

Role of Business Analytics in Effective CRM Implementation in Retail Sector: A Cross Sectional Research

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Abstract

Customer relationship management (CRM) continues to evolve and has undergone significant advancements. Major companies are increasingly leveraging automation and artificial intelligence (AI) technologies to gain insights into buying patterns of customer, enhancement of brand communication, and strengthen connections with customers. CRM is employed by organizations as a set of tools, processes, and technologies for tracking, analysing, and collaborating on customer data through the entire lifecycle of customers. This paper researches into the theoretical foundations of Business Analytics (BA), its integral elements, and the advantages it offers. Businesses can achieve their strategic objectives and attain success through the utilization of BA tools. In today's highly competitive market, retailers are putting a strong emphasis on customer intelligence to not only improve relationships but also cut costs. Business Analytics techniques empower companies to strengthen their understanding of customers, boost their knowledge, and ultimately increase turnover. BA plays a crucial role in delivering enhanced customer experiences, thus strengthening the bond between consumers and brands and enhancing brand uniqueness. A sample of 307 was collected from people working in marketing department of retail sector. The factors that determine the role of Role of Business Analytics in Effective CRM Implementation Retail Sector are Customer Segmentation, Performance Tracking, Personalized Marketing, and Customer Feedback Analysis.

Keywords: Artificial Intelligence, Business Intelligence, Customer Relationship Management, Retail Industry,

Introduction

Business analytics is causing a transformative shift in the operational methods of the majority of businesses. Large corporations globally are increasingly recognizing the pervasive impact of Artificial Intelligence and BA, extending from manufacturing processes to supply chain management and overall strategy. To influence their important business data and enhance customer experience, a growing company are embracing AI-driven strategies and research methodologies. Particularly, AI has now become an essential component of contemporary CRM. Following the successful implementation of AI-powered CRM, marketers can redirect their focus towards extensive research efforts aimed at identifying trends conducive to innovative solutions for less immediate customer needs. This, in turn, can lead to the development of brand reputation and long-term commercial success. CRM implementation is not limited to customer-facing activities; it also involves streamlining internal processes (Shaikh et al., 2023). Business analytics helps retailers analyze customer data for segmentation of customer base efficiently. Segmentation of customer is done based on their demographic details, preferences, and buying behavior. Marketing and sales strategies can be tailored by retailers based on such segmentation to fulfil demands of customers. With AI-enabled CRM in place, marketers can further strengthen their innovation efforts, analytical patterns that facilitate the expansion of fresh ideas to address growing customer demands, thereby creating long-term value and growth for the business. As expanded in our dissertation, CRM transformations have fundamentally altered the roles of marketing managers. Equipped with AI capabilities, marketing managers can now predict the outcomes of various actions and investments designed to boost the company's sales, profitability, brand loyalty, and customer retention. AI not only equips the marketing team with comprehensive customer data but also analyses this data to discern customer needs and preferences (Mahalakshmi & Meena, 2021). The success of a company is heavily reliant on its customers, making it imperative for firms to possess information about customer preferences. Businesses must swiftly adapt to evolving customer demands. Business Intelligence serves as a tool that enables companies to gather data on current trends and devise innovative products or services, facilitating a flexible approach to meeting customer demand.

Retailers, renowned for their innovative practices, are increasingly leveraging Business Intelligence techniques to cater to customer demands and thrive in a competitive landscape. Retailers are also recognizing that the effective use of Business Intelligence requires careful implementation and full support from top management (**Gupta & Sharma, 2013**). Upon the successful positioning of AI-powered CRM, marketers can shift their focus even more towards fostering innovation and identifying trends conducive to the creation of novel solutions for less immediate consumer needs. AI tools, including machine learning and deep learning algorithms, empower marketers to pinpoint the right target audience, select the most effective marketing strategies, and segment the market based on diverse demographic factors. Moreover, these advancements enable marketing managers to anticipate the outcomes of all potential investments and actions aimed at boosting sales, profitability, brand loyalty, and customer retention. Artificial intelligence not only provides the marketing team with comprehensive customer insights but also conducts in-depth data analysis to discern customers' requirements and preferences. Effective CRM relies on personalization, which is made possible through data analysis. Retailers can use analytics to track the performance of marketing campaigns. With the analysis of customer responses and data, it becomes easier for retailers to determine which campaign can be better and effective (**Almahairah et al., 2022**). In today's competitive market landscape, staying competitive requires the integration of information technology and the automation of processes to effectively manage various activities and operations. As technology continues to advance, the adoption of software products by companies and enterprises is on the rise, enabling them to streamline their operations both electronically and online. CRM systems not only drive sales but also enhance the share of sales in the digital realm while concurrently reducing company expenses (**Stefanov et al., 2023**).

