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Customer Sentiment Analysis Based on App Reviews for the Automotive Industry

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Abstract- This paper places a strong emphasis on the importance of customer feedback and sentiments which are available on digital media. OEMs must organize their digital strategy, budget their IT spending, and integrate IT with their corporate goal to improve their brand's perception and win over customers. For this research, the methodology adopted was to do the customer sentiment analysis towards the IT applications that automobile companies are offering by analyzing the customer feedback and reviews in the app market. It will help the companies understand customer sentiment and what customers like and dislike about their offerings. Businesses can use this input to improve their products or services, which will encourage repeat business by building a loyal customer base. it is crucial for automakers to track all of their customer's touchpoints and enhance their experience at each one by considering customer feedback and implementing new application features and technology.

Keywords – Customer Experience, CRM, Digital Transformation, Dealer Matrix, Customer Sentiment, Digital Roadmap

I.   INTRODUCTION

The communication gap between customers, salespeople, and marketing departments is filled by CRM [1]. All OEMs need to develop a technology stack to collect and integrate customer data at every touchpoint from both digital and Physical touchpoints. Based on the data, managers need to make the decision, which should be aligned towards achieving the organization's goal and these decisions ought to be based on the consumer touchpoints [3].

Processes have also evolved to focus on the needs of the customer as a result of the development of the internet and smart gadgets. Their daily chores are made easier and more certain by the features of digital gadgets including mobile, desktop, and other devices. Therefore, businesses—including those in the automotive industry—must add the "human touch" to the technological side of the equation [1]. This human touch requires exceptional customer service to be added to technology [1].

Traditional methods of delivering sales and after-sales services for example — a high potential sales team managing customers, and an efficient and creative marketing team managing digital platforms, and social media platforms, are good; but in today's world, these are not enough, especially after the pandemic world.

They need assistance from the technology to provide the data and help teams identify the gap and actionable items through which teams can deliver tailor-made and customized solutions for hassle-free customer experiences [1]. And same can be achieved by doing the customer feedback/review analysis. Understanding customer sentiment is important, as it helps develop customer loyalty and retention through better assistance results and customer experience [8].

To create tailored and customized solutions for hassle-free customer experiences, teams require aid from technology to supply the data, help teams discover the gap, and provide actionable items [1]. Likewise, by analyzing customer feedback and reviews, success can be attained. Understanding customer sentiment is crucial because it fosters loyalty and retention by improving customer service and experience [8].

II.   LITERATURE REVIEW

In the automotive industry, organizations are transitioning from being product-driven to being customer-centric and customer-driven. Which needs a stronger relationship among the companies, dealerships, and the customer to build trust [3]. Modern automotive CRM software and other customer-facing applications will help to ease out the dreary aspects of car buying and after-sales services. These applications play a crucial role in the entire customer journey.

5324

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For eg. Customers can benefit from several extra benefits when a CRM and customer portal are synchronized, including the ability to view inventories online and make decisions quickly. Customers will be more engaged in the purchasing process and have ideas before they visit the dealership with this kind of information readily available. [3].

Some practical evidence is available which suggests that the costs of retaining customers are significantly less of an existing customer than it does to acquire a new one. However, retaining a customer is still a challenge as making loyalty especially critical in times when corporate marketing budgets are scrutinized [9][10]. It has been indicated that an improvement of 5 percent in customer retention leads to an increase of 25 percent to 75 percent in the profit of automobile companies [2] and this can be achieved by technologies to provide improved customer experience in every touchpoint of after-sales journey.

Customer-facing applications are crucial in:
- Turning data into actionable items/insights
- Create a brand image with the new customers.
- Helps to improve a bond with the existing customers.
- personalized experiences for customers help to maintain loyalty
- Extending brand loyalty through word of mouth
- Help to increase productivity and customer service which interns Increase profitability [1]

Companies are now developing innovative customer experience applications. It's critical to understand client attitudes, the features they desire, the experience, and the user-friendliness that the application is providing. Simply launching the application into the market won't assist.

