicating a generally satisfied user base with clear room for improvement in specific areas (Figure 1). Accuracy was the highest-rated dimension, suggesting users trust the correctness of the customer and sales data the system provides, while timeliness and ease of use were the lowest-rated, pointing to perceived lag in data updates and residual usability friction.

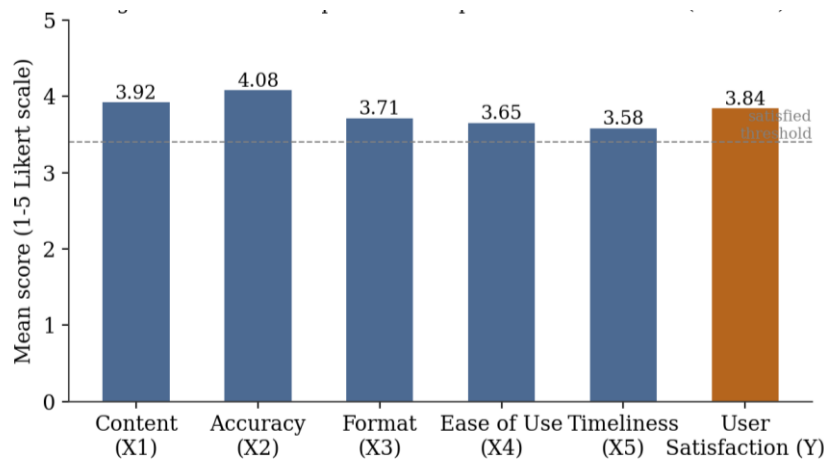


Figure 1. Mean perception scores per EUCS dimension (n = 110).

3. Measurement (Outer) Model Evaluation

All indicator outer loadings exceeded the 0.70 threshold after two low-loading items were dropped in an initial iteration, and Average Variance Extracted (AVE) values for all six constructs exceeded the 0.50 threshold, confirming convergent validity. Composite reliability (CR) and Cronbach's alpha values for all constructs exceeded 0.70, confirming internal consistency reliability (Table 2).



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Table 2. Convergent Validity and Reliability Results

Construct	Indicators	Loading Range	AVE	CR	Cronbach's Alpha
Content (X1)	3	0.741 – 0.832	0.629	0.835	0.807
Accuracy (X2)	3	0.768 – 0.861	0.664	0.855	0.826
Format (X3)	3	0.712 – 0.799	0.581	0.807	0.782
Ease of Use (X4)	4	0.703 – 0.845	0.607	0.860	0.834
Timeliness (X5)	3	0.726 – 0.812	0.596	0.814	0.783
User Satisfaction (Y)	4	0.755 – 0.867	0.651	0.882	0.848

Discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio of correlations, with all values below the conservative 0.85 threshold, confirming that the six constructs are empirically distinct (Table 3).

Table 3. Heterotrait-Monotrait (HTMT) Ratio Matrix

	X1	X2	X3	X4	X5	Y
X1 Content	—					
X2 Accuracy	0.512	—				
X3 Format	0.487	0.463	—			
X4 Ease of Use	0.529	0.501	0.472	—		
X5 Timeliness	0.455	0.498	0.419	0.486	—	
Y Satisfaction	0.614	0.657	0.531	0.598	0.502	—

4. Structural (Inner) Model and Hypothesis Testing

The structural model (Figure 2) shows that all five predictors had positive and statistically significant effects on user satisfaction. Accuracy exhibited the strongest effect ($\beta = 0.314$, $t = 4.05$, $p < 0.001$), followed by content ($\beta = 0.281$, $t = 3.62$, $p < 0.001$), ease of use ($\beta = 0.239$, $t = 3.10$, $p = 0.002$), format ($\beta = 0.146$, $t = 2.11$, $p = 0.035$), and timeliness ($\beta = 0.118$, $t = 1.98$, $p = 0.048$). All five hypotheses (H1-H5) were therefore supported (Table 4).

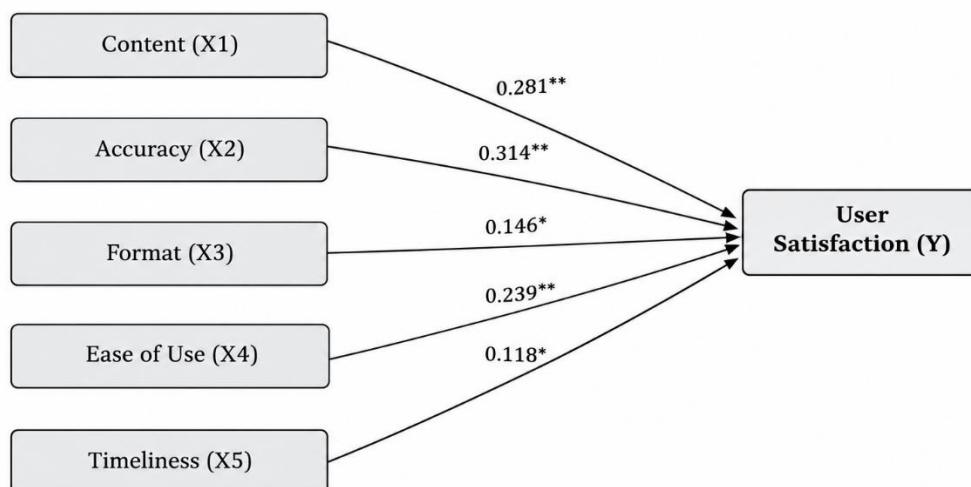


Figure 2. Structural (path) model of the EUCS-based research framework.