Literature Review

Handzic, Ozlen, and Durmic (2014) stated that Customer Relationship Management (CRM) is a modern model designed to facilitate the management of a company's communications with its customers. It has gathered substantial attention from both academia and business executives in recent years. However, defining CRM remains as challenging as defining Business Analytics (BA). The study highlights that the effectiveness of an organization's CRM strategy development is influenced by the implementation of BA initiatives within the organization and the competitive pressures it faces. By identifying two critical BI-related factors and two essential CRM processes (the organization's business and customer strategies), the research provides valuable evidence-based guidance to managers on how to harness BA for maximum benefit.

Chaplot et al. (2023) found the transformative potential of data analytics, that enables businesses to gain deep insights about customer behavior, interests, and preferences. This knowledge empowers companies to deliver personalized experiences, adapt their marketing strategies, and cultivate enduring customer loyalty. According to the study, data analytics allows organizations to move beyond traditional CRM methods and embrace a more proactive and customer-centric approach. Furthermore, the research underscores the importance of meticulous planning, the integration of analytics capabilities into existing CRM systems, and the cultivation of a data-driven culture within the organization for the successful adoption of data analytics in CRM. To effectively analyze and comprehend data insights, organizations must invest in advanced analytics tools, establish necessary data integration and consolidation processes, and provide training to their staff in these processes.

Haleem et al. (2022) stated that Artificial Intelligence (AI) includes a range of techniques that enable machines to carry out intellectual functions typically associated with human intelligence. Such functions include learning, cognitive, and networking with environment of machines. Machine Learning is a popular AI technology. AI has the capacity to create highly personalized brand experiences, simplifying the task of nurturing user engagement and loyalty. Marketers control language-based AI as versatile tools for sales, payment processing, and engagement management, all aimed at enhancing the user experience. Instead of customers having to navigate the buying process self-sufficiently, they can now depend on chatbots for assistance. Artificial intelligence based on language is evolving rapidly, learning continuously after past interactions and inevitably optimizing itself for improved user involvement. It helps companies by recognizing appropriate content interesting to read. AI has made it possible to personalize content by observing, collecting data, and analysing it, especially in digital marketing. This technology proves helpful in assisting marketing team with email drives, permitting to maximize their outcomes.

Goncarovs (2017) found that the challenge in the present era has shifted from data scarcity to data overflow. Marketers and Customer Relationship Management (CRM) specialists now have access to abundant data on consumer behavior. The

application of data analytics in CRM has emerged as a prominent trend in the industry, garnering attention from both industry professionals and academics. Analytical CRM builds upon the foundation of customer information, and its role continues to expand within enterprises. Analytical CRM involves the use of data to formulate relationship strategies, which are pivotal in understanding and meeting customer needs.

Nam, Lee, and Lee (2018) highlight the increasing significance of Business Analytics (BA) in a quickly altering environment of business. Study observed that data management capability plays a crucial mediating role between competency of Information technology and the usage of BA, while capability of customer response has partial mediation between Business Analytics usage and performance of Customer Relationship Management. Through experiential confirmation, author propose two key active proficiencies for effective usage of Business Analytics and CRM – capability of data management, which encompasses management of data quality and capability of data integration, and capability of customer response. These findings offer valuable insights for CRM practitioners, highlighting the importance of these dynamic capabilities. Utilizing BA for CRM can yield positive outcomes even for companies struggling to immediately apply customer perceptions. Application of Business Analytics can lead to satisfactory performance, its impact on CRM performance is significantly enhanced when coupled with customer response capability. It's important to note that despite data-driven Business Analytics and fact-based nature, analysis outcomes can be misleading due to factors such as data faults, mistaken expectations, misapprehensions, and buyer irritation due to unnecessary recommendations.

