Future of Work and Digital Management Journal

Article type:
Original Research

Article history:
Received 05 November 2025
Revised 22 February 2026
Accepted 25 February 2026
Published online 01 May 2026

Analyzing the Role of Data Mining–Based Customer Relationship Management in Enhancing Customer Loyalty and Sales Growth in Food Distribution Companies in Major Cities of Iran

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How to cite this article:
Moeini, S., Khanali, A. & Gharibshahian, A. (2026). Analyzing the Role of Data Mining–Based Customer Relationship Management in Enhancing Customer Loyalty and Sales Growth in Food Distribution Companies in Major Cities of Iran. *Future of Work and Digital Management Journal, 4*(3), 1-13. https://doi.org/10.61838/fwdmj.225

ABSTRACT

The objective of this study was to analyze the role of data mining–based customer relationship management in improving customer loyalty and promoting sales growth in large food distribution companies operating in metropolitan cities of Iran. This applied quantitative study employed a descriptive–correlational design using structural equation modeling. The statistical population consisted of managers, marketing experts, CRM specialists, and sales supervisors working in food distribution companies located in Tehran. A total of 312 participants were selected through stratified random sampling to ensure representation across organizational roles. Data were collected using a standardized questionnaire measuring data mining–based CRM capabilities, customer knowledge management, customer loyalty, and sales growth using a five-point Likert scale. Content validity was confirmed by academic and industry experts, and reliability indices exceeded acceptable thresholds. Data analysis was conducted using SPSS-27 for preliminary statistical analysis and SmartPLS-4 for confirmatory factor analysis and structural model testing. Structural equation modeling results revealed that data mining–based CRM had a significant positive effect on customer loyalty ($\beta = 0.62$, $p < 0.001$) and sales growth ($\beta = 0.41$, $p < 0.001$). Customer knowledge management also significantly influenced customer loyalty ($\beta = 0.33$, $p < 0.001$). Furthermore, customer loyalty demonstrated a strong positive effect on sales growth ($\beta = 0.47$, $p < 0.001$), confirming its mediating role in translating CRM capabilities into organizational performance outcomes. The model explained 58% of the variance in customer loyalty and 64% of the variance in sales growth, indicating substantial explanatory power. The findings demonstrate that integrating data mining techniques within CRM systems significantly enhances relationship quality with customers and converts customer intelligence into measurable sales performance improvements. Data-driven CRM functions as a strategic organizational capability that strengthens loyalty formation, optimizes marketing decisions, and supports sustainable business growth in competitive distribution markets.

Keywords: Data Mining, Customer Relationship Management, Customer Loyalty, Sales Growth, Food Distribution Industry, Analytical CRM, Marketing Analytics.

Introduction

In contemporary competitive markets, organizations increasingly recognize that sustainable business growth depends not only on acquiring new customers but also on maintaining long-term relationships with existing ones. The transformation from transaction-oriented marketing toward relationship-oriented strategies has positioned Customer Relationship Management (CRM) as one of the most influential managerial paradigms in modern business environments. CRM enables firms to systematically collect, analyze, and utilize customer information to create personalized value propositions, enhance customer satisfaction, and ultimately improve loyalty and organizational performance. As markets become more data-driven and

digitally interconnected, CRM has evolved from a simple customer database into a strategic decision-support system supported by advanced analytics and data mining technologies [1, 2].

The rapid expansion of digital technologies and information systems has fundamentally reshaped customer behavior, expectations, and competitive dynamics. Customers today demand personalized services, fast responses, and consistent experiences across multiple interaction channels. Organizations that fail to understand customer preferences risk losing market share to competitors capable of delivering data-driven solutions. Data mining has therefore emerged as a critical capability within CRM systems, allowing companies to uncover hidden patterns in purchasing behavior, predict future needs, and design targeted marketing strategies. The integration of data mining with CRM strengthens firms' ability to transform raw customer data into strategic knowledge, improving operational efficiency and long-term competitiveness [3, 4].

Theoretical and empirical research consistently highlights CRM as a central driver of customer loyalty. Loyalty represents a multidimensional construct encompassing emotional attachment, repeat purchasing behavior, trust, and long-term commitment to a brand or organization. Studies indicate that effective CRM programs enhance customer satisfaction through improved service quality, communication transparency, and personalized interaction, which subsequently foster loyalty outcomes [5, 6]. Furthermore, customer satisfaction often mediates the relationship between CRM practices and loyalty formation, emphasizing the importance of delivering value through relationship management rather than isolated marketing efforts [7, 8].

