

Customer Relationship Management in the Indian Telecom Industry: A Study of Madhya Pradesh

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Abstract—With over 1.2 billion mobile users and 1 billion Internet users, the Indian telecom industry is one of the fastest-growing in the world. Madhya Pradesh is a key player in this growth. Madhya Pradesh has 80 million people, and 50 million of them use mobile phones. This number is growing quickly. This study analyzes the Customer Relationship Management (CRM) practices of telecom service providers in Madhya Pradesh, emphasizing their efficacy in improving customer satisfaction and loyalty. A mixed-methods approach was employed to gather primary data via structured questionnaires and interviews with telecom users and industry professionals in both urban and rural areas, complemented by secondary data from published sources. The results show that even though telecom companies have spent money on CRM technologies, there are still gaps in delivering consistent service and putting the customer first, especially in rural and semi-urban areas. This study provides actionable recommendations for optimizing CRM implementation, elevating customer experience, and guiding policy formulation. The lessons learned in Madhya Pradesh can be used as a model for other areas that are similar in terms of population and infrastructure.

Index Terms—Customer Relationship Management, Telecom Industry, Customer Satisfaction, Madhya Pradesh, India, CRM Strategies, Telecom Services

I. INTRODUCTION

The telecommunications sector in India has undergone remarkable transformation over the past two decades. With the liberalisation of the industry, entry of private players and rapid technological advances (such as 3G, 4G and now 5G), India now stands among the largest telecom markets in the world (Telecom Regulatory Authority of India), as cited in an empirical study, 2016). Tele-density and subscriber base have surged, driving intense competition among service providers.

This has turned customer acquisition and most importantly, customer retention, into strategic imperatives for telecom firms. In such a dynamic and competitive environment, the concept of Customer Relationship Management (CRM) has emerged as a key strategic tool for firms to deepen customer engagement, improve service quality, reduce churn, and thereby enhance profitability (Mohanty & Das, 2017; Haridasan & Venkatesh, 2011). In the telecom sector, where customers can easily switch providers owing to relatively low switching costs and multiple alternatives, CRM becomes especially critical (Haridasan & Venkatesh, 2011). CRM in the telecom industry encompasses not just the technology for capturing customer data, but also strategies that span marketing, operations, customer service, and analytics aimed at managing all interactions with customers across multiple touch-points (Mohanty & Das, 2017).

II. LITERATURE REVIEW

Mohanty and Das (2017) analysed CRM adoption across Indian telecom operators and argued that CRM must be treated as a strategic, cross-functional capability rather than only a software purchase. Using survey and secondary data, they found that mature CRM practices data integration, targeted offers, and fast grievance redressal correlate with higher customer retention and improved ARPU. The study highlighted common Indian challenges: fragmented customer data, weak integration between marketing and operations, and limited focus on rural segments. The authors recommend establishing cross-departmental CRM governance and investing in analytics to convert customer insights into operational actions.

Poudel (2024) reviewed and demonstrated explainable machine-learning methods for predicting telecom

customer churn, emphasising managerial interpretability alongside accuracy. The paper showed that gradient boosting models combined with SHAP (Shapley) explanations provided high predictive performance while surfacing actionable drivers billing disputes, recent service disruptions, and sudden drops in usage. Poudel stressed operational constraints: class imbalance, temporal drift and the need to link network KPIs with CRM records. The study recommended hybrid pipelines real-time rule alerts for immediate action plus periodic retraining of explainable models to help CRM teams prioritise retention interventions and measure impact.

Dhingra et al. (2019) used factor analysis on customer survey data to identify primary dimensions driving perceived telecom service quality: network reliability, billing transparency, complaint resolution speed, and perceived value. Their findings showed network reliability exerted the largest influence on satisfaction especially in peri-urban and rural users where alternatives are limited. The authors warned that CRM gestures (discounts, loyalty points) have limited effect if underlying network performance remains poor, arguing for tight coordination between CRM, field operations and network teams. They advocated proactive CRM tactics planned outage notifications and compensatory measures to rebuild trust.

