

THE STUDY OF AN IMPACT OF SAFETY RATINGS ON CONSUMER PURCHASE DECISIONS WITH REFERENCE TO FOUR-WHEELERS

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Article History

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Abstract: The automobile industry has witnessed a growing emphasis on vehicle safety due to increasing road accidents and rising consumer awareness. Safety ratings provided by organizations such as Global NCAP and Bharat NCAP have become important indicators that help consumers evaluate the safety performance of vehicles before making purchase decisions. These ratings provide reliable and standardized information about crashworthiness, structural integrity, and safety features of vehicles. As a result, consumers are increasingly considering safety ratings as a major factor while selecting four-wheelers. The present study aims to analyze the impact of safety ratings on consumer purchase decisions with reference to four-wheelers. The research focuses on understanding consumer awareness of safety ratings, perception of vehicle safety, and the extent to which safety features influence buying behavior. The study adopts a single-method research approach involving data collection. Primary data will be collected through structured questionnaires from consumers in Bengaluru. The collected data will be analyzed using statistical tools such as percentage analysis and graphical representation in MS Excel. The findings of the study are expected to highlight the significance of safety ratings in consumer decision-making and provide insights for automobile manufacturers and policymakers to promote safer vehicles in the market.

Keywords: Vehicle Safety, Safety Ratings, Consumer Purchase Decision, Four-Wheelers, Global NCAP, Automobile Industry.

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INTRODUCTION

In recent years, vehicle safety has become an important factor influencing consumer purchasing decisions in the automobile industry. The increasing number of road accidents and fatalities has raised public awareness about the need for safer vehicles. Earlier, consumers mainly focused on factors such as price, fuel efficiency, design, and brand reputation while purchasing a car. However, with the growing availability of safety information and crash test results, safety ratings have gained significant importance in the decision-making process. Organizations such as Global NCAP and Bharat NCAP evaluate vehicles based on crash performance and safety features, providing ratings that help consumers compare different models easily. These ratings have encouraged automobile manufacturers to improve safety standards and incorporate advanced safety technologies in their vehicles. As a result, safety ratings are now considered a critical factor influencing consumer perceptions and purchase decisions in the four-wheeler market. The alarming statistics published by the Ministry of Road Transport and Highways, indicating over 1.5 lakh annual road fatalities, have catalyzed this paradigm shift. Consequently, safety is no longer viewed as a premium luxury but as a fundamental necessity. The introduction of localized assessment frameworks tailored to indigenous road conditions has further democratized safety awareness. By empowering buyers with transparent, standardized metrics, these initiatives are actively mitigating information asymmetry, forcing a systemic industry pivot toward robust structural integrity.

REVIEW OF LITERATURE

<i>Author</i>	<i>Topic name/focus</i>	<i>Source publication year/range</i>	<i>Challenge gap/area</i>	<i>Key finding & causal mechanism</i>
H. Stigson	Evaluation of Safety Ratings of Roads Based on Frontal Crashes	2009	The study focuses on road safety ratings rather than vehicle safety ratings and consumer behavior.	The study found that roads with higher safety ratings significantly reduce crash severity and injury risk, establishing the foundational link between standardized ratings and safety outcomes.

<i>Author</i>	<i>Topic name/focus</i>	<i>Source publication year/range</i>	<i>Challenge gap/area</i>	<i>Key finding & causal mechanism</i>
Zulhaidi, M., et al.	Consumers Purchasing Decision and Car Safety Rating with Respect to ASEAN NCAP	2018	Highlights language barriers and conceptualization gaps between active (accident avoidance) versus passive (crashworthiness) safety features.	Awareness of NCAP directly correlates with purchase influence (51.2% highly influenced); standard metrics educate consumers to demand better structural protection over mere technological convenience.
Borthakur, P.	Evolution of Car Purchasing Behaviour among Indian Consumers	2019	Identifies a segment indifferent to crash ratings but lacks geographic granularity to explain regional disparities in safety prioritization.	A 5-star crash rating is actively preferred by 27.5% of buyers; safety acts as a primary decision driver via risk aversion, though a small segment still prioritizes cost over crashworthiness.
Trivedi & Kishore	Factors Influencing Consumer Decision to Purchase a Car	2020	Did not account for the impact of localized Bharat NCAP ratings on brand attitudes due to the study's pre-2023 timeline.	Online reviews, vivacity, and digital accessibility influence consumers' brand attitudes; the democratization of crash test videos online fundamentally alters purchase intentions.
Kumar, R., & Singh, P.	Consumer Awareness towards Vehicle Safety Features in India	2021	Limited analysis on the psychological translation of star ratings into tangible willingness-to-pay premiums among regional demographic segments.	Consumer awareness is rising rapidly; the causal mechanism operates through exposure to digital media campaigns driving the demand for both active and passive safety features over luxury add-ons.
Mandys & Byun	Multi-Criteria Decision Making (MCDM) analysis of vehicle selection attributes	2021	Environmental friendliness and safety are often aggregated broadly rather than parsed into specific structural crashworthiness metrics.	Safety, performance, and economics are the top three criteria identified by experts; safety features heavily dictate the core utility and perceived lifespan value of the vehicle.