Recent technological developments have accelerated the transition toward electronic CRM (e-CRM) and intelligent customer management systems. Digital platforms allow organizations to track customer interactions continuously, enabling real-time analytics and adaptive decision-making processes. Evidence suggests that electronic CRM tools significantly enhance customer retention and engagement, particularly when integrated with digital marketing strategies and online service platforms [9, 10]. The emergence of artificial intelligence and machine learning further expands CRM capabilities by automating customer segmentation, predicting purchasing trends, and optimizing marketing resource allocation [11, 12].

Data mining–based CRM is particularly relevant in industries characterized by high transaction volumes and complex distribution networks, such as food distribution companies operating in large metropolitan areas. These organizations manage extensive customer bases, diverse product portfolios, and dynamic market conditions that require accurate forecasting and efficient customer relationship strategies. Analytical CRM enables distributors to identify profitable customer segments, manage demand fluctuations, and design loyalty programs tailored to different purchasing patterns. Research shows that CRM tools significantly influence both customer retention and revenue expansion when supported by analytical insights derived from customer data [13, 14].

Customer loyalty has been widely acknowledged as a key determinant of sales growth and organizational sustainability. Loyal customers typically demonstrate higher repurchase intentions, lower price sensitivity, and stronger advocacy behaviors, which contribute to stable revenue streams and reduced marketing costs. Empirical findings reveal that relationship-building initiatives, ethical selling practices, and trust-based interactions play essential roles in strengthening loyalty outcomes [15, 16]. Moreover, loyalty-driven strategies support business sustainability by fostering enduring relationships rather than short-term transactional gains [17].

Marketing innovation and digital communication channels further enhance CRM effectiveness by enabling firms to interact with customers in more meaningful and personalized ways. Organizations that adopt innovative communication strategies

demonstrate improved sales performance and stronger customer engagement compared to traditional marketing approaches [18]. Social media presence, digital promotion, and integrated marketing communication systems amplify relationship quality and contribute to sales growth through strengthened brand awareness and customer commitment [19, 20].

The adoption of CRM practices across various industries provides valuable insights into their operational effectiveness. Studies in retail, hospitality, automotive, and dairy sectors confirm that CRM implementation enhances customer satisfaction, operational efficiency, and competitive advantage. For example, CRM initiatives in retail environments improve customer interaction management and strengthen loyalty through personalized services [21]. Similarly, CRM adoption in hospitality enterprises supports customer retention by optimizing service delivery and relationship continuity [22]. Industry-specific analyses further demonstrate that CRM contributes to organizational resilience during disruptive periods such as economic crises and global pandemics by maintaining customer engagement and trust [23, 24].

Another significant dimension of modern CRM is emotional and experiential relationship management. Emotional CRM models emphasize understanding customers' psychological expectations and delivering meaningful experiences that strengthen relational bonds. Such approaches highlight that customer loyalty is not solely driven by economic benefits but also by perceived relational value and emotional connection with organizations [20, 25]. When firms effectively combine emotional engagement with analytical customer insights, they achieve stronger long-term loyalty outcomes and sustainable market positioning.

Data security and customer trust have also emerged as critical considerations in data-driven CRM environments. As organizations collect increasing amounts of customer information, safeguarding data privacy becomes essential for maintaining trust and ensuring continued customer engagement. Advanced analytical CRM systems that integrate secure data management practices significantly enhance loyalty by reinforcing customers' confidence in organizational integrity [26]. Trust-building mechanisms therefore function as a foundational element linking technological CRM adoption with behavioral loyalty outcomes.

From a strategic management perspective, CRM aligns closely with organizational performance objectives, particularly sales growth. Research demonstrates that CRM adoption directly contributes to improved sales performance by facilitating targeted marketing campaigns, cross-selling opportunities, and optimized resource allocation. CRM-supported promotion strategies enhance sales outcomes when mediated by customer loyalty, confirming the interdependence between relational marketing and financial performance [27, 28]. Additionally, CRM-driven analytical models help organizations identify high-value customers and prioritize marketing investments accordingly, strengthening revenue generation capabilities [29].