The customer researches the business, the vehicle, the experiences of other customers with that brand and vehicle, after-sales service options, the dealership network, etc. before making the purchase. This knowledge is readily accessible over the Internet thanks to technology. The opinions of other customers are tremendously influential in swaying a buyer's choice.

Figure 1: New car research [8]

Selling cars online has never been an easy task. It used to be thought of as part of the selling process to list products on a website, offer a slick configurator, an EMI calculator, and other digital experiences that empowered and entertained were needed to transport people from browsing to buying. On various platforms, a plethora of reviews and information is available which flipped the symmetry of information between buyers and dealers [5]. However, the car-buying process still needs a lot of refinement at each point in the customer's journey and is not as seamless as it should be.

By 2025, it's anticipated that more than 25% of all car sales will take place online. 48% of consumers, who research the market for 1-3 months before making a purchase, expect to have a remarkable experience at any point in the purchasing process [4]. Additionally, 80% of customers already purchase the majority of their new cars digitally, and they are especially loyal to businesses that provide outstanding value while making the purchasing process as easy and stress-free as possible [4].

Customers anticipate having a seamless experience throughout their whole journey, from digital brochures to the entire car-buying, after-sales process, and everything in between. Limited availability of online options in any of the steps across the journey is creating an overall unsatisfying experience for customers. It could be an inconvenient purchasing experience, inconsistent pricing, no transparency on vehicle inventory, and insufficient channel alignment which results in intra-band competition [5].

Because OEMs and customers have very little interaction in the current automobile buying and after-sales model, OEMs are heavily dependent on dealerships. The capacity of OEM to create data-driven sales is constrained by its reliance on dealers.

OEMs will expand and sustain their vision and will lead a good change in the automobile industry if they see the value of having access to consumer information, have high expectations for the customer experience, and welcome customer-centric innovation [5]. Separating software and hardware can help OEMs to wrap customers in a software bubble that moves with them from vehicle to vehicle, creating a whole new paradigm [5].

III. SAMPLE AND DATA COLLECTION

Four OEM customer-facing applications with a presence in the Indian market were chosen for this study.

Two of these four have the greatest market share in India. Application reviews have been selected for these customers-facing applications from the iOS store and Play store.

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Only those application reviews where a consumer provided the reviews along with the star rating have been taken into account for this research's purposes. 29387 reviews and ratings have been analyzed from 6 applications of 4 automobile companies in India. Each application has a different evaluation period that varies depending on when it was launched, but they all have the same finish date, which is April 30, 2023.

If an analysis is based on a certain time frame, that information is included in the analysis itself.

We'll use the abbreviations OEM1, OEM2, OEM3, and OEM4 to refer to the OEMs due to confidentiality concerns.

Table 1: OEM and Review count

OEM	Review Count
OEM1	6915
OEM2	734
OEM3	20643
OEM4	1095
Total	**29387**

IV. REVIEW ANALYSIS

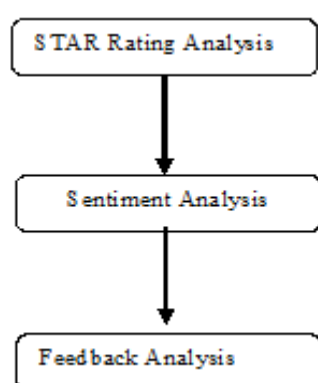For the review analysis three-step approach has been taken:

Figure 2: Review analysis steps

STAR Rating Analysis: Consider the data set in Table 1 for STAR rating. Figure 3 demonstrates that 40% of reviews are favorable, indicating that either users are satisfied with the application or the company's service. 52% of customers, however, are unhappy with the services or the applications.
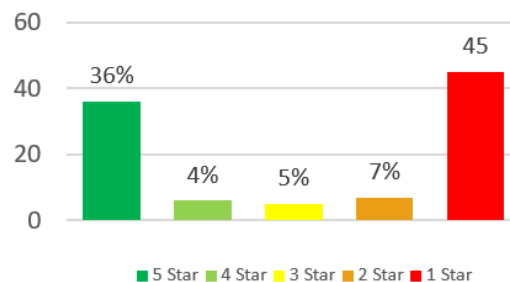