Gujrati (2015) studied the necessity for firms to quickly adapt to changing demands of customers. Business Intelligence (BI) plays a pivotal role by enabling companies to gather data related to current trends and generate innovative products or services, facilitating an agile approach to meeting customer demand. Retailers, known for their innovation, are at the front of using BI techniques to fulfill customer needs and succeed in today's competitive environment. Retailers have also recognized that the effective application of Business Intelligence requires careful implementation and strong support from top management. With the aid of Business Intelligence, companies can identify their most profitable customers, uncover the reasons behind their loyalty, and identify potential future customers who offer similar if not greater potential. Today, the most innovative retailers are those connecting Business Intelligence to gain a sustained competitive advantage.

Chandramana (2017) revealed that the rising competition in the retail market, emphasizing the critical importance of enhancing business procedures while meeting customer expectations. In this strict competitive market, effectively managing and gathering data to not only delight customers but also determine profitable results is important for success. Leading retail players, nationally and internationally, are now employing data, particularly big data analytics, at retail cycle. This includes tracking of developing common products, projecting sales and imminent demands through projecting modeling, enhancing placements of product and offers through customer heat-mapping, and various other applications. Big Data empowers clients in the retail industry to analyze a wide array of information from various sources such as CRM data, AdWord/AdSense analytics, inventory management systems, emails, transactional data, sensor data, and more. This wealth of data enables companies in identification of latest trends, inventory management for fast selling of items adjustment of prices, and effective distribution of products across multiple stores to enhance sales effectiveness. For retailers, efficient inventory management is critical. Analytics can help forecast demand accurately, reducing excess inventory and minimizing stockouts. This leads to better customer satisfaction as products are readily available when needed.

Theophilus, Jude, and Nhinda (2022) revealed the role of CRM systems in providing users and top management with access to valuable customer information for informed decision-making and improved service delivery. In the contemporary landscape, extensive analysis of customer data is made possible through advanced analytics, facilitated by Business Intelligence (BI). BI has the capability to transform raw data into actionable insights and reports, enabling effective decision-making. While some CRM systems offer basic analytics, they often fall short of fully leveraging the wealth of customer data available. Therefore, involving BI systems with CRM systems has become a common practice, offering a complete view of the customer. Gathering and analyzing customer feedback, whether from surveys, reviews, or social media, is essential for improving products and services. CRM, as a strategic approach, aims to enhance customer satisfaction and loyalty by efficient management of customer data, tracking of communications, and programming of sales and process of marketing.

Natarajan (2022) highlights the dynamic development of Customer Relationship Management (CRM), which has witnessed substantial changes in recent times. Prominent companies have shifted their focus towards incorporating automation and Artificial Intelligence (AI) tools to gain insights into customer buying behavior, enhance brand-customer

communications, and strengthen customer relationships. The adoption of AI-powered CRM has proven instrumental in effectively addressing customer queries and fostering increased customer loyalty. The future of CRM lies in its ability to adapt to the constantly changing needs and expectations of customers while staying attuned to market trends. AI has found frequent applications in CRM, although many companies excel in collecting customer data, not all possess the capacity to analyze, mine, and comprehend the data fully. Artificial Intelligence serves as a solution by automating routine tasks, providing rapid responses to customer inquiries, and offering precise insights essential for sustaining business growth. Increasingly, businesses are harnessing AI-driven techniques and analytical methods to leverage their valuable business data and customer insights. Clearly, artificial intelligence has become an integral component of contemporary CRM systems.