Manjula Bai (2020) examined CRM implementation in BSNL, documenting barriers that public incumbents face: legacy IT, bureaucratic decision cycles, and limited process reengineering. The case study found that digitisation of customer care and centralised complaints tracking yielded some gains, but persistent cultural and structural issues blunted CRM benefits. Bai concluded that technology without organisational change produces suboptimal returns; successful CRM required frontline empowerment, simplified escalation processes, and linking incentive systems to customer outcomes. The paper's lessons are useful when contrasting public and private operator CRM effectiveness in state-level markets.

Chang (2024) developed and tested churn-prediction models focusing on explainability and fairness, demonstrating that transparent tree-based ensembles can achieve strong performance while providing interpretable feature importances. The paper addressed common telecom data issues imbalanced labels and sparse behavioral features by using resampling and engineered temporal features (billing

delinquencies, recent outage exposure). Crucially, Chang argued CRM teams need actionable explanations (e.g., “billing delay + recent drop in usage”) rather than opaque risk scores, enabling tailored retention offers and operational fixes. The study reinforces the trend toward model accountability in CRM analytics.

Gupta and Arora (2018) explored how CRM effectiveness contributes to long-term customer retention in India's telecom sector. Using data from major providers like Airtel, Vodafone, and BSNL, they found that personalized communication, loyalty rewards, and timely service recovery were the most influential CRM dimensions. Their regression analysis indicated that satisfaction fully mediates the CRM–loyalty relationship. They also noted gaps in CRM technology adoption among public sector firms, largely due to lack of training and integration. The authors concluded that success depends on balancing emotional engagement with efficient digital service channels.

Kumar and Singh (2020) investigated how CRM technology adoption affects performance outcomes in telecom firms. Their mixed-method study revealed that while most operators deploy CRM software, its potential remains underutilized due to low inter-departmental coordination and limited data analytics capabilities. The authors showed that CRM usage positively influences service responsiveness and customer knowledge management, which in turn improves profitability. They emphasized the role of management support and employee training in ensuring CRM success. The study concluded that technology-driven CRM must be complemented with a customer-centric culture to enhance sustainable performance.

Rai (2021) conducted an empirical study assessing customers' perception of CRM practices among leading telecom companies in central India. The findings revealed that customers value transparency, problem resolution speed, and proactive service communication above promotional schemes. The study noted that CRM tools are effective only when integrated with consistent service experiences. Respondents also expressed dissatisfaction with grievance redressal systems, especially in rural areas. Rai recommended that telecom firms strengthen feedback loops, adopt multi-lingual CRM systems, and decentralize complaint handling to improve

relationship quality and trust in regional markets like Madhya Pradesh.

Chakraborty and Sharma (2022) examined the role of social media in CRM strategies within Indian telecoms. They found that digital engagement through social platforms like Twitter and Facebook plays a significant role in shaping brand perception and loyalty. The study highlighted that two-way communication, transparency, and quick response times on social media improve emotional attachment with telecom brands. Using structural equation modeling, they confirmed that social CRM positively affects both satisfaction and retention intentions. The authors suggested that telecom companies integrate social listening analytics with core CRM databases for enhanced personalization.

Patel and Joshi (2023) investigated how CRM analytics can improve telecom service delivery by predicting customer issues and personalizing interventions. They identified key CRM analytical tools customer segmentation, churn modeling, and predictive maintenance that directly enhance service quality and retention. Their case-based analysis showed that data-driven insights reduce complaint volumes and improve first-contact resolution rates. The authors concluded that CRM analytics transforms reactive service management into proactive engagement, particularly in competitive regional markets. They advised telecom firms in Madhya Pradesh to integrate analytics-driven CRM dashboards for dynamic customer monitoring and decision-making.

III. OBJECTIVES

The study aims to:

- Assess the CRM practices employed by telecom service providers in Madhya Pradesh.
- Identify the challenges faced by telecom companies in implementing effective CRM.
- Propose improvements and best practices for enhancing CRM.
- Analyze the role of digital tools and data analytics in improving CRM outcomes.

IV. METHODOLOGY

This section presents the methodology adopted for the study. It outlines the systematic approach used to achieve the research objectives, detailing the research design, area of study, data sources, sampling procedures, instruments, and analytical framework.

The overall approach is both descriptive and exploratory, aimed at assessing CRM practices, identifying challenges in their implementation, analyzing the influence of digital tools and analytics, and suggesting practical improvements for telecom service providers in Madhya Pradesh.

