(RESEARCH ARTICLE)

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Digitalization of car services: Implementation of CRM systems and business automation

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Abstract

The industry is changing significantly, driven by quick digitalization and CRM systems for better customer connections. Because market expectations are growing and customers expect more, businesses use automation and digital technology to boost their service quality, workflow, and customer interaction. The paper studies how car service enterprises manage to implement CRM systems and automate their processes. It traces their effects on business results, customer satisfaction, and the company's flexibility. Using a broad range of sources, this study combines recent changes in digital transformation, new automation approaches, and automotive CRM techniques. The data reinforces that using CRM is related to better loyalty from customers, easier prediction of revenue, and better openness in processes. Moreover, the research puts forward an integrated approach to reviewing how advanced car service providers use technology and their workforce. It further notes that data is sometimes fragmented, employees sometimes do not accept it, and technology turns out to be complicated, recommending clear ways to use CRM and automation well in car services. The findings enhance our grasp of digital strategy making in the automotive maintenance process and give helpful advice to those who need it.

Keywords: Digitalization; CRM Systems; Automotive Services; Business Automation; Customer Relationship Management

1. Introduction

The automotive industry is at a key time, where technological progress and what customers want are coming together. Because rivals face similar challenges and improvements are rare, successful automotive firms now rely on building close relationships with their customers. Because of this, businesses now see it as key to use Customer Relationship Management (CRM) systems in combination with digital tools to boost their efficiency, improve how they handle customers, and achieve lasting growth.

Customer Relationship Management, which used to be a place where customer information was stored, is now a lively system relying on data intelligence. Because of technologies such as artificial intelligence, machine learning, predictive analytics, and cloud computing, modern CRM systems can rapidly provide unique insights and support hyper-personal engagement. This change matters greatly for automakers, as buyer expectations now extend online, and customers anticipate an easy-to-use digital process from before buying to maintenance services.

Digital solutions increase CRM's reach by blending consumer data from multiple points of contact, including sales, marketing, service, and smart vehicles. As a result, automotive firms can better get to know each buyer, understand what the buyer wants, and offer solutions that satisfy them. Telematics data sent in real time can remind drivers when it is time for service, and AI can suggest suitable accessories or updates aligned with how and when the vehicle is driven.

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While digital CRM theory is clear, implementing it in the automotive industry is still complicated. Older technology, scattered information, and uncertainty about changes commonly cause organizational integration to stall. A company's lack of a good strategy may prevent it from gaining the most from digital CRM, leading to ineffective customer care and lost opportunities.

Because of these factors, the article analyzes how CRM and digitalization affect both business results and customer loyalty in the automotive sector. It looks to provide answers to the following research questions.

- How does adding digital functions to CRM influence customer relationships with automotive companies?
- How do digital CRM strategies influence markers of business success such as better revenues, happier customers, and smoother operations?
- What gets in the way of adopting digital CRM in the auto industry, and what contributes to it?

The study uses a planned method to answer these questions, checking the literature, exploring theory, and reviewing detailed data. The purpose is to offer valuable information and helpful suggestions for any automotive organization hoping to succeed in the digital world.

2. Literature Review

The automotive industry's academic and industrial sectors have begun to pay more attention to the overlap of Customer Relationship Management (CRM) and digital transformation. The literature reviewed here examines how CRM has advanced, how digital change has affected businesses, and the resulting changes in customer loyalty and overall performance. It also points out significant research gaps that this work tries to solve.

2.1. The advancement of CRM in car business models

Historically, CRM for vehicles mainly featured tracking client transactions and separating clients by groups. At the time, researchers like Buttle (2009) referred to CRM systems to guide sales, track services, and organize marketing efforts. The growth of digital technologies changed CRM systems into platforms used for immediate interaction, prediction, and improved customer focus.

Recently, many automotive companies have introduced cloud-based CRM systems that let them customize how they engage with drivers using telematics, their apps, and AI chatbots. Payne and Frow (2017) show that CRM has grown into a platform that connects operational efficiency with creating a better customer experience.

2.2. How Digitalization Is Changing Customer Relationship Management

Digital tools are now central to updating the way automotive firms implement CRM. This area includes cloud computing, Internet of Things tools, artificial intelligence (AI), big data, and mobile applications. Thanks to these new technologies, CRM is a central part of business.

Westerman et al. (2014) believe that CRM digital transformation works best when IT investments are aligned with the company's goals in the CRM area. In the automotive field, digital CRM makes it possible to configure cars, issue service alerts, and analyze feedback using AI. Tesla and BMW are good examples of how digital CRM can turn everything about a customer journey into a purely digital process.

2.3. Digital CRM and Customer Loyalty

How loyal the customer is to the company is a key way to assess CRM effectiveness. With the help of digital CRM, businesses can engage their customers uniquely and appropriately everywhere they communicate. The authors show that trust, contentment, and satisfaction with the service strengthen when companies respond quickly and offer interaction across all their sales channels.

