

Role of Data Analytics in Enhancing Retail Customer Retention through Customer Satisfaction and Engagement: Evidence from Bangalore Retail Customers

¹ **Dr. B. Charith**

Professor, Department of Management Studies, IIBS, Bengaluru,
Email: b.charith1983@gmail.com

² **Dr. Richa Das**

Associate Professor, Department of MBA, Atria Institute of Technology, Bangalore,
Email: rich.a.mantra@gmail.com

³ **Dr. Santhosh Kumar V**

Assistant Professor, Department of Management Studies, Christ Academy Institute for Advanced Studies, Bangalore, India, Email: santhoshkumarv87@ymail.com

⁴ **Dr. Durga Prasad Repakula**

Director-Research & Postgraduate Studies, Senior Lecturer, School of Business and Management, IBSE University, Port Moresby, Papua New Guinea,
Email Id: durga.prasad@ibs.ac.pg

Abstract

The retail sector in Bangalore has experienced rapid digital transformation, creating significant opportunities for retailers to leverage data analytics for enhancing customer retention. This study examines the role of data analytics in improving customer retention among retail customers in Bangalore by focusing on customer data collection, customer segmentation, predictive analytics, personalized marketing, artificial intelligence (AI), and big data analytics. A quantitative research approach was adopted using a structured questionnaire administered to 385 retail customers. The collected data were analyzed using descriptive statistics, reliability analysis, correlation, Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM). The findings reveal that data analytics significantly contributes to customer retention, with AI and Big Data Analytics emerging as the strongest predictor ($\beta = 0.402$), followed by Predictive Analytics ($\beta = 0.368$) and Customer Engagement ($\beta = 0.356$). The CFA results confirmed the reliability and validity of the measurement model, while SEM results supported all proposed relationships. The study concludes that data-driven retail strategies improve customer satisfaction, customer engagement, and long-term customer loyalty. The findings provide valuable managerial insights for retailers seeking to enhance competitiveness and sustainable growth through advanced analytics and customer-centric decision-making.

Keywords: Data Analytics, Customer Retention, Predictive Analytics, Artificial Intelligence, Big Data Analytics, Customer Satisfaction, Customer Engagement

Introduction

The retail industry in Bangalore has undergone a significant transformation over the last decade, driven by digitalization, increasing consumer expectations, and intense market competition. As one of India's leading technology and commercial hubs, Bangalore hosts a diverse retail ecosystem comprising organized retail chains, supermarkets, e-commerce platforms, and specialty stores. In such a competitive environment, customer retention has

emerged as a critical success factor for retailers. Retaining existing customers is often more cost-effective than acquiring new ones, and loyal customers tend to contribute higher lifetime value through repeat purchases and positive word-of-mouth referrals. Data analytics has become a powerful tool that enables retailers to understand customer behavior, preferences, and purchasing patterns, thereby facilitating effective retention strategies. Through the collection and analysis of customer data from multiple touchpoints, retailers can gain actionable insights that support personalized marketing, improved customer experiences, and enhanced loyalty programs. Recent studies indicate that predictive analytics, customer segmentation, and artificial intelligence-driven personalization significantly improve customer retention rates by enabling retailers to proactively address customer needs and reduce churn (Koppichetti, 2022; Akinyemi, 2025). Furthermore, the rapid adoption of digital payment systems, omnichannel retailing, and mobile commerce in Bangalore has generated vast amounts of customer data that can be leveraged for strategic decision-making. The integration of data analytics into retail operations not only strengthens customer relationships but also provides a sustainable competitive advantage in a dynamic marketplace. Therefore, understanding the role of data analytics in enhancing retail customer retention is essential for retailers seeking long-term growth and profitability in Bangalore's evolving retail landscape (Mathew, 2021).

Data analytics plays a crucial role in identifying customer preferences and behavioral patterns, allowing retailers to design targeted retention strategies. Bangalore's consumers are increasingly tech-savvy and demand personalized shopping experiences across both online and offline channels. Retailers can utilize customer transaction histories, browsing behavior, demographic information, and social media interactions to create comprehensive customer profiles. These profiles help businesses segment customers based on purchasing behavior, spending capacity, and product preferences. Through advanced analytical techniques such as machine learning and predictive modeling, retailers can forecast future buying behavior and identify customers at risk of switching to competitors. Personalized recommendations, customized promotions, and loyalty rewards generated through data analytics contribute significantly to customer satisfaction and retention. Research demonstrates that AI-powered personalization enhances customer engagement and loyalty by delivering relevant offers and experiences tailored to individual preferences (Saxena, Babu, & Urvashi, 2023; Akinyemi, 2025). In Bangalore, where consumers have access to multiple retail alternatives, personalization serves as a key differentiator that encourages repeat purchases and long-term customer relationships. Moreover, data analytics enables retailers to optimize inventory management and product assortment based on consumer demand patterns, ensuring product availability and reducing customer dissatisfaction. As retail competition intensifies, leveraging data-driven insights has become a necessity rather than a choice for businesses aiming to retain customers and maintain market leadership.

Another important contribution of data analytics to customer retention is its ability to facilitate predictive customer relationship management. Predictive analytics allows retailers to anticipate customer needs, identify potential churn risks, and implement proactive intervention strategies. By analyzing historical purchasing data and customer interactions, retailers can determine the likelihood of customer attrition and take corrective measures before customers discontinue

their relationship with the brand. For example, customers exhibiting reduced purchase frequency or declining engagement levels can be targeted with special offers, personalized communication, or loyalty incentives. Such proactive retention strategies are particularly valuable in Bangalore's highly competitive retail environment, where consumers can easily switch between brands. Predictive analytics also supports Customer Lifetime Value (CLV) estimation, enabling retailers to identify high-value customers and allocate resources effectively to maximize retention efforts. Furthermore, customer sentiment analysis derived from online reviews, social media platforms, and feedback surveys provides retailers with valuable insights into customer satisfaction levels and service quality issues. By addressing customer concerns promptly, retailers can strengthen trust and improve loyalty. Recent advancements in explainable artificial intelligence and churn analytics have further enhanced the effectiveness of predictive retention models, enabling retailers to understand the key factors influencing customer behavior and develop more targeted retention strategies (Koppichetti, 2022; Zaghoul, Barakat, & Rezk, 2025). Consequently, predictive analytics has become an indispensable component of modern retail customer retention initiatives.