Despite extensive global research on CRM effectiveness, contextual differences across industries and geographic regions necessitate localized investigations. Emerging markets and rapidly urbanizing economies present unique challenges related to distribution infrastructure, consumer diversity, and technological adoption. Studies emphasize that CRM strategies must be adapted to local operational environments to maximize effectiveness and align with market-specific customer expectations [30, 31]. Furthermore, price sensitivity and competitive pressures within food distribution markets highlight the importance of data-driven decision-making in achieving sustainable sales performance [32].

In large metropolitan cities of Iran, food distribution companies operate within highly competitive and complex supply chains characterized by rapid product turnover, extensive retailer networks, and evolving consumer preferences. These firms

increasingly invest in CRM technologies and data mining systems to manage customer relationships more effectively and support strategic growth initiatives. However, empirical evidence examining how data mining–based CRM contributes simultaneously to customer loyalty and sales growth within this sector remains limited. Previous studies have primarily focused on individual CRM outcomes such as satisfaction or loyalty, while comprehensive models linking analytical CRM capabilities to organizational performance outcomes are still underexplored [9, 33].

Moreover, the integration of advanced analytics, artificial intelligence, and digital CRM platforms creates new opportunities for improving customer engagement and operational efficiency. Organizations capable of leveraging these technologies gain deeper insights into customer behavior and develop adaptive marketing strategies aligned with evolving market conditions [11, 12]. Understanding how these technological capabilities translate into measurable performance outcomes is therefore essential for both academic development and managerial practice.

Given the growing importance of data-driven decision-making, examining CRM effectiveness within the food distribution industry provides valuable insights into how analytical customer knowledge can strengthen loyalty formation and stimulate sales expansion. Investigating these relationships contributes to the broader literature on relationship marketing, digital transformation, and performance management by integrating technological, relational, and financial perspectives into a unified analytical framework.

Therefore, the aim of this study is to analyze the role of data mining–based customer relationship management in enhancing customer loyalty and promoting sales growth in food distribution companies operating in major metropolitan cities of Iran.

Methodology

This study was conducted using an applied research approach with a quantitative methodology and a descriptive–correlational design based on structural equation modeling. The research aimed to investigate how data mining–based customer relationship management (CRM) practices influence customer loyalty and sales growth within large-scale food distribution companies operating in metropolitan environments. The statistical population consisted of managers, sales supervisors, marketing experts, and CRM specialists employed in food distribution companies headquartered in Tehran, Iran, as Tehran represents the largest and most technologically advanced distribution hub in the country and serves as the operational center for nationwide supply chains.

A total of 312 participants were selected from food distribution companies located in Tehran using a stratified random sampling procedure to ensure adequate representation across organizational roles and company sizes. Eligibility criteria required participants to have at least two years of professional experience in sales management, customer relationship management, marketing analytics, or distribution operations, and to be directly involved in customer data management or decision-making processes related to sales performance. The sample size was determined based on recommendations for structural equation modeling, ensuring sufficient statistical power for testing complex relationships among latent variables. Participation was voluntary, and respondents were assured of confidentiality and anonymity to minimize response bias and encourage accurate reporting.

Data were collected using a structured questionnaire developed through an extensive review of CRM, data mining, customer loyalty, and sales performance literature. The instrument consisted of several conceptual sections designed to

capture the multidimensional nature of data mining–based CRM implementation and its organizational outcomes. The first section measured the extent of data mining utilization in CRM activities, including customer segmentation, purchasing pattern analysis, predictive analytics, recommendation systems, and decision-support applications used in marketing and distribution planning. The second section evaluated CRM effectiveness dimensions such as personalized communication, responsiveness to customer needs, customer knowledge management, service quality enhancement, and relationship continuity.

Customer loyalty was assessed through indicators reflecting behavioral loyalty, repurchase intention, emotional commitment, brand preference, and long-term customer retention tendencies. Sales growth was operationalized using perceptual measures related to market expansion, revenue increase, customer acquisition rate, cross-selling success, and overall sales performance improvement over recent fiscal periods. All items were measured using a five-point Likert scale ranging from strongly disagree to strongly agree. Content validity of the questionnaire was confirmed through expert evaluation involving university faculty members specializing in marketing analytics and senior managers from the food distribution industry. A pilot test conducted with a small group of industry professionals confirmed clarity, relevance, and reliability of the measurement items prior to full-scale data collection.

The collected data were analyzed using a multistep statistical procedure designed to ensure methodological rigor and robustness of findings. Initially, data screening was performed to identify missing values, outliers, and normality assumptions. Descriptive statistics were calculated to summarize demographic characteristics and organizational profiles of participants. Reliability of measurement constructs was examined using Cronbach’s alpha and composite reliability indices to confirm internal consistency.