Chaudhary (2017) studied the critical importance of identifying the right customers for effective Customer Relationship Management (CRM). Building relationships with the wrong customers is a key reason behind project failures related to customer systems. Big Data techniques and advanced analytics play a crucial role in customer identification as they uncover trends, patterns, and insights. These techniques are applied to historical data from past interactions with customers and current customer information. CRM is essential for enabling companies to gain a deeper understanding of their customers and establish two-way communication. In CRM solutions, multi-criteria decision-making analysis tools are employed to discover the weight and performance among risk, and management of project, and performance of organization.

Objective

To identify the Role of Business Analytics in Effective CRM Implementation Retail Sector.

Methodology

This study considered a sample of 307 people was collected from people working in marketing department of retail sector. "Random sampling method" was used to collect the data, and scrutinized by "Explanatory Factor Analysis" for study's outcome.

Finding of the study

The table shares respondents' details which show that 64.17% are male and 35.83% are female. Among them, 33.55% are between 28 to 32 years, 36.15% are between 32-34 years, and 30.23% are above 34 years. Regarding Industry type, apparel / clothing is 28.99%, grocery is 38.11%, and electronics are 32.90%. About Online platforms, Amazon is 20.52%, Flipkart is 23.13%, Myntra is 25.73%, and others are 30.62%.

Demographic Details

Variables	Participants	%
Gender		
Male	197	64.17
Female	110	35.83
Total	307	100
Age		
28 to 32	103	33.55
32 to 34	111	36.15

Above 34	93	30.23
Total	307	100
Industry type		
Apparel / Clothing	89	28.99
Grocery	117	38.11
Electronics	101	32.90
Total	307	100
Online platforms		
Amazon	63	20.52
Flipkart	71	23.13
Myntra	79	25.73
Others	94	30.62
Total	307	100

“Factor Analysis”

“KMO and Bartlett's Test”

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.779
Bartlett's Test of Sphericity	Approx. Chi-Square	4582.173
	df	91
	Sig.	.000

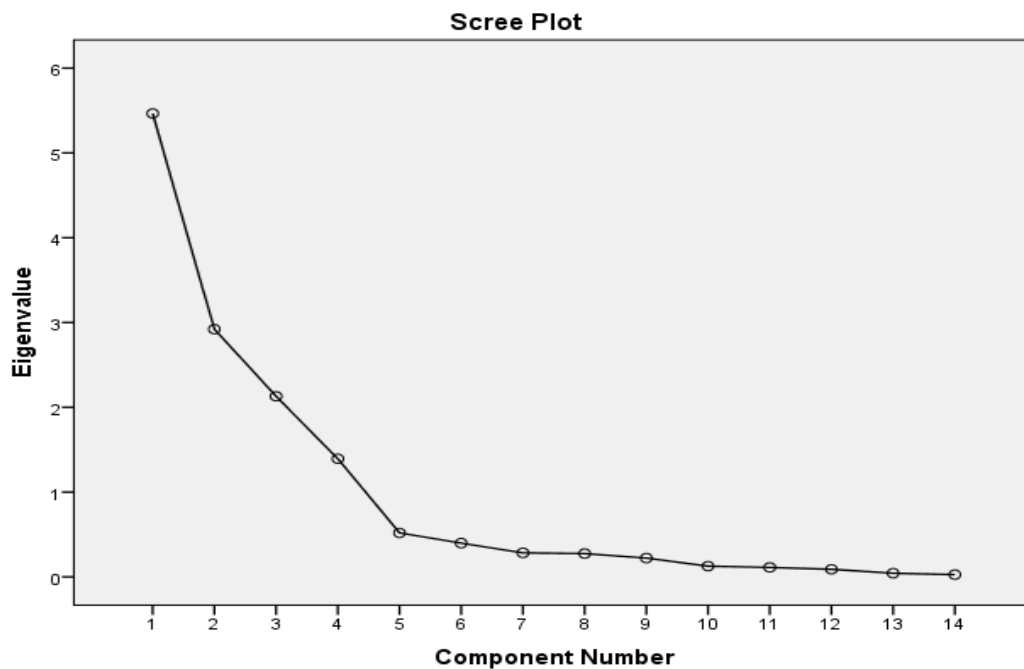
In table “KMO and Bartlett's Test”, the KMO value found is .779