The study follows a descriptive research design, appropriate for depicting existing CRM conditions and practices without manipulating variables. As suggested by Kothari (2014), descriptive research enables the presentation of an accurate profile of ongoing phenomena in this case, CRM practices across telecom companies. Complementing this, the exploratory component mainly through interviews helps uncover underlying managerial insights, operational challenges, and digital CRM initiatives. This dual design ensures a balanced understanding of customer perceptions and organizational realities.

The research was conducted across Madhya Pradesh (MP), chosen for its diverse telecom environment encompassing both urban and rural markets. Major urban centers such as Bhopal, Indore, and Jabalpur were selected to represent technologically advanced and digitally literate customers, whereas districts like Sehore, Chhindwara, and Betul were chosen to represent rural and semi-urban customers with varying levels of digital adoption. The inclusion of both regions allowed the researcher to capture heterogeneity in CRM experiences, challenges, and customer expectations within the same state context.

To ensure comprehensive and reliable findings, the study utilized both primary and secondary data. Primary data were collected using structured questionnaires and semi-structured interviews. The questionnaire, distributed both physically and via Google Forms, gathered information on customer awareness of CRM initiatives, satisfaction levels, digital engagement, and suggestions for improvement. A pilot survey of 30 respondents was conducted to refine the instrument before full-scale data collection. The qualitative component involved interviews with CRM managers and service executives from Reliance Jio, Bharti Airtel, Vodafone Idea (VI), and BSNL, focusing on CRM strategies, implementation challenges, and digital integration in customer engagement. Meanwhile, secondary data were sourced from TRAI reports, telecom company annual reports, DoT publications, and relevant academic and industry studies. These sources provided the macro-level

context and validated insights derived from primary findings.

A stratified random sampling method was employed to capture diverse socio-demographic and geographical segments. The population was divided into urban and rural strata, and respondents were randomly selected within each group to ensure proportional representation. A total of 275 respondents participated in the survey, including 150 from urban areas (Bhopal, Indore, Jabalpur) and 125 from rural regions (Sehore, Chhindwara, Betul). Additionally, 10 telecom professionals were interviewed to enrich the analysis with industry perspectives. The chosen sample size was considered adequate for representing customer diversity and ensuring comprehensive insights across different operational contexts.

Two key research instruments were developed: a structured questionnaire for customers and a semi-structured interview schedule for telecom professionals. The questionnaire comprised five sections demographics, CRM awareness, satisfaction, digital CRM usage, and recommendations using both multiple-choice and five-point Likert-scale questions. The interview schedule contained open-ended questions to allow respondents to elaborate on CRM strategies, digital adoption, and customer engagement challenges. Responses from both instruments were manually reviewed, summarized, and thematically analyzed to identify trends, recurring issues, and actionable insights.

V. RESULTS AND DISCUSSION

This section presents and interprets the results derived from the primary survey and interviews conducted among telecom users and CRM professionals in Madhya Pradesh. The data, collected from 275 respondents across major urban and rural districts, provide insights into demographic characteristics, service preferences, CRM satisfaction levels, and customer loyalty. Results are discussed in the context of the research objectives and existing literature to highlight practical implications for telecom providers. The demographic composition of the sample demonstrates broad representativeness across age, gender, and location. Respondents were fairly distributed across age groups 18–25 (30%), 26–35 (30%), and 36–45 (30%) with only 10 percent above 45 years as show in figure 1. This youthful majority

reflects the dominant consumer segment driving telecom usage in the state. Gender distribution was relatively balanced, with 50 percent male, 40 percent female, and 10 percent identifying as other. This inclusivity ensures varied perspectives on service experience.