Subsequently, confirmatory factor analysis was conducted to evaluate the measurement model and assess construct validity, including convergent validity and discriminant validity. After establishing the adequacy of the measurement model, structural equation modeling was employed to test hypothesized relationships among data mining–based CRM practices, customer loyalty, and sales growth. Path coefficients, model fit indices, and explained variance values were analyzed to determine the strength and significance of causal relationships. Statistical analyses were performed using SPSS version 27 for preliminary analyses and SmartPLS version 4 for structural modeling, enabling simultaneous examination of direct and indirect effects among latent variables and providing a comprehensive understanding of how data-driven CRM capabilities contribute to organizational performance outcomes in Tehran’s food distribution sector.

Findings and Results

The analysis began with a descriptive examination of participants’ demographic and professional characteristics to ensure representativeness of the research sample. Among the 312 respondents from food distribution companies in Tehran, 68.3% were male and 31.7% were female, reflecting the managerial and operational structure commonly observed in large distribution firms. In terms of age distribution, 21.8% of participants were between 25 and 34 years old, 46.5% were between 35 and 44 years old, 24.0% were between 45 and 54 years old, and 7.7% were above 55 years old. Regarding educational attainment, 18.6% held bachelor’s degrees, 63.5% possessed master’s degrees, and 17.9% had doctoral or professional qualifications. Organizational positions included sales managers (29.5%), marketing and CRM specialists (34.0%), senior operational managers (21.2%), and data analysts or IT specialists involved in customer data management (15.3%). Work

experience analysis showed that 26.6% had 2–5 years of experience, 41.0% had 6–10 years, 22.8% had 11–15 years, and 9.6% had more than 15 years of professional experience. These statistics indicate that respondents possessed sufficient expertise and familiarity with customer relationship management systems and sales operations, thereby strengthening the credibility of subsequent analytical results.

Table 1

Descriptive Statistics and Reliability of Research Variables

Variable	Mean	Standard Deviation	Cronbach's Alpha	Composite Reliability	AVE
Data Mining–Based CRM	3.91	0.63	0.91	0.93	0.68
Customer Loyalty	3.84	0.59	0.89	0.92	0.66
Sales Growth	3.77	0.61	0.88	0.90	0.64
Customer Knowledge Management	3.95	0.57	0.90	0.92	0.69
Personalized Marketing Capability	3.88	0.60	0.87	0.89	0.63

The results presented in Table 1 demonstrate that all research variables exhibit acceptable central tendencies, with mean values exceeding the midpoint of the measurement scale, indicating a generally favorable perception of data mining utilization and CRM effectiveness among food distribution companies in Tehran. Reliability indicators confirm strong internal consistency, as Cronbach's alpha values range from 0.87 to 0.91, exceeding recommended thresholds. Composite reliability coefficients also surpass 0.70, verifying measurement stability. Furthermore, Average Variance Extracted (AVE) values are above 0.50 for all constructs, confirming convergent validity and indicating that measurement items adequately represent their respective latent variables. These findings support proceeding to advanced inferential analyses.

Table 2

Correlation Matrix Among Research Variables

Variable	1	2	3	4	5
1. Data Mining–Based CRM	1.000				
2. Customer Knowledge Management	0.71	1.000			
3. Personalized Marketing Capability	0.66	0.69	1.000		
4. Customer Loyalty	0.74	0.72	0.68	1.000	
5. Sales Growth	0.69	0.65	0.63	0.76	1.000

The correlation matrix indicates strong and statistically meaningful positive relationships among all constructs. Data mining–based CRM shows a high correlation with customer loyalty (r = 0.74) and sales growth (r = 0.69), suggesting that organizations leveraging analytical customer data tend to experience improved relational outcomes and financial performance. Customer knowledge management demonstrates substantial associations with both loyalty and sales outcomes, emphasizing the strategic value of transforming raw customer data into actionable insights. Importantly, none of the correlations exceed critical multicollinearity thresholds, confirming the independence of constructs within the structural model.