“Total Variance Explained”

“Component”	“Initial Eigenvalues”			“Rotation Sums of Squared Loadings”		
	“Total”	“% Of Variance”	Cumulative %	“Total”	“% Of Variance”	Cumulative %
1	5.465	39.034	39.034	3.731	26.653	26.653

2	2.921	20.864	59.899	3.530	25.215	51.868
3	2.130	15.213	75.111	2.346	16.756	68.624
4	1.393	9.951	85.063	2.301	16.439	85.063
5	.518	3.703	88.766			
6	.398	2.841	91.607			
7	.283	2.021	93.628			
8	.275	1.962	95.590			
9	.222	1.584	97.174			
10	.127	.904	98.078			
11	.111	.794	98.871			
12	.089	.633	99.505			
13	.043	.305	99.810			
14	.027	.190	100.000			

All 4 factors contribute to explain total 85.063% of variance. The variance explained by Customer Segmentation is 26.653%, Performance Tracking is 25.215%, Personalized Marketing is 16.756%, and Customer Feedback Analysis is 16.439%.



Screeplot

Rotated Component Matrix

Sr. No.	Statements	Factor Loading	Factor Reliability
	Customer Segmentation		.975
1.	Customers are segmented through BA on various criteria like preferences, or purchase history	.956	
2.	Customer segmentation helps retailers understand base of customers	.955	
3.	Customer segmentation helps in tailored marketing	.945	
4.	It helps in better customer retention	.942	
	Performance Tracking		.953
1.	BA helps retailers to track effectiveness of CRM strategies and initiatives	.968	
2.	It allows constant improvements and adjustments as required	.933	
3.	Better tracking of customer's habits and preferences	.908	
4.	Identifies gaps and opportunities in CRM strategies	.865	
	Personalized Marketing		.869
1.	BA analyse customer data for personalized marketing	.895	
2.	By understanding interest of customers targeted offers and recommendations can be provided	.847	
3.	Personalized brand experience is provided to customers	.791	
	Customer Feedback Analysis		.825
1.	Social media and email surveys can analyse customer's feedback	.895	

2.	Feedback of customers helps in understanding their sentiments	.830	
3.	Products & services can be improved with feedback of customers	.800	

Factors and associated variables

The first factor of the study is Customer Segmentation, the variables included under this factor are Customers are segmented through BA on various criteria like preferences, or purchase history, Customer segmentation helps retailers understand base of customers, Customer segmentation helps in tailored marketing, and it helps in better customer retention. Second factor is Performance Tracking, the variables in this factor are BA helps retailers to track effectiveness of CRM strategies and initiatives, it allows constant improvements and adjustments as required, better tracking of customer's habits and preferences, and Identifies gaps and opportunities in CRM strategies. Third factor is Personalized Marketing, the variables in this factor are BA analyse customer data for personalized marketing, by understanding interest of customers targeted offers and recommendations can be provided, and Personalized brand experience is provided to customers. Fourth factor is Customer Feedback Analysis it has variables like Social media and email surveys can analyse customer's feedback, Feedback of customers helps in understanding their sentiments, and Products & services can be improved with feedback of customers.

Reliability Statistics

Cronbach's Alpha	Number of Items
.873	14

Total reliability of 14 items including variables in context of Role of Business Analytics in Effective CRM Implementation Retail Sector is 0.873.