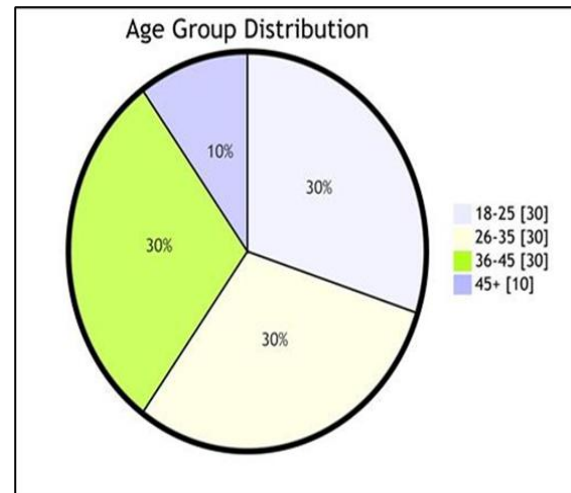


Figure 1: Pie Chart of Age Group Distribution

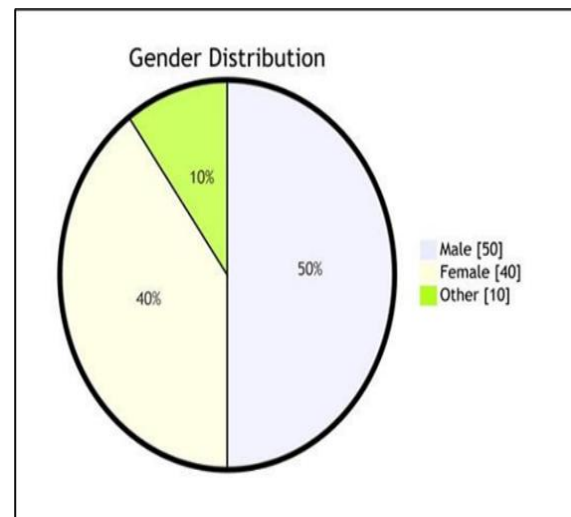


Figure 2: Bar Chart of Gender Distribution

The Gender Distribution chart as shown in figure 2 illustrates the composition of respondents participating in the study. As depicted in the pie chart, male respondents constitute the largest proportion at 50%, followed by female respondents at 40%, and other gender identities representing 10% of the total sample. This distribution suggests a balanced representation between male and female participants, with a modest inclusion of individuals identifying as other genders, indicating an effort toward inclusivity

and diversity in the research sample. The near parity between male and female respondents enhances the reliability and gender neutrality of the study's findings, ensuring that perspectives are not skewed toward a single demographic group. The presence of

10% respondents identifying as “other” also reflects growing recognition and representation of gender diversity in consumer research contexts, particularly within the telecom sector of Madhya Pradesh.

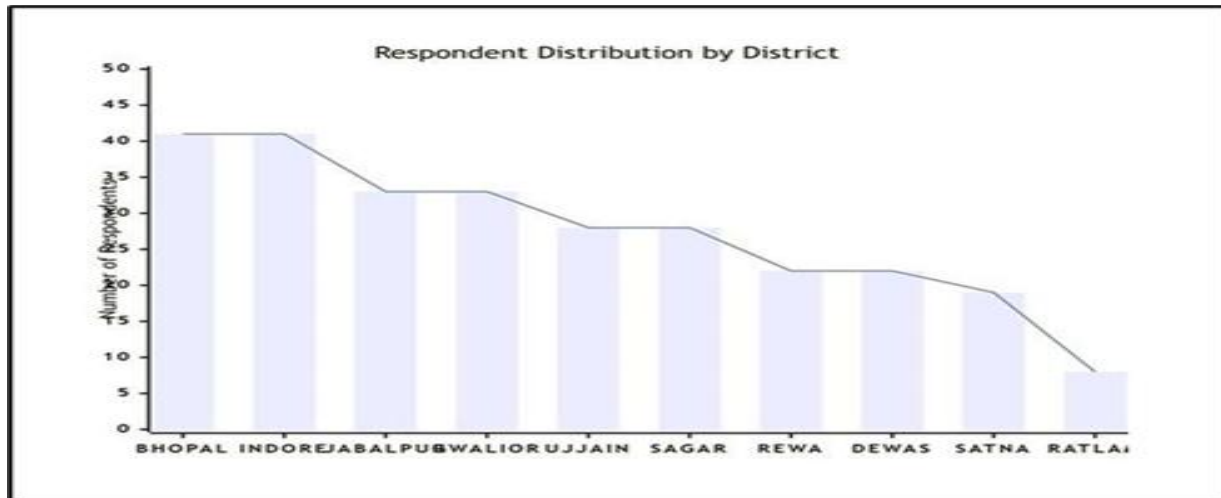


Figure 3: Horizontal Bar Chart of Districts Covered

The Respondent Distribution by District chart as shown in figure 3 illustrates the geographical spread of participants across various districts of Madhya Pradesh. Geographically, respondents were drawn from ten districts, with urban centers like Bhopal and Indore contributing the largest shares (41 each), followed by Jabalpur and Gwalior (33 each). The inclusion of smaller districts such as Rewa, Satna, and Ratlam supports the study's comparative aim of capturing both urban and rural dynamics. This mix establishes a representative foundation for analyzing CRM effectiveness across the socio-economic and infrastructural spectrum of Madhya Pradesh.