Figure 3: STAR Rating Analysis

Figure 4: Average STAR Rating

On a scale of 1 to 5, where 5 symbolizes Excellent service and 1 is terrible service, Figure 4 demonstrates that the average STAR rating for these applications is 2.8, which is on the lower end.

OEMs must review every aspect of their company operations, develop a customer-centric strategy based on their requests and input, and address the value that the digital experience has brought. The entire value chain needs more room for digital innovations.

Sentiment Analysis: To take it a step further, sentiment analysis on the same data set is done, and is performed on textual data to help businesses monitor brand and product sentiment in customer feedback and understand customer needs. It's to learn what users think about the app, its features, the services provided by businesses, their experiences at the dealership, and their perceptions of the brand as a whole.

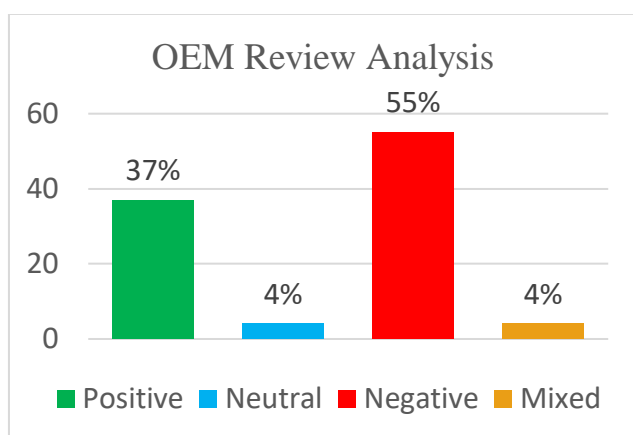Out of 29387 reviews, 37% reviews are positive and 55% are negative (Figure 5)

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Figure 5: Overall Review Analysis

OEM-wise sentiment analysis was also conducted. Figure 6 shows that except for the OEM3, all others have around 60% of reviews negative. OEM3 is having around 50% positive reviews. It demonstrates that OEM3 provided various features in the application that is very beneficial to users and enhance the customer experience.
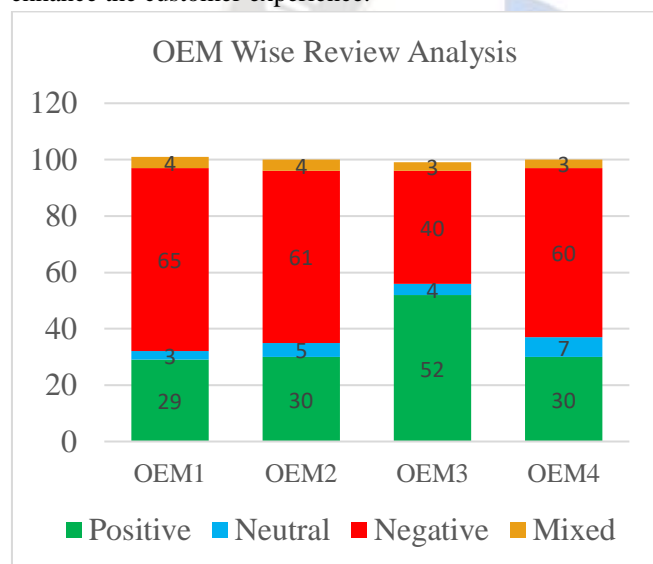

Figure 6: OEM-wise Review Analysis

The overall sentiment score for these OEMs is 56%, which is not on the good side. To determine the score, all reviews are taken into account under Table 1.