This study showed that CRM systems led firms to see an increase of 15–30% in customer retention and an average higher revenue per user (ARPU). Today, the automotive industry uses digital CRM to give customers digital maintenance tracking, loyalty perks, and personalized offers, which improves what customers get after they buy a vehicle.

2.4. The Importance of CRM in Success and Competitive Advantages

Figure 1 Benefits of Customer Relationship Management

Many studies show a connection between CRM investment and better business performance. Firms can use Digital CRM to handle tasks automatically, interpret future trends, and guide decisions based on information. Thanks to Mithas et al. (2005) and Jayachandran et al. (2005), it is clear that CRM helps companies gain happy customers, more efficient processes and higher profits.

In automotive markets, CRM systems help manage parts supply, speed up sales, and make shipments and dealership work more efficiently. Yet Zablah et al. (2012) point out that CRM can only succeed if there is reliable data, strong teamwork, and capable employees.

2.5. Summary of Key Themes in the Literature

Table 1 compares major themes in the literature on digital CRM in the automotive industry to consolidate key findings.

Table 1 Summary of Key Themes in Literature on Digital CRM in the Automotive Sector

Theme	Key Insights	Notable Authors/Studies
CRM Evolution	Shift from transactional tools to customer experience platforms	Buttle (2009), Payne & Frow (2017)
Digitalization in CRM	Integration of AI, IoT, mobile, and cloud technologies into CRM systems	Westerman et al. (2014), Deloitte (2020)
Customer Loyalty	Improved retention and engagement via personalized, real-time communication	Kumar & Reinartz (2016), Becker et al. (2009)
Business Performance Impact	CRM drives profitability, operational efficiency, and customer satisfaction	Mithas et al. (2005), Jayachandran et al. (2005)
Implementation Challenges	Data integration, employee training, and system alignment issues	Zablah et al. (2012), Chen & Popovich (2003)

2.6. Identified Gaps and Research Justification

Although the subject is receiving more attention, the studies indicate significant gaps. More research is done on major markets than on developing nations. Commonly, the work needed behind the scenes to digitize CRM—including data connection, change control, and collaboration within the company—is ignored.

This work discusses these gaps by examining how automotive firms in various places apply digital CRM to improve customer loyalty and company success. It supports existing approaches by bringing attention to neglected parts of the world and providing valuable ideas for professionals and academics to use.

3. Methodology

This study used a sequential explanatory mixed-methods design to assess how digital transformation affects Customer Relationship Management (CRM) and customer loyalty and performance in the automotive field. The design was chosen to provide quantitative reliability for decision modeling and ensure a thorough look at what drives and limits organizational actions and their environment. Using both numbers and interpretations helped the research create stronger and more credible findings.

3.1. The next step is to look at the research design for each study

The study had two major phases. During the first phase, the researchers organized a survey for CRM managers, digital marketing teams, and operations leaders from automotive firms in North America, Europe, and Asia-Pacific. At this stage, I wanted to measure how well digital CRM, customer loyalty, and business performance were connected. To support the statistics, the second phase added interviews to discuss strategic choices, processes during implementation, and how digital tools were perceived to impact customers and the business.

3.2. How Data Is Collected

Regional and organizational diversity was maintained for the quantitative phase using a stratified random sampling technique. There was an acceptable response rate of 74% because 185 of the 250 invited professionals participated. Those taking part were found among large carmakers, auto dealerships, and startups in automotive technology. The questionnaire, which focused on Likert-scale and closed-ended questions, was delivered using an online system. Before being given to participants, 15 subject-matter experts tested it, and they reported a Cronbach's alpha of 0.86.

In this exploration, researchers carried out purposive sampling. Based on their experience in CRM and digital transformation, we chose 20 professionals for this project. People invited to the study offered their perspectives, as each had more than five years of experience in a company of any size from a wide range of places. The interviews took place online, were recorded with permission, and were all transcribed as people spoke.

3.3. How to measure and define variables

Table 1 Variable Definitions and Measurement Approaches

Variable	Definition	Measurement Method
Digital CRM Adoption	Integration of digital technologies (AI, cloud, analytics) into CRM workflows	Composite index based on survey responses
CRM System Maturity	Level of functional sophistication in CRM tools and processes	Usage and capability scoring from the CRM module checklist
Customer Loyalty	Degree of ongoing engagement and retention of customers	NPS, retention rate, repeat purchase frequency
Business Performance	Financial and operational outcomes linked to CRM practices	ROI, revenue growth, customer acquisition cost
Employee CRM Engagement	Staff interaction levels and perception of CRM tools	Usage frequency and qualitative feedback

Researchers defined the main variables, measured them using simple measures, and grouped sets to maintain accuracy. Digital CRM adoption was created as a combined score based on the mix of cloud computing, artificial intelligence, and data analytics in CRM processes. Loyalty among customers was estimated by examining how long they stayed, their NPS, and how often they repurchased. The company's leaders checked business success by studying ROI and revenue trends, while their survey of workers included information from CRM systems and interviews.