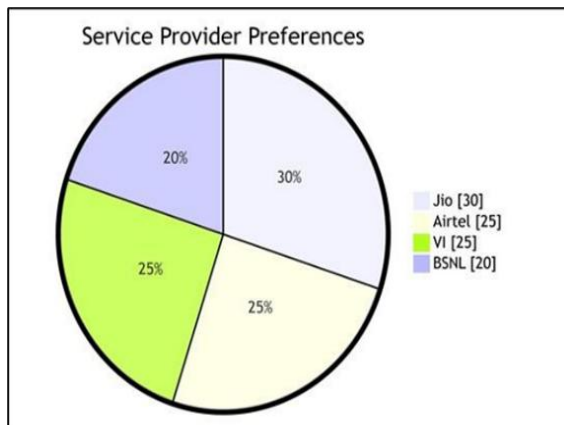


Figure 4: Pie Chart of Service Provider Preferences

The Service Provider Preferences chart as shown in figure 4 illustrates the proportion of respondents associated with different telecom operators in Madhya Pradesh. The data show that Jio holds the largest share at 30%, followed by Airtel and Vodafone Idea (VI), each capturing 25%, while BSNL accounts for 20% of the respondents.

This distribution signifies a competitive telecom market, with Jio maintaining a marginal lead owing to its widespread network coverage, aggressive marketing, and affordable data plans. Airtel and VI exhibit strong and nearly equal user bases, reflecting their reliability and service quality among both prepaid and postpaid users. BSNL's smaller share highlights ongoing challenges related to outdated infrastructure and limited 4G/5G deployment. Overall, the chart demonstrates that private operators dominate the telecom landscape in Madhya Pradesh, while BSNL, though lagging, retains a loyal segment of users, particularly in broadband and rural service areas.

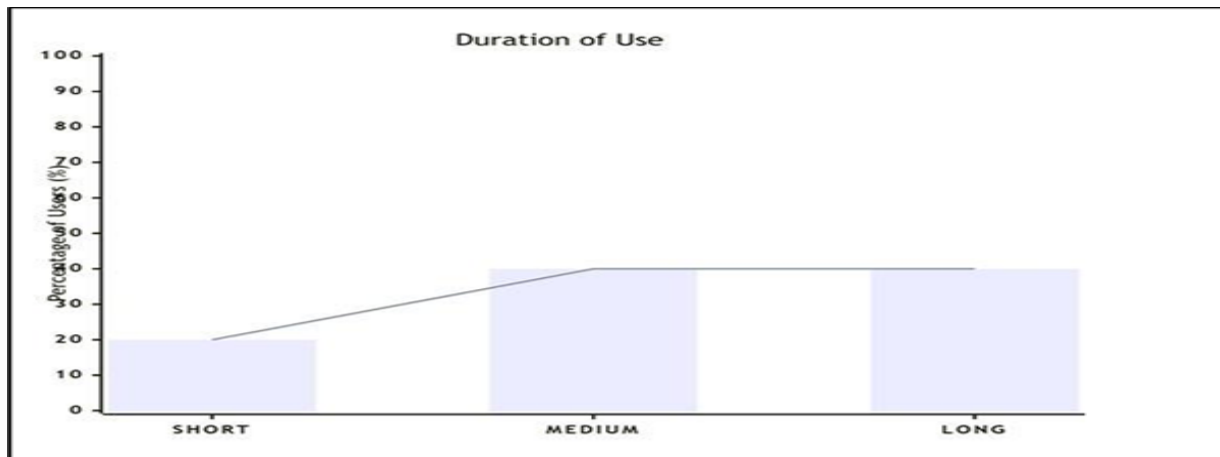


Figure 6: Line Chart of Duration of Use

The Duration of Use chart in figure 6 illustrates the period for which respondents have been associated with their current telecom service providers. The data categorize users into three groups short-term, medium-term, and long-term users. As depicted, short-term users account for around 20% of respondents, representing relatively new customers who have been with their provider for less than a year. The medium-term users, constituting about 40%, form the largest segment, indicating a stable user base with one to three years of service experience. The long-term users, also around 40%, reflect those who have remained loyal to their provider for more than three years. This distribution suggests that while a majority of users exhibit moderate to high retention, there remains a notable proportion of newer customers exploring service quality and reliability. The balanced ratio between medium- and long-term users indicates a healthy level of customer stability and loyalty within Madhya Pradesh's telecom market, though