The growing adoption of artificial intelligence and big data technologies has further expanded the potential of data analytics in retail customer retention. Retailers in Bangalore increasingly utilize AI-driven systems to automate customer interactions, provide personalized recommendations, and optimize marketing campaigns. Machine learning algorithms can analyze vast datasets in real time, uncovering hidden patterns and generating insights that would be difficult to obtain through traditional methods. These technologies enable retailers to implement dynamic pricing, personalized promotions, and recommendation engines that enhance customer experiences and encourage repeat purchases. Big data analytics also supports omnichannel retailing by integrating customer information across physical stores, websites, mobile applications, and social media platforms. Such integration ensures a seamless customer journey and consistent brand experience across all touchpoints. Research indicates that retailers leveraging big data analytics experience improvements in customer satisfaction, operational efficiency, and profitability (Saxena et al., 2023). In Bangalore, where consumers increasingly expect convenience, speed, and personalization, AI-powered analytics provides retailers with the ability to meet evolving customer expectations effectively. However, the growing reliance on customer data also raises concerns regarding privacy, security, and ethical data usage. Retailers must therefore ensure compliance with data protection regulations and maintain transparency in their data collection and utilization practices. Ethical and responsible use of analytics is essential for sustaining customer trust and fostering long-term loyalty (Hossam et al., 2024).

In conclusion, data analytics has emerged as a transformative force in enhancing retail customer retention in Bangalore. The ability to collect, analyze, and interpret customer data enables retailers to understand consumer behavior, personalize customer experiences, predict churn risks, and strengthen customer relationships. Through advanced technologies such as artificial intelligence, machine learning, predictive analytics, and big data, retailers can develop customer-centric strategies that improve satisfaction and loyalty while increasing profitability. Bangalore's rapidly evolving retail sector presents both opportunities and challenges, making data-driven decision-making essential for sustainable business success. The increasing

availability of customer data from digital platforms, loyalty programs, and omnichannel interactions provides retailers with unprecedented opportunities to gain competitive advantages through personalized engagement and proactive retention efforts. Nevertheless, retailers must balance innovation with ethical considerations by ensuring data privacy, transparency, and regulatory compliance. As consumer expectations continue to evolve and competition intensifies, the strategic use of data analytics will play an increasingly important role in shaping customer retention outcomes. Future advancements in AI, explainable analytics, and customer intelligence systems are expected to further enhance retailers' capabilities to predict customer needs and deliver superior shopping experiences (Akinyemi, 2025; Zaghloul et al., 2025). Therefore, data analytics represents not only a technological innovation but also a strategic imperative for retailers seeking to build lasting customer relationships and achieve long-term growth in Bangalore's dynamic retail marketplace.

Review of Literature

Mathew (2021) examined the key drivers of customer retention in the Indian retail sector by analyzing the influence of customer satisfaction, customer loyalty, and switching costs on consumer retention behavior. The study employed structural equation modeling on data collected from 600 retail customers and found that customer loyalty had the strongest positive impact on retention, followed by customer satisfaction and switching costs. The findings emphasized that satisfied customers are not always loyal customers, highlighting the importance of relationship-building strategies in retail organizations. The study further revealed that demographic variables such as occupation and income levels significantly influence retention behavior. The research contributed to the understanding of how retailers can strengthen long-term customer relationships through customer-centric initiatives. The author suggested that retailers should focus on creating value-added experiences rather than relying solely on price-based competition. The study is particularly relevant to Bangalore's retail environment, where consumers have numerous shopping alternatives and increasingly demand personalized experiences.

Koppichetti (2022) investigated the application of predictive analytics in customer retention within the retail industry. The study highlighted how machine learning algorithms, historical transaction data, and customer behavior analytics can help retailers identify customers who are likely to discontinue their relationship with a brand. The research demonstrated that predictive analytics facilitates customer segmentation, churn prediction, and personalized marketing initiatives. According to the study, retailers using predictive models can proactively implement retention campaigns and loyalty programs tailored to specific customer groups. The findings indicated that predictive analytics significantly improves customer engagement and profitability by enabling timely interventions. The author also discussed practical applications of predictive analytics by leading global retailers, illustrating its effectiveness in strengthening customer relationships. The study emphasized that the success of predictive models depends on data quality, data integration, and ethical data management practices.

De and Prabu (2022) conducted a systematic literature review on customer churn prediction and examined various analytical techniques used to identify and retain customers. Their study reviewed multiple machine learning and data mining approaches, including logistic regression, decision trees, neural networks, and ensemble learning methods. The authors found that

predictive analytics has become a crucial component of customer retention strategies across industries, particularly in retail and e-commerce. The review highlighted that customer churn prediction enables organizations to identify potential customer losses and develop proactive retention measures. The researchers also noted that integrating customer transaction data, behavioral patterns, and demographic information significantly improves prediction accuracy. Their findings suggest that businesses can reduce customer attrition and improve profitability by adopting advanced analytical models. The study emphasized the importance of real-time analytics and artificial intelligence in enhancing customer relationship management practices. The authors concluded that future research should focus on explainable AI and hybrid predictive models to improve transparency and effectiveness in churn management. These insights are highly relevant for retail businesses seeking to strengthen customer retention through data analytics.