Table 3

Measurement Model Evaluation (Factor Loadings and Validity Indicators)

Construct	Indicator	Factor Loading
Data Mining–Based CRM	CRM1	0.82
	CRM2	0.85
	CRM3	0.87
	CRM4	0.81
Customer Loyalty	CL1	0.84
	CL2	0.88

	CL3	0.83
	CL4	0.86
Sales Growth	SG1	0.80
	SG2	0.85
	SG3	0.82
	SG4	0.84

Confirmatory factor analysis results indicate that all measurement indicators load strongly on their intended constructs, with factor loadings ranging from 0.80 to 0.88, exceeding the minimum acceptable criterion of 0.60. These high loadings confirm that questionnaire items effectively capture underlying theoretical dimensions. The measurement model therefore demonstrates strong convergent validity and construct reliability. The absence of weak indicators indicates that respondents consistently interpreted questionnaire items, reinforcing confidence in the structural relationships tested later in the analysis.

Table 4

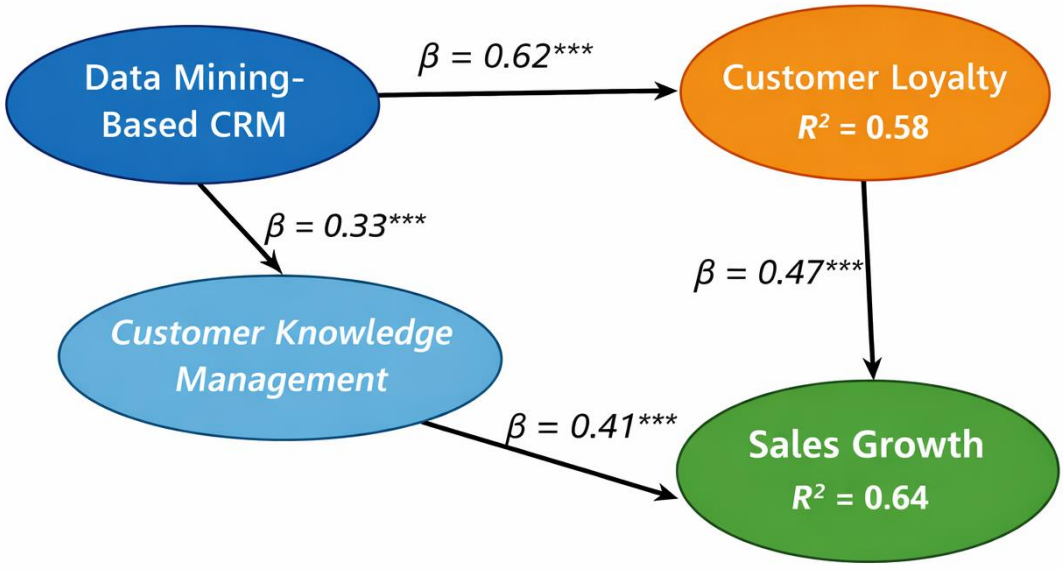
Structural Model Results and Hypothesis Testing

Hypothesized Path	Path Coefficient (β)	t-value	p-value	Result
Data Mining–Based CRM → Customer Loyalty	0.62	12.41	<0.001	Supported
Data Mining–Based CRM → Sales Growth	0.41	8.35	<0.001	Supported
Customer Loyalty → Sales Growth	0.47	9.72	<0.001	Supported
Customer Knowledge Management → Customer Loyalty	0.33	6.81	<0.001	Supported

Structural equation modeling results confirm statistically significant positive effects among all hypothesized relationships. Data mining–based CRM exerts a strong direct influence on customer loyalty (β = 0.62), indicating that analytical customer insight substantially enhances long-term relational commitment. Its direct impact on sales growth (β = 0.41) demonstrates that CRM analytics not only influence attitudes but also translate into measurable business outcomes. Customer loyalty itself significantly predicts sales growth (β = 0.47), suggesting a mediating mechanism through which relationship quality converts into economic performance. The findings collectively support the theoretical proposition that data-driven CRM functions as a strategic capability linking customer intelligence with organizational growth.

Figure 1

Structural Model of the Impact of Data Mining–Based CRM on Customer Loyalty and Sales Growth



The structural model illustrates the integrated relationships among data mining–based CRM capabilities, customer knowledge management, customer loyalty, and sales growth outcomes. The model demonstrates strong explanatory power, with the coefficient of determination (R^2) equal to 0.58 for customer loyalty and 0.64 for sales growth, indicating that the proposed framework explains a substantial proportion of variance in organizational performance indicators. Path strengths visually confirm that customer loyalty operates as a central mediating construct connecting technological CRM capabilities to financial success. Overall model fit indices meet recommended thresholds, confirming adequacy of the conceptual framework and validating the hypothesized relationships within the context of large food distribution companies operating in Tehran's competitive metropolitan market.