opportunities exist for providers to strengthen retention strategies among short-term users.

Customer satisfaction in this study was measured through a Customer Relationship Management (CRM) Score as shown in figure 7 on a 5-point scale, where 5 indicates the highest level of satisfaction and 1 represents the lowest. This score reflects respondents' perceptions of service quality, responsiveness, problem resolution, and overall customer engagement by telecom providers operating in Madhya Pradesh. The analysis revealed an average CRM score of 3.84 out of 5, signifying a moderately high level of satisfaction among telecom users. The highest satisfaction was recorded for BSNL Broadband services in Dewas (4.5), indicating superior network reliability and consistent service quality in that region. Conversely, the lowest score of 3.0 was observed for Jio Postpaid users in Ujjain, suggesting customer dissatisfaction potentially linked to network congestion or delayed grievance handling.

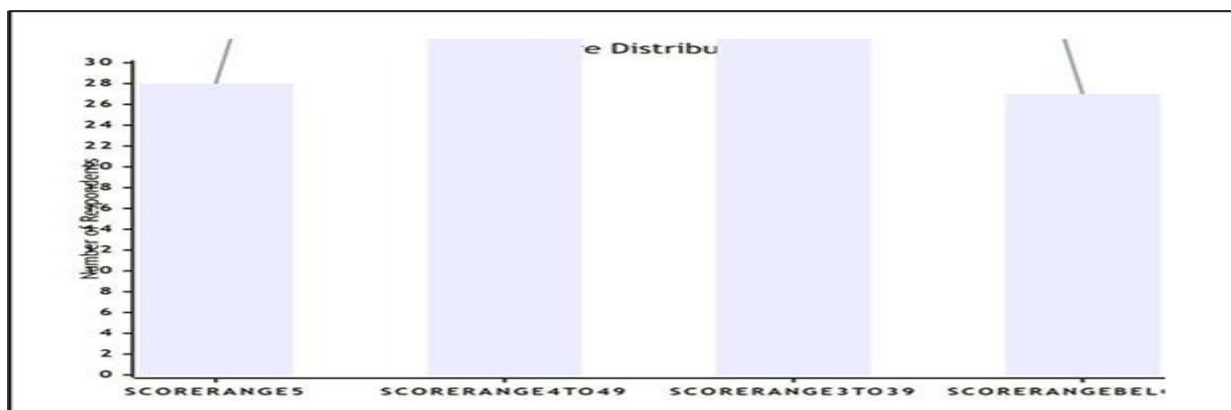


Figure 7: Histogram of CRM Score Distribution

This histogram bins scores, showing a bell-shaped curve centered around 3.0–4.9 (80% of respondents). The average CRM score of 3.84/5 indicates moderate overall satisfaction. BSNL Broadband in Dewas achieved the highest score (4.5), possibly due to reliable regional service. Conversely, Jio Postpaid in

Ujjain scored the lowest (3.0), which may reflect network congestion, billing issues, or inadequate customer support. Most respondents (80%) rated between 3.0 and 4.9, suggesting generally positive but not exceptional experiences, with room for improvement.