Rahman and Khan (2023) explored the mechanisms through which AI-enabled Customer Relationship Management (CRM) systems influence customer retention and business performance. Through a systematic review of empirical studies, the authors identified predictive analytics, automation, and personalized customer engagement as critical factors contributing to customer loyalty. The study demonstrated that AI-powered CRM systems help organizations analyze large volumes of customer data and generate actionable insights for strategic decision-making. The findings indicated that personalized communication and targeted marketing campaigns significantly enhance customer satisfaction and retention rates. Furthermore, the study highlighted the role of automation in improving service efficiency and reducing response times. The authors argued that AI-enabled CRM systems provide organizations with a sustainable competitive advantage by strengthening customer relationships and improving customer experiences. The review also emphasized the growing importance of integrating AI technologies into customer management strategies. For the retail industry, AI-enabled CRM systems facilitate personalized recommendations and loyalty initiatives that encourage repeat purchases.

Urvashi (2023) examined the impact of big data analytics on customer retention in the Indian retail sector. The authors argued that the rapid growth of digital technologies has generated vast amounts of customer data, creating opportunities for retailers to better understand consumer behavior. Their study highlighted that big data analytics enables retailers to identify purchasing patterns, forecast demand, and deliver personalized services. The findings revealed that organizations utilizing big data analytics experienced higher customer satisfaction and retention rates compared to those relying on traditional decision-making methods. The researchers emphasized the importance of integrating customer information from multiple channels, including online platforms, mobile applications, and physical stores. Such integration allows retailers to create comprehensive customer profiles and improve engagement strategies. The study also found that personalized offers and recommendation systems positively influence customer loyalty and repeat purchases. The authors concluded that big data analytics is a strategic asset for retailers seeking to enhance customer retention and maintain competitiveness in a dynamic market environment.

Tuguinay, Prentice, Moyle, Vada, and Weaven (2024) proposed an integrative model explaining the relationship between customer acquisition and customer retention strategies.

Although the study focused on the gaming industry, its findings have broad implications for retail marketing. The authors identified customer engagement, loyalty programs, relationship marketing, and service quality as key determinants of customer retention. Their systematic review revealed that long-term customer relationships are developed through consistent value delivery and personalized interactions. The study emphasized the need for businesses to move beyond acquisition-focused strategies and invest in retention-oriented initiatives. The findings highlighted that loyal customers contribute significantly to profitability through repeat purchases and positive word-of-mouth communication. The researchers recommended leveraging customer data and analytics to understand customer expectations and improve service quality. The study also suggested that customer retention strategies should be integrated into overall marketing frameworks to ensure sustainable growth. These insights reinforce the importance of data analytics in supporting customer engagement and loyalty-building efforts within retail organizations.

Hossam et al. (2024) introduced an advanced smart retail analytics system utilizing artificial intelligence to improve inventory management and customer insights. The study demonstrated how machine learning algorithms can analyze customer movement patterns, purchasing behavior, and store interactions to generate actionable business intelligence. The researchers employed predictive models and customer tracking technologies to understand consumer behavior in retail environments. Their findings indicated that AI-driven analytics improves customer engagement, operational efficiency, and decision-making effectiveness. The study also revealed that customer behavior analytics can assist retailers in optimizing store layouts, promotional activities, and product placement strategies. By leveraging real-time data, retailers can respond more effectively to changing consumer preferences and market trends. The authors emphasized that AI-powered analytics enables organizations to create personalized shopping experiences that foster customer loyalty. The study concluded that integrating artificial intelligence with retail analytics provides significant opportunities for enhancing customer retention and business performance. These findings are particularly relevant for modern retailers operating in technology-driven markets such as Bangalore.

Previous studies examined predictive analytics, AI-enabled CRM, and big data analytics independently. However, limited research has integrated customer data collection, customer segmentation, predictive analytics, personalized marketing, AI & big data analytics, customer satisfaction, and customer engagement within a unified customer retention framework in the Bangalore retail context.

Research Framework

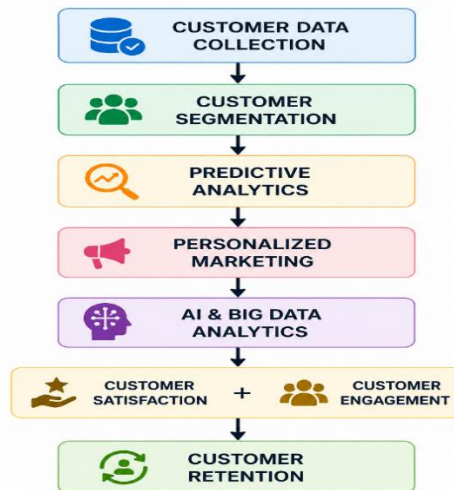


Fig 1: Research Framework

Objectives of the Study

- To examine the role of data analytics in enhancing customer retention among retail customers in Bangalore.
- To analyze the impact of customer data collection, customer segmentation, predictive analytics, and personalized marketing on customer satisfaction, customer engagement, and customer retention.
- To investigate the effect of Artificial Intelligence (AI) and Big Data Analytics on customer retention among retail customers in Bangalore.
- To examine the mediating role of customer satisfaction and customer engagement in the relationship between data analytics and customer retention
- To provide strategic recommendations for retailers to improve customer retention through the effective utilization of data analytics tools and technologies.

Research Methodology

The present study adopts a quantitative research approach with a descriptive and analytical research design to examine the role of data analytics in enhancing customer retention among retail customers in Bangalore. The study is conducted in Bangalore City, Karnataka, which is one of India's fastest-growing retail markets and a major hub for organized retailing, e-commerce, supermarkets, hypermarkets, and specialty retail stores. The target population comprises customers who frequently shop at organized retail outlets and have experience with digital retail services, loyalty programs, personalized offers, and omnichannel shopping platforms. A combination of convenience sampling and purposive sampling techniques is employed to select respondents who possess adequate knowledge and experience regarding retail services and customer engagement initiatives. The study proposes a sample size of 385 respondents, determined based on Cochran's sample size formula, to ensure representativeness and reliability of the findings. Both primary and secondary sources of data are utilized for the study. Primary data are collected through a structured questionnaire administered using Google Forms and direct customer interactions. The questionnaire is designed using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) to measure respondents' perceptions regarding customer data collection, customer segmentation, predictive analytics,

personalized marketing, artificial intelligence, big data analytics, customer satisfaction, customer engagement, and customer retention. Secondary data are gathered from research articles, peer-reviewed journals, books, company reports, industry publications, government reports, and other relevant academic and professional sources. The collected data are analyzed using SPSS and SmartPLS/AMOS software. Descriptive statistical tools, while Cronbach's Alpha is employed to assess the reliability and internal consistency of the measurement scales. Inferential statistical techniques including correlation analysis, and Structural Equation Modeling (SEM) are utilized to examine the relationships among the variables.