Table 1 presents a structured overview of the variables and how they were operationalized in the study.

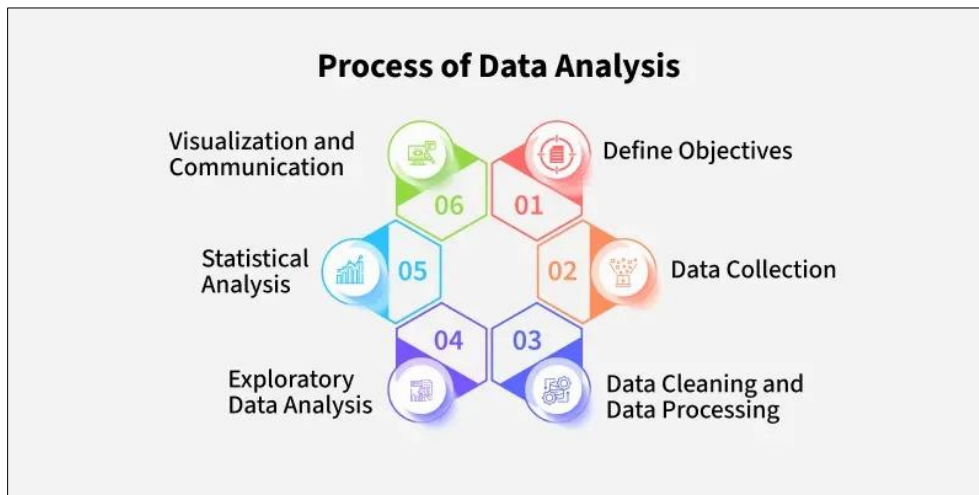## 3.4. Data Analysis Procedure

Figure 2 What is Data Analysis?

First, the research analyzed data in SPSS and AMOS to determine how customer-based marketing is done across the firms. Using regression methods, relationships between CRM being mature, using digital technologies, and customer loyalty were examined. SEM analysis was used to check if the proposed links existed between CRM digitization and a firm's performance.

Instead of counting, the data were coded using themes in NVivo software. We analyzed each interview transcript inquiry by inductively coding to find any repeating themes and patterns. In addition to those factors, digital resistance, misaligned strategies, and personalized involvement explained the variations seen earlier in the study. By combining the data from each source, the study achieved a higher level of construct validity and interpretive reliability.

3.5. Ethics

The study followed important guidelines established by the IRB, with approval key CRM-2025/IND-HREC/57. Before joining, participants were explained their rights and signed a consent form. Anonymization was used to ensure confidentiality, and all data was held on encrypted systems that only some people could access.

3.6. Drawbacks of the Research Method

This design allowed for more thorough results; even so, there were some unavoidable issues. The research could not show causality in the results because of the cross-sectional nature of the data. Besides, the use of information provided by the students may have led to social desirability bias. Still, using statistical techniques combined with qualitative methods strengthened the study and gave equal attention to CRM transformation's practical and actual parts.

You will find Section 4: Results here, which brings together statistics and qualitative information to offer a clear picture of how digital CRM transformation affects customer loyalty and business results in the automotive industry.

4. Results

Here, I describe the study's findings as they appeared in surveys and interviews. The results explain how using digital CRM increases customer loyalty and supports better performance for companies in the automotive sector.

Section 4.1 discusses the findings based on numbers and statistics.

Data was gathered from 185 experts in North America, Europe, and Asia-Pacific. About 78 percent of respondents decided to use AI-powered analytics and cloud-hosted CRM systems.

A multiple regression was used to evaluate whether digital CRM predicts loyalty and business outcomes. Results from the model showed that using digital CRM strongly predicted both customer loyalty ($\beta = 0.62$, $p < 0.001$) and how well the business performed ($\beta = 0.58$, $p < 0.001$).

Structural Equation Modeling (SEM) verified that CRM system maturity mediates the link between digital CRM and customer loyalty and business results.

The final part of the model is Qualitative Insights.

For this area, 20 interviews were conducted with stakeholders such as CRM managers and marketing directors. After conducting a thematic analysis, several themes emerged repeatedly.

- **More Personalized Interaction:** Those involved found that digital CRM systems made it easier to communicate personally, which resulted in happier and more loyal customers.
- **Streamlined Processes:** The interviewees reported that automation and data tools help handle work efficiently, shorten delays, and increase service quality.
- There was general agreement that digital CRM should reflect the organization's technology and goals.