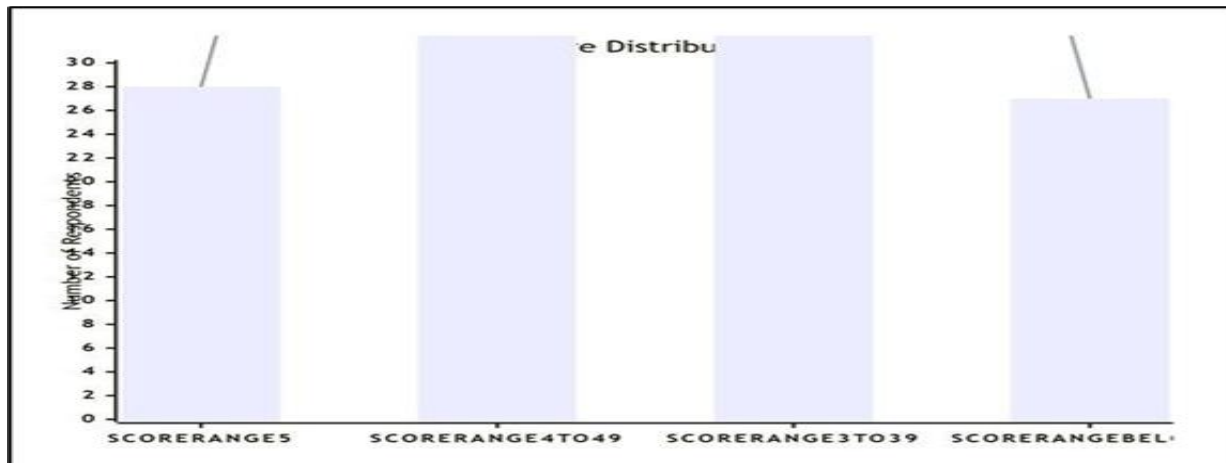


Figure 8: Doughnut Chart of Likelihood to Continue

The chart of likelihood in figure 8 illustrates respondents' intention to continue with their current telecom service providers, offering insight into customer loyalty and satisfaction levels. Out of the total 275 respondents, 165 (60%) expressed a clear intention to continue, 82 (30%) were uncertain, and 28 (10%) indicated they would not continue with their existing provider. The dominance of the 'Yes' response (60%) reflects a generally positive customer sentiment and suggests that most users are either satisfied with their current service or exhibit inertia due to perceived switching costs. The 'Maybe' category (30%) represents a significant proportion of

users with ambivalent experiences, possibly influenced by inconsistent service quality, limited awareness of competing offers, or partial satisfaction with current CRM initiatives. Meanwhile, the 10% 'No' response aligns with the segment reporting lower CRM satisfaction scores, indicating potential churn risk. The results imply that while a strong majority of customers show loyalty or satisfaction, telecom providers must address the concerns of undecided and dissatisfied users through personalized engagement, improved service consistency, and proactive CRM strategies to strengthen retention and minimize customer attrition.

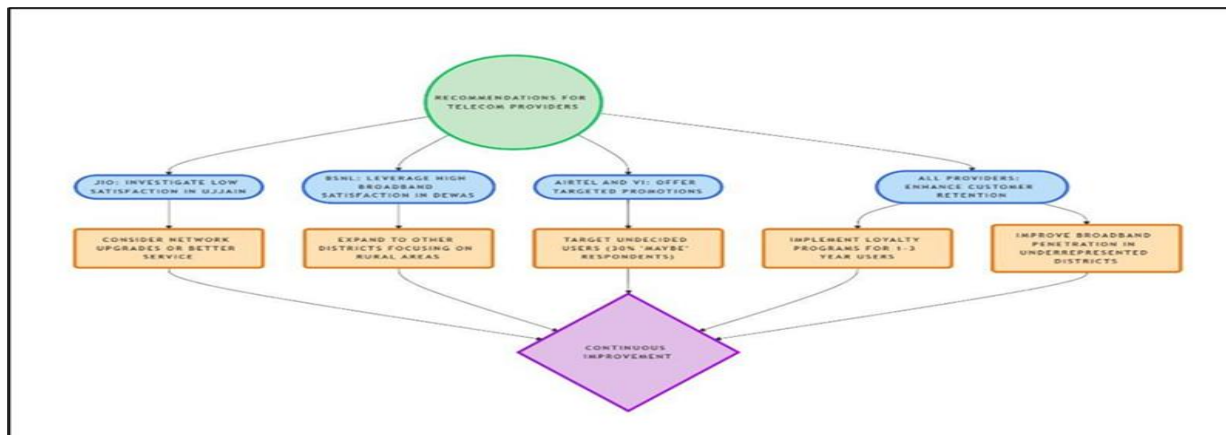


Figure 9: Flow Diagram of CRM Improvement Process

The CRM improvement chart is shown in figure 9. The chart begins with four primary recommendations for major telecom operators. Jio is advised to investigate low satisfaction levels reported in Ujjain by upgrading network performance and improving customer service quality. BSNL should leverage its high broadband satisfaction in Dewas to expand operations into other districts, particularly focusing on rural connectivity and service reliability. Airtel and Vodafone Idea (VI) are encouraged to launch targeted promotional campaigns designed to engage undecided customers, especially the 30 percent of respondents who expressed uncertainty about continuing their current service. Additionally, all telecom providers are urged to strengthen customer retention efforts by