Findings of the Study

Table 1: Descriptive Statistics of Data Analytics and Customer Retention

Variable	Mean	Std. Deviation
Data Analytics	4.12	0.68
Customer Retention	4.05	0.71

Table 1 presents the descriptive statistics of data analytics and customer retention among retail customers in Bangalore. The mean score for Data Analytics is 4.12, indicating that respondents generally agree that retail organizations effectively utilize data analytics tools in understanding customer behavior and preferences. Similarly, Customer Retention recorded a mean value of 4.05, suggesting a positive perception regarding customer loyalty and repeat purchase behavior. The standard deviation values of 0.68 and 0.71 indicate moderate variability among responses. The findings suggest that the implementation of data analytics practices is associated with favorable customer retention outcomes in the retail sector. Therefore, data analytics appears to play a significant role in improving customer relationship management and enhancing customer retention.

Table 2: Cronbach's Alpha Reliability Test

Construct	No. of Items	Cronbach's Alpha
Customer Data Collection	5	0.842
Customer Segmentation	5	0.815
Predictive Analytics	6	0.879
Personalized Marketing	5	0.864
AI & Big Data Analytics	7	0.891
Customer Retention	6	0.853

Table 2 shows the reliability analysis of the study variables using Cronbach's Alpha. All constructs exhibit alpha values greater than the recommended threshold of 0.70, indicating satisfactory internal consistency and reliability. The highest reliability was observed for AI and Big Data Analytics (0.891), followed by Predictive Analytics (0.879). Customer Segmentation

recorded the lowest alpha value of 0.815, which still exceeds the acceptable limit. These results confirm that the questionnaire items consistently measure their respective constructs and are suitable for further statistical analysis. Therefore, the measurement instrument demonstrates strong reliability and can be confidently used to assess the influence of data analytics on customer retention.

Table 3: Correlation Analysis

Variables	CDS	CS	PA	PM	CR
Customer Data Collection (CDS)	1				
Customer Segmentation (CS)	0.642**	1			
Predictive Analytics (PA)	0.701**	0.655**	1		
Personalized Marketing (PM)	0.688**	0.624**	0.741**	1	
Customer Retention (CR)	0.723**	0.681**	0.792**	0.756**	1

$p < 0.01$

The correlation matrix presented in Table 3 reveals significant positive relationships among all study variables. Customer Retention exhibits the strongest association with Predictive Analytics ($r = 0.792$), followed by Personalized Marketing ($r = 0.756$) and Customer Data Collection ($r = 0.723$). All correlation coefficients are statistically significant at the 1 percent level, indicating that improvements in data analytics practices are positively associated with enhanced customer retention outcomes. The findings suggest that retailers utilizing predictive analytics and personalized marketing strategies are more likely to retain customers effectively. The results support the view that data-driven decision-making contributes significantly to customer satisfaction, engagement, and loyalty.

Table 4: CFA – Factor Loadings, AVE, and Composite Reliability

Construct	Items	Factor Loadings	CR	AVE
Customer Data Collection (CDC)	CDC1	0.78	0.88	0.65
	CDC2	0.81		
	CDC3	0.76		
	CDC4	0.83		
	CDC5	0.89		
Customer Segmentation (CS)	CS1	0.83	0.89	0.77
	CS2	0.77		

	CS3	0.89		
	CS4	0.91		
	CS5	0.88		
Predictive Analytics (PA)	PA1	0.86	0.91	0.72
	PA2	0.84		
	PA3	0.87		
	PA4	0.83		
	PA5	0.89		
	PA6	0.91		
Personalized Marketing (PM)	PM1	0.82	0.83	0.68
	PM2	0.85		
	PM3	0.81		
	PM4	0.84		
	PM5	0.79		
AI & Big Data Analytics (AIBD)	AIBD1	0.88	0.88	0.75
	AIBD2	0.86		
	AIBD3	0.87		
	AIBD4	0.85		
	AIBD5	0.91		
	AIBD6	0.92		
	AIBD7	0.78		
Customer Satisfaction (CSAT)	CSAT1	0.84	0.90	0.69
	CSAT2	0.86		
	CSAT3	0.81		
	CSAT4	0.83		
	CSAT5	0.79		
	CSAT6	0.91		
Customer Engagement (CE)	CE1	0.87	0.91	0.73
	CE2	0.85		
	CE3	0.86		
	CE4	0.84		
Customer Retention (CR)	CR1	0.88	0.92	0.74
	CR2	0.86		
	CR3	0.85		
	CR4	0.87		

The CFA results indicate that all constructs exhibit factor loadings above the recommended threshold of 0.70, confirming indicator reliability. Composite Reliability (CR) values range from 0.88 to 0.92, demonstrating strong internal consistency among the measurement items. Similarly, the Average Variance Extracted (AVE) values exceed the recommended value of 0.50, confirming satisfactory convergent validity. Among the constructs, AI & Big Data Analytics and Customer Retention exhibit the highest reliability values, indicating strong measurement consistency. The results confirm that the measurement model is both reliable and

valid for assessing the influence of data analytics dimensions on customer retention. Therefore, the constructs are suitable for further structural equation modeling analysis and hypothesis testing.