Discussion and Conclusion

The findings of this study provide strong empirical evidence supporting the strategic importance of data mining–based customer relationship management (CRM) in enhancing customer loyalty and driving sales growth within food distribution companies operating in large metropolitan environments. The structural model demonstrated that analytical CRM capabilities significantly influence customer loyalty and organizational sales performance, confirming that data-driven relationship management has become a fundamental competitive resource in modern distribution industries.

The first major finding indicated that data mining–based CRM exerts a strong positive effect on customer loyalty. This result highlights the ability of analytical CRM systems to transform customer data into actionable insights that enable personalized communication, targeted service delivery, and proactive relationship management. By identifying purchasing patterns and behavioral preferences, firms can anticipate customer needs and deliver tailored value propositions, which strengthen emotional attachment and long-term commitment. Similar conclusions have been reported in previous studies showing that CRM programs significantly improve customer loyalty through enhanced relationship quality and satisfaction outcomes [5, 7]. Research on electronic CRM environments also confirms that customer satisfaction mediates loyalty formation when organizations effectively utilize digital interaction data [8, 10].

The strong association between data mining–based CRM and loyalty also aligns with relationship marketing theory, which emphasizes continuous engagement rather than transactional exchanges. Analytical CRM allows organizations to recognize high-value customers, maintain consistent communication, and build trust through personalized experiences. Studies focusing on emotional CRM models demonstrate that understanding customers' psychological expectations enhances relational bonds and encourages long-term retention behaviors [25]. Similarly, research on ethical selling practices and trust-building mechanisms indicates that customer loyalty emerges when firms demonstrate responsiveness and reliability in customer interactions [15, 16]. The present findings therefore reinforce the notion that loyalty is not merely an outcome of product quality but a consequence of intelligent relationship management supported by data analytics.

Another important finding revealed that data mining–based CRM directly contributes to sales growth. This relationship confirms that analytical CRM functions not only as a relational tool but also as an economic performance driver. Data mining enables organizations to forecast demand accurately, optimize inventory distribution, and implement targeted marketing campaigns, all of which enhance revenue generation. Previous empirical studies have similarly reported that CRM tools significantly improve sales performance by enabling firms to focus resources on profitable customer segments and refine marketing strategies [13, 14]. Research examining promotion strategies further shows that customer loyalty mediates the

relationship between marketing initiatives and sales performance, reinforcing the interconnected nature of relational and financial outcomes [27].

The results additionally demonstrated that customer loyalty significantly influences sales growth, supporting the mediating role of loyalty within the CRM-performance relationship. Loyal customers exhibit higher repurchase intentions, reduced switching behavior, and increased willingness to recommend brands to others. These behaviors reduce customer acquisition costs and stabilize revenue streams, ultimately strengthening organizational profitability. Prior research confirms that loyalty-driven strategies enhance long-term business sustainability and competitive advantage [17]. Empirical evidence from retail and distribution industries further indicates that CRM-supported loyalty programs generate measurable improvements in sales outcomes through customer retention and cross-selling opportunities [21, 28].

The findings also emphasize the importance of customer knowledge management as a supporting mechanism within data mining–based CRM systems. Organizations capable of integrating customer information across multiple touchpoints achieve deeper understanding of market behavior and develop more effective decision-making processes. Studies show that CRM systems designed to enhance customer knowledge improve organizational responsiveness and enable adaptive marketing strategies aligned with evolving consumer expectations [1, 3]. Advanced analytical tools embedded within CRM platforms allow firms to detect behavioral trends, personalize offerings, and improve service quality, ultimately strengthening both loyalty and performance outcomes.

From a technological perspective, the results support the growing role of artificial intelligence and digital analytics in CRM effectiveness. Intelligent CRM platforms automate customer segmentation, recommendation systems, and predictive marketing decisions, enabling organizations to operate more efficiently in competitive environments. Research examining AI-powered CRM confirms that technological integration significantly enhances business performance by improving customer interaction quality and operational efficiency [11, 12]. These findings suggest that the value of CRM increasingly depends on analytical sophistication rather than mere adoption of customer databases.