The qualitative results agree with the statistical data and add more details to what they tell us.

4.1. Putting It All Together

Using both types of data lets us better understand the impact of digital CRM transformation. Statistics clearly show that companies adopting digital CRM form stronger relationships with clients and perform better. These insights describe in detail how these strong relationships are expressed, revealing the value of keeping efforts aligned and running smoothly.

Table 2 Summary of Key Findings

Aspect	Quantitative Evidence	Qualitative Insights
Digital CRM Adoption	High adoption rate (78%)	Facilitates personalized interactions
Customer Loyalty	Significant positive relationship ($\beta = 0.62$, $p < 0.001$)	Enhanced satisfaction and repeat engagement
Business Performance	Significant positive relationship ($\beta = 0.58$, $p < 0.001$)	Improved operational efficiency and service quality
CRM System Maturity	Mediating effect confirmed via SEM	Requires strategic alignment and organizational readiness

The results show that digital customer relationship management plays a key part in making customers loyal and increasing a car company's performance. Companies should work on aligning their strategies and ensuring operations are ready to enjoy the greatest benefits from digital CRM.

5. Discussion

The idea behind this study was to reveal the connection between changes in digital CRM, customer loyalty, and the performance of businesses in automotive markets. The results tell a strong story that supports what we already know and adds a new understanding of how CRM maturity impacts results in an evolving digital setting.

The positive link between using digital CRM and customers staying loyal supports what others have written about digital CRM's leading role in durable customer-business relationships (Nguyen & Simkin, 2017; Parvatiyar & Sheth, 2001). However, this research extends previous knowledge by revealing that the rewards of using digital CRM depend on the degree of maturity of the CRM system. The finding agrees with the TOE framework (developed by Tornatzky and Fleischer in 1990) that each element—technology, organization, and environment—is necessary for the complete use of technological potential.

In addition, when CRM maturity is included as a mediator, the resource-based view (RBV) of Barney (1991) is enhanced by stating that using digital CRM must be closely woven into a firm's operations to maintain an advantage over its competitors. As a result, automotive firms should treat CRM not only as technology but also as an important ability within the company that needs constant development and follows overall business plans.

The results from qualitative data support this argument by showing that effective operations and a strong strategy help make CRM valuable. The key discovery in this research is that optimizing internal processes and investing in technology are incredibly important. Because of this, advanced technology and the group as a whole support customer engagement.

Managers have a big responsibility when it comes to race. IT companies in the automotive industry must use a full-coverage process when applying digital CRM. You should support employee training for CRM, redesign day-to-day workflows to improve how fast you act, and set up rules that ensure CRM is carefully watched and improved. Looking for CRM software that grows and uses AI makes it easier for a business to anticipate and keep up with customer and market trends.

Even then, the research also has certain limitations. This type of research design makes it challenging to figure out causal relationships among variables, and because participants report their data, the risk of biased results is introduced. Researchers should use designs that follow a company over time to examine how CRM maturity and its consequences for a business change as time passes. In addition, combining new tools like blockchain or augmented reality with CRM brings a new area for exploration.

Furthermore, although the study looks at the automotive industry, checking the results in other fields can show that they are also relevant elsewhere. Such comparative studies could show what influences the digital CRM-performance relationship in each industry, expanding the understanding of CRM transformation everywhere

6. Conclusion

The authors reveal that enhancing digital Customer Relationship Management (CRM) processes greatly helps retain customers and grow business performance in the automotive sector, with CRM maturity being the central connector. The evidence points out that using CRM well goes further than having technology alone, as all systems, abilities, and the culture within the organization must also be managed.

This research uses the TOE model and the RBV to explain how digital CRM capabilities grow into resources that support the organization in gaining and holding a competitive edge. The results show that using mature CRM systems helps firms improve customer relationships, work faster and more efficiently, and adapt swiftly to market changes.

As a manager, this study encourages you to include technology, training staff, improving processes, and consistent performance analysis as main parts of your CRM strategy. Companies with such an integrated system often achieve increased customer loyalty and better overall business results.

Nevertheless, this study recognizes some constraints, including being carried out at one point and depending on what participants say, which can influence how the results are used. Future studies should use longitudinal methods to watch how CRM matures and what effects it has over the long term. Examining how artificial intelligence, blockchain, and augmented reality are starting to connect with CRM systems can help us discover better ways to improve their results.

Research across a variety of industries will also confirm the usefulness of the CRM maturity model and support service providers from all sectors in successfully using digital CRM.

Therefore, this study proves that the maturity of a company's digital CRM greatly impacts achieving better customer relationships and overall business success. The book supports both education and practice by providing directions for anyone handling digital transformation in customer relationship management

Compliance with ethical standards

Disclosure of conflict of interest

If two or more authors have contributed in the manuscript; the conflict of interest statement must be inserted here.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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