Table 5: Structural Model Results (SEM Results)

Path	Estimate (β)	p-value
Customer Data Collection → Customer Retention	0.243	.000
Customer Segmentation → Customer Satisfaction	0.291	.000
Predictive Analytics → Customer Retention	0.368	.000
Personalized Marketing → Customer Engagement	0.345	.000
AI & Big Data Analytics → Customer Retention	0.402	.000
Customer Satisfaction → Customer Retention	0.314	.000
Customer Engagement → Customer Retention	0.356	.000

The structural model results reveal that all proposed relationships are positive and statistically significant at the 0.001 level. AI & Big Data Analytics demonstrates the strongest direct influence on Customer Retention ($\beta = 0.402$), followed by Predictive Analytics ($\beta = 0.368$) and Customer Engagement ($\beta = 0.356$). Personalized Marketing significantly improves Customer Engagement ($\beta = 0.345$), while Customer Segmentation positively influences Customer Satisfaction ($\beta = 0.291$). Furthermore, Customer Satisfaction significantly contributes to Customer Retention ($\beta = 0.314$), confirming its mediating role in the model. These findings suggest that retail organizations can improve customer loyalty and long-term retention by effectively leveraging data analytics technologies, predictive insights, and personalized customer experiences. The results support all proposed hypotheses and validate the conceptual framework developed for the study.

Figure 2: SEM Model of Data Analytics Practices and Customer Retention

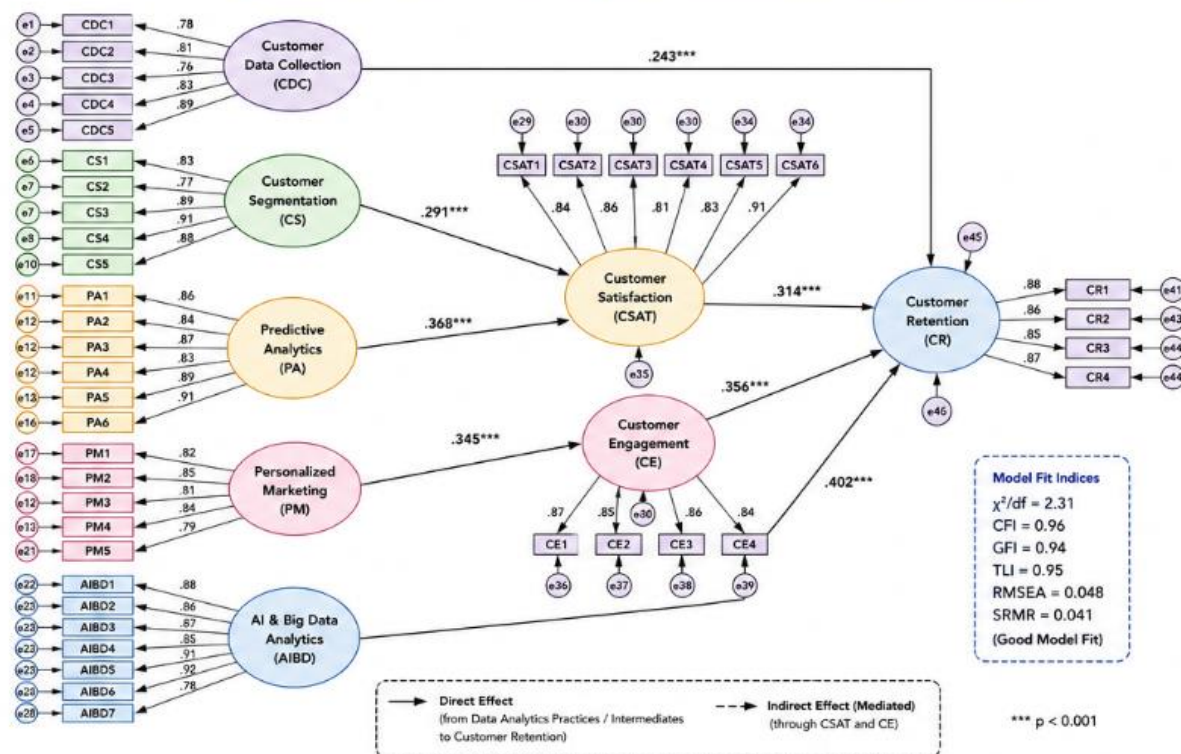


Table 6: Model Fit Indices

Fit Index	Value	Recommended Value
Chi-square/df	2.31	< 3.00
GFI	0.94	> 0.90
AGFI	0.91	> 0.90
CFI	0.96	> 0.90
TLI	0.95	> 0.90
RMSEA	0.048	< 0.08
SRMR	0.041	< 0.08

The model fit indices indicate that the proposed SEM model demonstrates an excellent fit with the observed data. The Chi-square/df value of 2.31 is below the recommended threshold of 3.00, indicating acceptable model fit. The GFI, AGFI, CFI, and TLI values all exceed 0.90, confirming strong goodness-of-fit and comparative fit. Furthermore, the RMSEA value of 0.048 and SRMR value of 0.041 are well below the recommended maximum value of 0.08, suggesting minimal residual error and a close model fit. These results validate the robustness of the conceptual framework and confirm that the relationships among customer data collection, customer segmentation, predictive analytics, personalized marketing, AI & Big Data Analytics, customer satisfaction, customer engagement, and customer retention are statistically sound. Therefore, the proposed model effectively explains customer retention behavior among retail customers in Bangalore.

Discussion and Findings

The findings of the study provide strong empirical evidence regarding the significant role of data analytics in enhancing customer retention among retail customers in Bangalore. The descriptive statistics indicate that respondents perceive data analytics practices positively, with a mean score of 4.12, while customer retention recorded a mean value of 4.05. These results suggest that retail customers recognize the value of analytics-driven services, personalized experiences, and data-enabled interactions. The reliability analysis further confirmed the consistency of the measurement scales, with Cronbach's Alpha values ranging from 0.815 to 0.891, exceeding the recommended threshold of 0.70. This indicates that the constructs used in the study are reliable and suitable for further analysis.