Overall Sentiment Score 56%
Figure 7: Overall Sentiment Analysis

Feedback Analysis: To understand the reviews, identify the top contributors' feedback which was crucial in shaping both the positive and the negative assessments' sentiment.

Table 2: TOP Contributor - Positive feedback
Application experience
Good Remote start feature
Book Service appointments
Car Insurance Policy and reminder
Service History
Dealer Locator
Estimate service costs feature
Claim information
Authorized service center

Table 3: TOP Contributor - Positive feedback
Service experience
Excellent Customer service
Good New Car purchase experience
Great Service experience
Highly Recommended
Great Features in the Car

Table 4: TOP Contributor - Negative feedback
Application experience
Something went wrong error
Invalid registration & Mobile number
Remote start features not working
Login/OTP issues/App crash issue
Inaccurate Service cost calculation
Don't show service history & Payment history
No confirmed service appointment
Download Invoices Sales/Service doesn't work

Table 5: TOP Contributor - Negative feedback
Service experience
Heated steering wheel
Poor Customer service
No confirmed service appointment
Bad Service experience
remote lock unlocks don't work

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Hogging over the price
Moved around different salespeople
The issue with roadside assistance

To understand what customers are anticipating during the sales and post-sale journeys, businesses should regularly conduct sentiment analyses. It will assist in adding new capabilities to the app and allow businesses to budget for these apps as well as plan their digital maps.

In Table 4, the top contributors are mostly related to the application issues, like Login/OTP issues/App crash issues, something went wrong error- No proper error handling, Invalid registration, and mobile number, and not showing service history and payment history, etc. which means there is an issue with the development process or in user acceptance testing or insufficient infrastructure, etc.

It indicates the lack of budget for IT projects, lack of resources in IT, and also indicates the less involvement of business in the project development life cycle. To minimize these bad attitudes, businesses should appropriately plan their IT investments and resource allocation. Although these errors appear to be little, they significantly contribute to negative sentiment development.

V.   RESULT AND DISCUSSION

Both sentiment analysis and star ratings have been taken into account in this study. The average star rating for this service is 2.8, which ranges from neutral to subpar. If you notice an overall sentiment score of 56 on a scale of 1 to 100, it suggests that customers do not have positive feelings about the apps and services that dealerships or OEMs provide. When these applications are properly constructed considering customer feedback, can enhance business operations. Businesses will experience larger gains in organizational productivity when they employ information technology to streamline operations and decentralize decision-making [6].

OEMs ought to view this forum for app reviews as an opportunity. These lower ratings or unfavorable comments are indicative of problems with applications or services provided by the dealership and OEM, as well as the company's long-term customer service strategy.

The company's reputation is being damaged, which will lead to a loss of customers.

Companies need to develop an IT roadmap, prioritize requirements, and allocate funds (both capex and opex) and resources in the right way in order to meet consumer expectations while also taking the needs of the business into account. The score can be adjusted in favor of the positive side of the scale with the aid of careful preparation of customer feelings.

In addition to planning their IT investments and supporting agile software delivery that will help to reach customers quickly and get their feedback sooner, incumbents must contend with the challenges posed by new entrants, new digital disruptors, and new partnerships [5].

CONCLUSION

This study examines customer sentiment by reviewing their ratings and feedback. According to this survey, maintaining an application is no longer sufficient; businesses must also continue to add new features in response to customer feedback and internal business requirements. Along with improving the customer experience, it will aid in customer retention and brand value growth, both of which will boost profitability.

However, the majority of established OEMs in the automobile sector still rely on a conventional sales model, in which OEM engagement is minimal and a heavy reliance on dealers is placed on customer outreach. Dealers take the lead in pricing, marketing, and sales in place of OEMs. However, new competitors like Tesla, NIO, and Canoo are now competing against well-known OEMs and their dealers with a direct consumer strategy that provides practical sales and mobility experiences. Working towards a customer-centric process in this situation is even more crucial [5].

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