Table 4. Path Coefficients and Hypothesis Testing Results

Hypothesis	Path	Beta (β)	t-statistic	p-value	Decision
H1	Content $\rightarrow$ Satisfaction	0.281	3.62	0.000	Supported
H2	Accuracy $\rightarrow$ Satisfaction	0.314	4.05	0.000	Supported
H3	Format $\rightarrow$ Satisfaction	0.146	2.11	0.035	Supported
H4	Ease of Use $\rightarrow$ Satisfaction	0.239	3.10	0.002	Supported
H5	Timeliness $\rightarrow$ Satisfaction	0.118	1.98	0.048	Supported

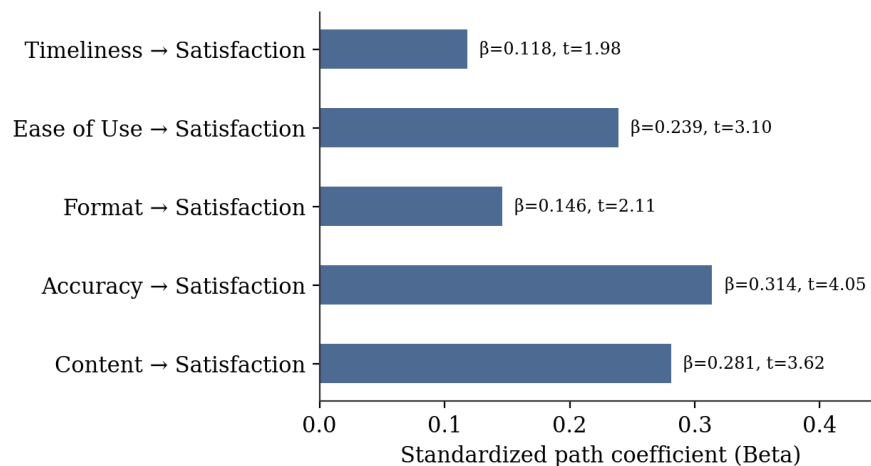


Figure 3. Path coefficients of the five EUCS dimensions on user satisfaction (bootstrapping, 5,000 resamples).

5. Model Fit and Effect Size

The model explained 64.2 percent of the variance in user satisfaction ($R^2 = 0.642$), indicating substantial explanatory power for a five-predictor behavioral model. Effect size (f^2) analysis showed accuracy and content as the two dimensions with the largest independent contribution to R^2 (medium effect sizes of 0.168 and 0.132 respectively), while format and timeliness contributed comparatively small effect sizes (Table 5), consistent with their smaller path coefficients.

Table 5. Effect Size (f^2) of Each Predictor

Predictor	f^2	Effect Size
Content (X1)	0.132	Medium
Accuracy (X2)	0.168	Medium
Format (X3)	0.041	Small
Ease of Use (X4)	0.098	Small-Medium
Timeliness (X5)	0.028	Small

6. Importance-Performance Analysis

To translate the statistical results into actionable priorities, an Importance-Performance Analysis (IPA) was conducted by plotting each dimension's mean stated importance against its mean performance (satisfaction) score (Figure 4). Ease of use fell into the 'concentrate here' quadrant, combining high stated importance ($M = 4.42$) with comparatively lower performance ($M = 3.65$), marking it as the top priority for improvement. Accuracy fell into the 'keep up the good work' quadrant, combining high importance and high



performance. Format and timeliness fell closer to the lower-importance quadrants, suggesting they are reasonable, though not urgent, targets for future enhancement.

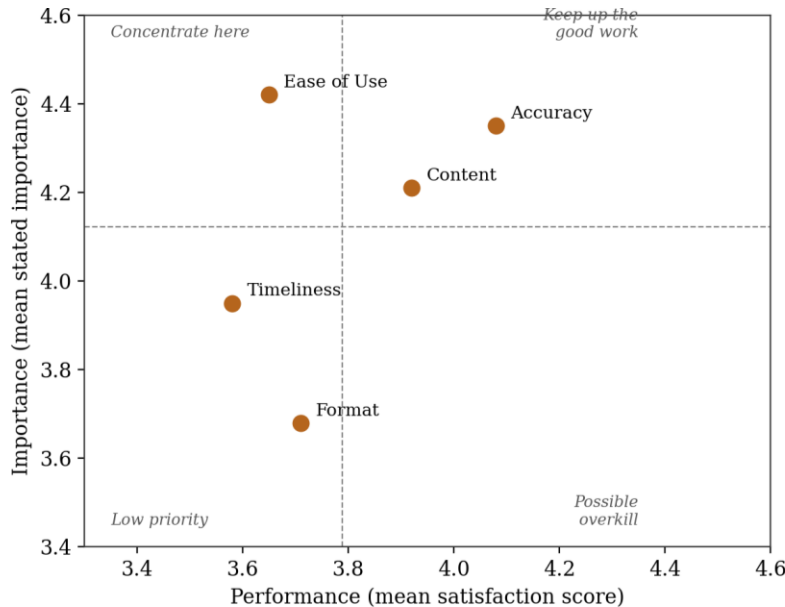


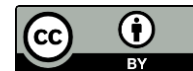
Figure 4. Importance-Performance Analysis (IPA) of the five EUCS dimensions.