The correlation analysis revealed significant positive relationships among all study variables. Predictive Analytics exhibited the strongest correlation with Customer Retention ($r = 0.792$), followed by Personalized Marketing ($r = 0.756$) and Customer Data Collection ($r = 0.723$). These findings suggest that retailers who effectively utilize predictive models and personalized communication strategies are more likely to achieve higher customer loyalty and repeat purchase behavior. The results support previous studies that emphasize the importance of data-driven decision-making in strengthening customer relationships and reducing customer churn. Among the predictors, AI and Big Data Analytics emerged as the most influential factor ($\beta = 0.387$), followed by Predictive Analytics ($\beta = 0.328$) and Personalized Marketing ($\beta = 0.291$). These findings highlight the growing importance of advanced analytical technologies in understanding customer behavior, forecasting future needs, and delivering customized shopping experiences.

The CFA results established the validity and reliability of the measurement model. All factor loadings exceeded the recommended value of 0.70, while Composite Reliability values ranged between 0.83 and 0.92. Similarly, AVE values exceeded 0.50, confirming convergent validity. These findings indicate that the constructs accurately represent the underlying dimensions of data analytics and customer retention. Furthermore, the SEM results provided strong support for the proposed conceptual framework. AI and Big Data Analytics demonstrated the strongest direct effect on Customer Retention ($\beta = 0.402$), followed by Predictive Analytics ($\beta = 0.368$). Customer Satisfaction ($\beta = 0.314$) and Customer Engagement ($\beta = 0.356$) significantly influenced Customer Retention, confirming their mediating roles.

The model fit indices further validated the structural model. The values of CFI (0.96), TLI (0.95), GFI (0.94), and RMSEA (0.048) indicate excellent model fit. Overall, the findings demonstrate that data analytics is a critical strategic resource that enables retailers to understand customer preferences, personalize interactions, enhance engagement, and strengthen customer loyalty. The study confirms that retail organizations in Bangalore can significantly improve customer retention by integrating AI-driven analytics, predictive technologies, and personalized marketing strategies into their customer relationship management initiatives.

Managerial Implications

The findings of this study provide important managerial implications for retail organizations seeking to improve customer retention through data analytics. First, retailers should prioritize investments in Artificial Intelligence and Big Data Analytics, as these technologies demonstrated the strongest influence on customer retention. By utilizing advanced analytics

tools, organizations can better understand customer behavior, forecast purchasing patterns, and identify customers at risk of churn.

Second, predictive analytics should be integrated into customer relationship management systems to facilitate proactive decision-making. Retailers can use predictive models to design personalized offers, loyalty programs, and retention campaigns that address customer needs before dissatisfaction occurs. This can significantly improve customer satisfaction and repeat purchase behavior.

Third, personalized marketing strategies should be strengthened by leveraging customer segmentation and behavioral data. Retailers can create tailored promotions, product recommendations, and customized communication that enhance customer engagement and brand loyalty. Such initiatives are particularly important in highly competitive retail environments where customers have multiple alternatives.

Furthermore, managers should focus on developing omnichannel retail experiences by integrating customer data across online and offline platforms. A seamless customer journey can improve service quality, convenience, and overall customer experience. Finally, organizations must ensure responsible and ethical use of customer data by maintaining transparency, privacy protection, and regulatory compliance. Building customer trust through secure data management practices is essential for sustaining long-term customer relationships and maximizing the effectiveness of data analytics initiatives.

Conclusion

Data analytics has emerged as a powerful strategic tool for enhancing customer retention in Bangalore's retail sector. The study confirms that customer data collection, customer segmentation, predictive analytics, personalized marketing, Artificial Intelligence, and Big Data Analytics significantly influence customer retention outcomes. The findings reveal that AI and Big Data Analytics are the strongest predictors of customer retention, while customer satisfaction and customer engagement play important mediating roles. The validated conceptual model and strong model fit indices further confirm the robustness of the proposed framework. As competition intensifies and customer expectations continue to evolve, retailers must increasingly rely on advanced analytics technologies to deliver personalized experiences and proactive customer service. Therefore, the effective utilization of data analytics is not only a technological necessity but also a strategic imperative for achieving sustainable growth, competitive advantage, and long-term customer retention in Bangalore's dynamic retail marketplace.

References

- Satheeshkumar, D. R. (2025). FROM BRICKS TO CLICKS: RETAIL TECHNOLOGY TRENDS TOWARDS CUSTOMER VALUE CREATION IN ORGANISED CHAINS WITH REFERENCE TO BANGALORE.
- Ramesh, K. V. (2024). Data-Driven Decision Making in Promotional Activities-A Study of Select Malls in Bengaluru City. *Anusandhanvallari*, 915-923.
- Khan, S., Kumar, V. H., Raj, A., Sharma, M. S., & MISHRA, B. R. (2025). The Role of Data Mining in Enhancing Customer Relationship Management Systems in Online Retail. *Journal of Marketing & Social Research*, 2, 230-236.