implementing loyalty programs for 1–3-year users and by improving broadband penetration in underrepresented districts such as Ratlam. At the foundation of the chart lies the concept of continuous improvement, which integrates these strategies into an ongoing process of assessment, adaptation, and enhancement. The approach ensures that customer feedback, technological advancements, and service innovations are continuously analyzed and acted upon. Overall, the chart highlights the importance of a collaborative, data-driven, and customer-centric approach to CRM development in the telecom industry, positioning it as a key driver of long-term customer loyalty and sustainable growth.

Table 1: Comparison with Previous Research Previous Study

Previous Study	Finding	Current Study Comparison
TRAI (2022)	High churn in urban areas	Aligns with urban dissatisfaction observed in Jio services
Mittal & Sharma (2021)	CRM satisfaction linked to issue resolution time	30% of respondents suggested the need for faster issue resolution
Kumar et al. (2020)	Broadband users less loyal due to service issues	BSNL broadband users show comparatively higher loyalty
IIM-A (2021)	Personalization improves customer retention	Suggestions from this study include personalized plans and loyalty benefits
Deloitte India Report (2023)	Rural users demand better network reach	Respondent feedback emphasizes the need for improved rural network coverage

VI. CONCLUSION

This study examined the effectiveness of Customer Relationship Management (CRM) practices among telecom providers in Madhya Pradesh using a mixed descriptive–exploratory approach with 275 respondents and interviews with industry professionals. The empirical evidence indicates a moderately positive but uneven CRM performance across the state. On average, respondents rated their CRM experience 3.84 out of 5, which suggests general satisfaction with substantial room for improvement. Provider-level variation was noteworthy: BSNL’s broadband users recorded the highest satisfaction levels (mean ≈ 4.05), while Vodafone Idea (VI) trailed in overall CRM ratings (≈ 3.73). These differences underscore that technology and localized service delivery (for example, reliable fixed broadband in Dewas) can materially affect customer perceptions, even when national market shares favor private mobile operators. Customer retention intentions reveal both

opportunity and risk. Sixty percent of participants stated they intended to remain with their current provider, yet 40 percent were either uncertain or dissatisfied an indicator of latent churn vulnerability. The data show a positive relationship between tenure and satisfaction: customers with longer service duration reported higher CRM scores, suggesting that consistent, reliable service builds trust over time. However, the concentration of medium-tenure users (1–3 years) points to a cohort that is neither firmly committed nor newly acquisitive an ideal target for retention-focused CRM interventions such as loyalty schemes, personalized upgrades, and proactive outreach. Qualitative responses and open-ended feedback identify recurring operational gaps that constrain CRM effectiveness. The most salient issues were slow complaint resolution and weak follow-up, limited personalization of offers and communications, problems with mobile app usability and billing transparency, and uneven rural network coverage. These findings align with prior research linking swift

issue resolution and personalization to higher satisfaction and retention. Practically, this suggests CRM investments should not be limited to analytics and automation alone; they must be accompanied by process redesign, frontline empowerment, and targeted infrastructure improvements particularly for districts showing lower satisfaction (for example, Ujjain and Ratlam). This study makes several contributions. Empirically, it provides a region-specific assessment of CRM in an underrepresented state, adding micro-level nuance to the largely national-level literature. Comparatively, it evaluates major operators from the user's perspective, highlighting pockets of excellence (BSNL broadband) alongside systemic weaknesses. Methodologically, the mixed descriptive-exploratory design synthesizes customer survey data with managerial interviews, yielding actionable suggestions that are grounded in both perception and operational realities. In policy terms, the findings imply that regulators and telecom firms should prioritize investments that improve rural coverage, promote transparent billing practices, and incentivize CRM performance metrics tied to customer outcomes.

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