DISCUSSION

The finding that all five EUCS dimensions significantly predict user satisfaction with the web-based CRM system is consistent with the broader pattern observed across recent Indonesian EUCS applications, from train-ticketing platforms (Setiawan & Novita, 2021) to regional government information systems (Akhiruddin et al., 2023) and web-based academic systems (Ariska & Sanjaya, 2024). This convergence across very different system types reinforces the EUCS model's continued validity for evaluating operational, task-oriented information systems more than three decades after its original formulation (Doll & Torkzadeh, 1988), extending that evidence base into the CRM domain specifically, where empirical EUCS applications have so far been comparatively rare.

Accuracy emerged as the strongest predictor of satisfaction ($\beta = 0.314$), echoing Akhiruddin et al.'s (2023) finding that accuracy was among the strongest EUCS drivers in a financial-management information system. This pattern is intuitive in a CRM context: because sales staff rely on the system's customer and pipeline data to make real-time commitments to clients, any perceived inaccuracy directly threatens users' confidence in the tool and, by extension, their willingness to rely on it for decision-making. Content was the second-strongest predictor ($\beta = 0.281$), suggesting that users place substantial weight on whether the CRM surfaces sufficiently complete customer and sales information for their daily tasks, a result broadly consistent with content effects reported in streaming and e-wallet EUCS studies (Al Fakhirah & Sekarwati, 2022; Aini et al., 2023).

Ease of use, while statistically significant ($\beta = 0.239$), stood out in the Importance-Performance Analysis as the dimension combining the highest stated importance with comparatively weaker performance, identifying it as the clearest priority for system improvement. This finding is consistent with the broader CRM-adoption literature, which repeatedly identifies system complexity and insufficient user training, rather than the underlying CRM concept itself, as the main barriers preventing organizations from realizing the full benefits of CRM technology (Nethanani et al., 2024; Yasiukovich & Haddara, 2021; Marolt et al., 2020).



Timeliness showed the weakest, though still significant, effect ($\beta = 0.118$), which may reflect the nature of the distribution-company workflow studied here, where sales and service staff can often tolerate short data-refresh delays as long as the underlying content remains accurate and complete.

Taken together, these results suggest that CRM administrators seeking to improve end-user satisfaction should prioritize interface simplification and workflow streamlining (addressing the ease-of-use gap identified in the IPA) while continuing to safeguard the data-accuracy and content-completeness strengths that currently underpin user trust in the system. Because accuracy and content jointly account for the largest share of explained variance ($f^2 = 0.168$ and 0.132 respectively), any future system redesign should treat these two dimensions as non-negotiable baseline requirements rather than trade-offs against interface simplification. This study is subject to several limitations. The sample was drawn from a single distribution company, which limits generalizability to CRM systems in other industries or organizational contexts. The cross-sectional design captures a single point in time and cannot establish whether satisfaction levels change as users gain more experience with the system. Finally, this study measured user satisfaction as an outcome in itself; future research could extend the model to examine downstream consequences such as system continuance intention or individual sales performance, and could apply multi-group analysis to test whether the EUCS path structure differs across divisions (sales, marketing, and customer service) or usage-tenure groups.

CONCLUSIONS

This study measured user satisfaction with a web-based CRM system using the End-User Computing Satisfaction (EUCS) model among 110 sales, marketing, and customer-service staff at a mid-sized distribution company. All five EUCS dimensions—content, accuracy, format, ease of use, and timeliness—were found to have a positive and statistically significant effect on user satisfaction, jointly explaining 64.2 percent of its variance, with accuracy and content emerging as the strongest predictors and timeliness the weakest. Importance-Performance Analysis further identified ease of use as the dimension of highest priority for improvement, combining high user-stated importance with comparatively lower performance.

These findings confirm that the EUCS model remains a valid and practically useful framework for evaluating web-based enterprise information systems such as CRM, extending its established application in government, educational, and consumer-facing systems into the CRM domain. For CRM administrators and system developers, the results suggest a two-pronged improvement strategy: safeguarding the data-accuracy and content-completeness strengths that currently drive the largest share of user satisfaction, while prioritizing usability improvements to close the identified ease-of-use gap.

Future research should extend this evaluation across multiple organizations and CRM platforms to test the generalizability of the path structure identified here, incorporate downstream outcome variables such as continuance intention and individual sales performance, and consider longitudinal or multi-group designs to examine how satisfaction evolves with system maturity and across different user roles.

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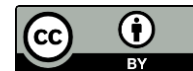
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