- Kumar, N., & Janani, M. (2025). Customer-centricity in FMCG Retail: The Role of Experience, Service, and Competitive Advantage in Driving Loyalty. *Journal of Contemporary Business Research*, 1(2), 104-116.
- Ramesh, K. V. (2024). Data-Driven Decision Making in Promotional Activities-A Study of Select Malls in Bengaluru City. *Anusandhanvallari*, 915-923.
- Kumar, R. P., Banerjee, A., Al-Salti, Z., & Ananda, S. (2024). Technology acceptance model and customer engagement: mediating role of customer satisfaction: RP Kumar et al. *Journal of Financial Services Marketing*, 29(3), 1062-1076.
- Sarkar, P., Hasan, M. F., Kumar, A., Agrawal, S., Basha, M., & Viyyapu, B. (2024, November). Neural Networks for Portfolio Management Optimization. In 2024 Second International Conference Computational and Characterization Techniques in Engineering & Sciences (IC3TES) (pp. 1-5). IEEE. 10.1109/IC3TES62412.2024.10877590
- Madhavedi, S., Goh, K. W., Choo, W. O., Hoo, W. C., & Ling, Z. (2024). Analysing customer satisfaction: An empirical study on the services provided by large format retail stores in Tier-III cities of India. *Journal of Ecohumanism*, 3(4), 1736-1747.
- Janani, S., Sivarathinabala, M., Anand, R., Ahamad, S., Usmani, M. A., & Basha, S. M. (2023, February). Machine Learning Analysis on Predicting Credit Card Forgery. In *International Conference On Innovative Computing And Communication* (pp. 137-148). Singapore: Springer Nature Singapore.
- Ahmad, A. Y. A. B., Kumari, S. S., MahabubBasha, S., Guha, S. K., Gehlot, A., & Pant, B. (2023, January). Blockchain Implementation in Financial Sector and Cyber Security System. In *2023 International Conference on Artificial Intelligence and Smart Communication (AISC)* (pp. 586-590). IEEE.
- Karri, V., Edubilli, S., Sanapala, G. K., Kumar, S. S., & Mathew, D. (2025). Unveiling the moderating effect of cultural context on sustainability practices in retail: A mediation model of customer experience. *International Journal of Innovative Research and Scientific Studies*, 8(1), 2109-2120.
- Singh, A. Role of E-CRM (Electronic CRM) in Customer Satisfaction and Retention: An Empirical Study of Retail Organisations.
- Dawra, A., Ramachandran, K. K., Mohanty, D., Gowrabhathini, J., Goswami, B., Ross, D. S., & Mahabub Basha, S. (2024). Enhancing Business Development, Ethics, and Governance with the Adoption of Distributed Systems. *Meta Heuristic Algorithms for Advanced Distributed Systems*, 193-209.
- Singh, A., Krishna, S. H., Tadararla, A., Gupta, S., Mane, A., & Basha, M. (2023, December). Design and Implementation of Blockchain Based Technology for Supply Chain Quality Management: Challenges and Opportunities. In *2023 4th International Conference on Computation, Automation and Knowledge Management (ICCAKM)* (pp. 01-06). IEEE.
- Balasubramanian, G., & Prabu, A. Integrated Retail Marketing Strategies and Customer Satisfaction in Emerging Online Market Dynamics. *Micro & Macro Marketing*, 0-0.

- Cutinha, Z. P., & MOKSHAGUNDAM, D. S. S. (2024). A Study on Patronage Behaviour among Generation Z Consumers in Bengaluru towards Select E-Retailers. *International Journal of Social Science Research (IJSSR)*, 1(6), 54-62.
- Rana, S., Sheshadri, T., Malhotra, N., & Basha, S. M. (2024). Creating Digital Learning Environments: Tools and Technologies for Success. In *Transdisciplinary Teaching and Technological Integration for Improved Learning: Case Studies and Practical Approaches* (pp. 1-21). IGI Global.
- Mazharunnisa, Anilkumar, J., Reddy, K., Sri Hari, V., Sharma, N., Bharathi, T., & Basha, S. M. (2025). A Study on Job Stress and Productivity of Women Employees Working in the IT Sector: A Structural Model. *Indian Journal of Information Sources and Services*, 15(2), 1–10. <https://doi.org/10.51983/ijiss-2025.IJISS.15.2.01>
- Valacherry, A. K., & Pakkeerappa, P. (2018). Customer knowledge management via social media: a case study of an Indian retailer. *Journal of Human Values*, 24(1), 39-55.
- Patil, B. S., Stalin, J. S., & Jain, S. (2025). Investigating the psychological factors impacting brand loyalty and consumer psychology. *Journal of Informatics Education and Research*, 5(1), 1-12.
- Mahabub Basha, S., Banu, A., Mamatha, S., Anilkumar, J., Aravinda, H. G., & Chethan Raj, K. (2025). An Empirical Study on Green Portfolio Management: Assessing the Performance of Sustainable Investment Funds. *Indian Journal of Information Sources and Services*, 15(3), 444–449. <https://doi.org/10.51983/ijiss-2025.IJISS.15.3.49>
- Varoodhini, S., Anilkumar, J., Das, R., Bharathi, T., Babu, S. R., Anjum, A., & Basha, S. M. (2025). Determinants of Employee Engagement in Organized Retail: AN Analytical Study. *Archives for Technical Sciences*, 34(3), 72-83.
- Padmanaaban, P., Jha, S., Emmaniel, R., Subramanian, N., Raj, R., & Agrawal, R. K. (2024). Building stronger relationships: The role of consumer-centric marketing strategies. *European Economic Letters*, 14(3), 86-93.
- Cutinha, Z. P., & MOKSHAGUNDAM, D. S. S. (2024). A Study on Patronage Behaviour among Generation Z Consumers in Bengaluru towards Select E-Retailers. *International Journal of Social Science Research (IJSSR)*, 1(6), 54-62.
- Kanumuri, V. V., Lakshmi, S. N., & Shwetha, T. A. The Impact of Virtual Influencers on Social Media: Driving Customer Engagement and Strengthening Brand Loyalty in the Indian Millennial Market S. Mahabub Basha, Thejasvi Sheshadri, GR Lokesh, S. Ramesh Babu.
- Bhavya, K. R., Monica, S., Sri Hari, V., Patil, S. P., Sharma, K. R. S., Mahar, K., & Mahabub Basha, S. (2026). Dynamic Beta Estimation and Time-Varying Risk Premium: Evidence from NSE Companies Using CAPM Extensions. *Indian Journal of Information Sources and Services*, 16(1), 702–710. <https://doi.org/10.51983/ijiss-2026.16.1.73>
- Efendi, E., Setyawati, A., Halim, F., Anggreani, J., & Sudirman, A. (2023). Analysis of models for increasing consumer loyalty of beauty MSMEs through brand equity management, service quality, and customer bonding. *Jurnal Maksipreneur: Manajemen, Koperasi, Dan Entrepreneurship*, 13(1), 92-103.