Conclusions

In the retail sector, the effective implementation of Customer Relationship Management (CRM) systems is crucial for building and maintaining strong customer relationships, driving sales, and ensuring long-term business success. Business analytics plays a pivotal role in this process, contributing significantly to CRM effectiveness. Business analytics plays an indispensable role in the effective implementation of CRM in the retail sector. It empowers retailers to better understand their customers, make informed decisions, personalize interactions, and stay competitive in a rapidly evolving market. By harnessing the power of data-driven insights, retailers can create stronger and more enduring customer relationships, leading to increased revenue and sustained growth. Business analytics enables retailers to make data-driven decisions by analyzing huge customer data. By recognizing customer behavior, favorites, and purchase patterns, retailers can modify their CRM strategies to meet individual customer needs, resulting in higher customer satisfaction and loyalty. Business analytics provides deep insights into customer preferences, allowing retailers to identify trends and adjust their product offerings accordingly. This helps in inventory management, optimizing stock levels, and ensuring that products on the shelves align with customer demand. The factors that determine the role of Role of Business Analytics in Effective CRM Implementation Retail Sector are Customer Segmentation, Performance Tracking, Personalized Marketing, and Customer Feedback Analysis.

References

1. Shaikh, I.A.K., Mohanasundaram, T., K.M.R., Jadhav, R., Palande, S.A., Drave, V.A. (2023). An Impact of Artificial Intelligence on Customer Relationship Management (CRM) In Retail Banking Sector, *Eur. Chem. Bull*, 5, 470-478.

2. Mahalakshmi, M., & Meena, S. (2021). Role Of Artificial Intelligence in Customer Relationship Management in Indian Retail Industry, *International Journal of Creative Research Thoughts*, 9(9), 46-51.
3. Gupta, Y., & Sharma, N. (2013). When BI Meets CRM: An Emerging Concept in Retail Industry, *International Journal of Business Analytics and Intelligence*, 1(1), 41-48.
4. Almahairah, M.S.Z., Balaji, K., Murugan, A., Rajesh, P., Kumar, H., & Alotoum, F.J. (2022). A Novel Study on Customer Relationship Management Using Artificial Intelligence in The Retail Sector, *Journal of Pharmaceutical Negative Results*, 13(9), 9810-9819.
5. Stefanov, T., Varbanova, S., Stefanova, M. & Ivanov, I. (2023). CRM System as a Necessary Tool for Managing Commercial and Production Processes, *TEM Journal*, 12(2),785-797.
6. Handzic, M., Ozlen, K., & Durmic, N. (2014). Improving Customer Relationship Management Through Business Intelligence, *Journal of Information & Knowledge Management*, 13(2), 1-9.
7. Chaplot, D., Ranawat, P., Yadav, A. & Soni, K. (2023). Customer Relationship Management (CRM) In the Era of Data Analytics, *Eur. Chem. Bull.*, 12(4), 18392-18406.
8. Haleem, A., Javaid, M., Qadri, M.A., Singh, R.P. & Suman, R. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study, *International Journal of Intelligent Networks*, 3, 119-132.
9. Goncarovs, P. (2017). Data Analytics in CRM Processes: A Literature Review, *Information Technology and Management Science*, 20, 103-108.
10. Nam, D., Lee, J., & Lee, H. (2018). Business analytics use in CRM: A nomological net from IT competence to CRM performance, *International Journal of Information Management*, <https://doi.org/10.1016/j.ijinfomgt.2018.01.005>.
11. Gujrati, R. (2015). CRM for retailers: Business intelligence in retail CRM, *International Journal of Applied Research*, 2(1), 24-29.
12. Chandramana, S.B. (2017). Retail Analytics: Driving Success in Retail Industry with Business Analytics, *Research journal of social science and management*, 7(4), 159-166.
13. Theophilus, S., Jude, O., & Nhinda, G. (2022). Integrating business intelligence systems with customer relationship management systems. An approach for Business Organisations, *Proceedings of International Conference on Information systems and Emerging Technologies*.
14. Natarajan, K. (2022). A Study on Impact of Artificial Intelligence in Customer Relationship Management, *International Journal of Innovative Research in Technology*, 8(8), 99-103.
15. Chaudhary, W. (2017). Customer Relationship Management (CRM) and Machine Learning technology for Customer Identification, *International Journal on Informatics Visualization*, 1(1), 12-15.