Another noteworthy implication concerns the role of digital communication and marketing innovation in strengthening CRM outcomes. Food distribution companies operating in metropolitan markets must manage diverse customer groups, fast-moving inventories, and complex supply networks. Data mining–supported communication strategies allow organizations to deliver timely promotional campaigns and maintain continuous engagement with clients. Empirical studies demonstrate that innovative marketing communication significantly enhances customer loyalty and sales growth through strengthened brand relationships [18, 19]. The present findings confirm that integrating analytical CRM with digital communication strategies creates synergistic effects that amplify organizational performance.

The study also contributes to industry-specific CRM literature by extending previous findings beyond retail or hospitality contexts into the food distribution sector. Distribution companies face unique operational challenges, including fluctuating demand, logistics complexity, and high competition among suppliers. Evidence from CRM applications in various sectors shows that relationship management systems improve resilience during environmental uncertainty and support customer retention even during economic disruptions [23, 24]. The results of this research indicate that similar benefits occur within food distribution organizations when CRM systems are strengthenedhanalytically driven.

Data security and trust considerations further explain the effectiveness of data mining–based CRM. As companies rely heavily on customer data, maintaining secure information systems becomes essential for sustaining loyalty. Previous research

highlights that secure analytical CRM infrastructures strengthen customer confidence and reinforce long-term relationships [26]. The positive loyalty outcomes observed in this study suggest that organizations successfully balancing analytical capability with trust management can achieve superior relational performance.

Moreover, the findings demonstrate that CRM effectiveness depends on strategic alignment with organizational goals rather than isolated technological implementation. Studies examining CRM adoption emphasize that successful outcomes occur when CRM supports marketing strategy, customer service processes, and organizational culture simultaneously [2, 22]. In metropolitan distribution environments, where competition and price sensitivity are high, data-driven CRM enables firms to differentiate themselves through superior service and relationship quality rather than price competition alone [32]. This strategic alignment explains the significant impact observed on both loyalty and sales growth.

Overall, the results support a comprehensive framework in which data mining–based CRM acts as a dynamic capability integrating technological resources, customer knowledge, and relationship management practices. By transforming customer information into strategic intelligence, organizations strengthen loyalty formation processes and convert relational advantages into measurable sales performance. These findings are consistent with contemporary CRM literature emphasizing the transition from operational CRM toward analytical and predictive CRM systems capable of sustaining long-term competitive advantage [29, 31]. Consequently, the study advances understanding of how data-driven customer management contributes simultaneously to relational and financial success in large-scale distribution industries.

Despite the significant contributions of this study, several limitations should be acknowledged. First, the research focused exclusively on food distribution companies located in Tehran, which may limit generalizability to smaller cities or different industrial sectors. Second, the cross-sectional research design restricts the ability to capture long-term causal dynamics between CRM implementation and organizational performance outcomes. Third, data were collected using self-reported questionnaires, which may introduce subjective bias despite confidentiality assurances. Additionally, organizational performance indicators such as sales growth were measured perceptually rather than through objective financial records. Finally, variations in technological maturity among participating companies could influence CRM effectiveness, yet such organizational differences were not deeply examined.

Future studies may expand this research by examining CRM implementation across multiple cities or countries to enable comparative analysis of cultural and market influences on CRM effectiveness. Longitudinal research designs would allow scholars to observe how CRM adoption evolves over time and how loyalty and sales outcomes develop across different stages of technological maturity. Researchers could also incorporate objective financial performance data and big-data analytics to strengthen empirical validity. Exploring moderating variables such as organizational culture, digital transformation readiness, employee analytics capability, or customer experience quality would provide deeper insights into CRM success factors. Furthermore, qualitative or mixed-method approaches could enrich understanding of managerial decision-making processes underlying data-driven customer relationship strategies.

Managers of food distribution companies should invest in integrated data mining and CRM platforms capable of analyzing customer purchasing behavior in real time. Organizations are encouraged to move beyond traditional transactional CRM and adopt predictive analytics that support personalized marketing and proactive customer engagement. Training employees in data analytics and customer insight interpretation can significantly enhance CRM effectiveness. Firms should also prioritize secure data management practices to strengthen customer trust while leveraging digital communication channels for

continuous interaction. Finally, aligning CRM initiatives with overall organizational strategy and performance objectives will help companies translate customer relationships into sustainable sales growth and long-term competitive advantage.

Acknowledgments

We would like to express our appreciation and gratitude to all those who cooperated in carrying out this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

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