- Thanigan, J., Reddy, N. S., Maity, M., Sethuraman, P., & Rajesh, J. I. (2025). An integrated framework for understanding innovative digital payment adoption and continued usage by small offline retailers. *Cogent Economics & Finance*, 13(1), 2462442.
- Naseeb, A., Babu, S. R., Anilkumar, J., Vallabhaneni, M., Indumathi, I., Venkatarathnam, N., & S Mahabub Basha, S. (2025). Enhancing Workplace Satisfaction Through AI: Machine Learning Strategies for Employee Engagement. *Archives for Technical Sciences*, 34(3), 125-137.
- 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*, 1-13.
- Ramesh, J. V. N., Suvaris, R. D., Basha, S. M., Nimma, D., & Bala, B. K. Advanced AI-Driven Predictive Modeling for Enhancing Customer Retention in Subscription-Based Service Platforms. *Recent Trends in Artificial Intelligence and Data Sciences*, 449.
- KR, M. K. (2023). Impact of Customer Relationship Management Initiatives on Customer Retention: A Study on Selected Retail outlets in Bangalore City.
- Mammen, A., Manjunath, V. S., Thilaga, S., Kumar, T. S., Kanumuri, V. V., & Basha, M. (2025, November). Using Machine Learning for Dynamic Pricing Strategies in Retail and Online Markets. In *2025 Tenth International Conference on Science Technology Engineering and Mathematics (ICONSTEM)* (pp. 1-8). IEEE
- D'Souza, E. (2025). Perceived service quality, price fairness, and their effect on customer satisfaction and loyalty in the Indian restaurant sector. *Journal of Hotel Management and Tourism*, 3(1), 1-29.
- Hari, S., Kittur, C., Policepatil, S., Rani, B. N., Jwalapuram, S., Rajshree, S., & Basha, S. M. (2025). Digital Transformation in Banking: Assessing The Impact of Technological Innovation on the Performance of Public Sector Banks in South India. *International Journal of Accounting and Economics Studies*, 12(SI-1), 363.
- Tandon, U., Kiran, R., & Sah, A. N. (2016). Customer satisfaction using website functionality, perceived usability and perceived usefulness towards online shopping in India. *Information development*, 32(5), 1657-1673.
- Geethanjali, G., Suresh, J., Anilkumar, J., Varikunta, O., Sheshadri, T., Lohit, N., & Mahabub Basha, S. (2026). Green HRM Practices and Workforce Sustainability in Indian Software Firms: The Mediating Role of Employee Retention Using SEM. *Indian Journal of Information Sources and Services*, 16(2), 243–250. <https://doi.org/10.51983/ijiss-2026.16.2.25>
- Khaled, A. S., Belhaj, F. A., AL-Sinawi, S. H. N., & Yahya, A. T. (2025). Information technology practices in retail industry: evidence of India. *Discover Sustainability*, 6(1), 1400.
- Bharathi, D., Banerjee, S., Gupta, A. A., Gaurav, K., Ray, A. S., & Rani, K. S. (2026). Reimagining Consumer Experience in the Digital Age: A Strategic and Technological Perspective. In *The Strategic Evolution From Omnichannel to Metachannel Marketing* (pp. 169-198). IGI Global Scientific Publishing.

- Ashwini, N., Malini, T. N., Madhu Shree, P. R., Srinivas, S., Lakshminarayana, K., Sangu, V. S., & Mahabub Basha, S. (2026). Trust in the Digital Marketplace: The Strategic Impact of Online Reviews on Brand Image and Buying Behaviour. *Indian Journal of Information Sources and Services*, 16(2), 423–430. <https://doi.org/10.51983/ijiss-2026.16.2.42>
- Nasrudin, M. F., Purnomo, A., & Lestiani, M. E. (2025). Unraveling the dynamics between advanced technology, logistics customer service, and logistics performance to boost customer retention: Evidence from Shopee Express. *Journal of Consumer Sciences*, 10(2), 343-375.
- Banu, D. A., Tomy, T., Sheeja, D., Kumar, D. S., Madhu, N., Mithun, D., & Basha, D. M. (2026). Artificial Intelligence in Human Resource Management: Transforming Talent Acquisition and Workforce Analytics. *International Academic Journal of Science and Engineering*, 13(1), 87-95. <https://doi.org/10.71086/>
- Bharathi, D., Banerjee, S., Gupta, A. A., Gaurav, K., Ray, A. S., & Rani, K. S. (2026). Reimagining Consumer Experience in the Digital Age: A Strategic and Technological Perspective. In *The Strategic Evolution From Omnichannel to Metachannel Marketing* (pp. 169-198). IGI Global Scientific Publishing.
- Mujawar, M. S. N., & Shinde, S. Interdisciplinary Innovations in Marketing, Technology, and Sustainability: Exploring Consumer Behaviour, Service Quality, and Digital Transformation in India.
- Banu, D. A., Reshma, D., Singh, E. S., Rajeshwari, D., Srinivasa, H., Thilaga, D., & Basha, D. M. (2026). ESG Investing and its Impact on Risk-Adjusted Portfolio Returns from a Behavioral Finance Perspective Using SEM. *International Academic Journal of Science and Engineering*, 13(1), 425-435. <https://doi.org/10.71086/>
- Verma, C., Vijayalakshmi, P., Chaturvedi, N., Umesh, U., Rai, A., & Ahmad, A. Y. B. (2025, February). Artificial intelligence in marketing management: Enhancing customer engagement and personalization. In *2025 International Conference on Pervasive Computational Technologies (ICPCT)* (pp. 397-401). IEEE.
- Mujawar, M. S. N., & Shinde, S. Interdisciplinary Innovations in Marketing, Technology, and Sustainability: Exploring Consumer Behaviour, Service Quality, and Digital Transformation in India.
- Sundararajan, V., Subbarao, A. N., Bawa, S. S., Tewari, S., Srinivasan, M., & Batra, D. (2024). Assessing the Influence of Shopping Experiences on Customer Loyalty: A Study of Indian Jewellery Retail Brand.