<i>Author</i>	<i>Topic name/focus</i>	<i>Source publication year/range</i>	<i>Challenge gap/area</i>	<i>Key finding & causal mechanism</i>
Sharma, A., & Gupta, R.	Impact of Safety Features on Consumer Buying Behaviour in the Automobile Sector	2022	Focuses heavily on premium and mid-segment dynamics, occasionally neglecting the entry-level market where cost-safety trade-offs are most acute.	Safety features create psychological reassurance; consumers prioritize features that provide perceived control, validating the integration of Advanced Driver Assistance Systems (ADAS).
Patel, K., & Mehta, D.	Consumer preference for automobile safety features in India	2022	Does not sufficiently isolate standard NCAP ratings from general brand trust and post-sales service reliability in the minds of consumers.	Airbags and Anti-lock Braking Systems (ABS) are now viewed as minimum requirements; the mechanism reveals that positive online safety feedback significantly improves brand credibility.
Rahman Jafar Sathik	Consumer Perception and Preference Analysis of Multiple Car Brands in the Indian Automotive Sector	2024	The study lacks specific analysis of vehicle safety ratings and their isolated influence on consumer purchasing behavior in the Indian market.	Brand quality had the highest influence (61.1%) on purchase decisions followed by income and mileage; brand reputation acts as a proxy for assumed safety without empirical validation.
Jadhav, P., et al.	Global Safety Rating Standards for Vehicles: A Comparative Analysis	2024	Compares testing protocols theoretically but lacks direct behavioral analysis of how consumers interpret varying collision speeds and test parameters.	Standardized crash tests force manufacturers to upgrade base models; transparency and public exposure of zero-star cars create market pressure for immediate compliance.

RESEARCH GAP

Although several studies have analyzed consumer preferences in the automobile sector, limited research has specifically focused on the influence of vehicle safety ratings on consumer purchasing decisions. Many studies focus on factors such as brand, price, mileage, and design, but do not thoroughly examine how safety ratings affect the final decision-making process. Furthermore, there is a

lack of region-specific research examining consumer awareness and perception of safety ratings in the Indian automobile market. This study aims to fill this gap by analyzing how safety ratings influence purchasing decisions among consumers in BENGALURU.

RESEARCH OBJECTIVES

- To analyse the perception of consumers regarding safety in four-wheelers.
- To evaluate the influence of safety features on consumer decision making while purchasing vehicles.

RESEARCH METHODOLOGY

Research Approach

The study adopts a **Single-method approach**, combining data to understand consumer perceptions of vehicle safety and its influence on purchase decisions.

Research Design

The research is **descriptive in nature**, as it aims to analyze consumer awareness, perception, and behavior regarding vehicle safety ratings. A structured questionnaire was used consisting of multiple-choice, Likert scale, ranking, and open-ended questions.

Sources of Data Collection

The study is based on primary data collected through structured questionnaires from respondents.

Data to be Collected

The data collected includes:

- Consumer demographics (age, gender, income, education, occupation, family size, location)
- Vehicle purchase behavior (brand preference, vehicle type, price range, purchase frequency)
- Awareness of safety ratings (knowledge, trust, importance)
- Purchase decision factors (models considered, reasons for purchase)

Sampling Frame

Consumers visiting automobile showrooms in **Bengaluru**.

Sampling Element

Individuals aged **23–30 years** who are potential buyers of four-wheelers.

Sample Size

A total of **600 respondents** were surveyed.

Sampling Technique

A **stratified sampling method** was used, covering major zones of Bengaluru (North, East, West, and South).

Data Collection Methods

- Surveys (Structured Questionnaires)

Tools of Data Collection

- Primary Tool: Questionnaire

Analytical Tools

Data was analyzed using **MS Excel** through:

- Percentage analysis
- Graphs and charts
- Hypothesis Testing

Tested using chi-square test

Null Hypothesis (H_0): Assumes no significant effect or relationship between the study variables.

Alternative Hypothesis (H_1): Assumes a significant effect or relationship exists between the study variables.

Qualitative Research Design: A qualitative component was included using a descriptive approach to understand deeper consumer perceptions.

DATA ANALYSIS

1. Awareness of Vehicle Safety Ratings

Awareness of Vehicle Safety Ratings

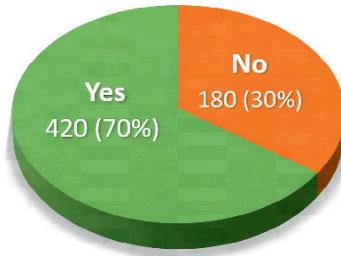


Figure 1: Awareness of Vehicle Safety Ratings

Figure 1 indicates that 420 respondents (70%) are aware of vehicle safety ratings provided by organizations such as Global NCAP and Bharat NCAP. This indicates that the majority of consumers have knowledge about safety evaluation systems while purchasing vehicles. However, 180 respondents (30%) are not aware of safety ratings. This suggests that automobile companies and government agencies should increase awareness programs to educate consumers about vehicle safety and crash test ratings.

2. Importance of Safety While Purchasing a Car

IMPORTANCE OF SAFETY WHILE PURCHASING A CAR

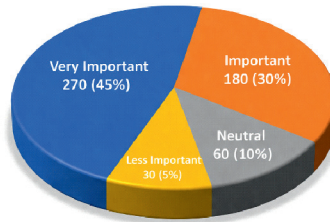


Figure 2: Importance of Safety While Purchasing a Car

Figure 2 shows that safety is considered an important factor by most respondents. That safety is considered an important factor by most respondents. Around 270 respondents (45%) consider safety very important when purchasing a car, while 180 respondents (30%) consider it important. This means that 75% of respondents prioritize safety during vehicle purchase. Only 10% consider safety less important. This shows that consumer awareness regarding vehicle safety is increasing significantly.

3. Awareness of Safety Rating Agencies

Awareness of Safety Rating Agencies

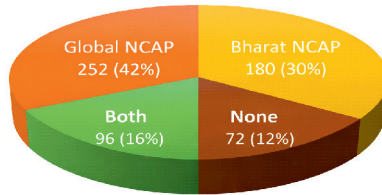


Figure 3: Awareness of Safety Rating Agencies

Figure 3 illustrates that Global NCAP is the most recognized safety rating agency 252 respondents (42%) are aware of Global NCAP, making it the most recognized safety rating agency among consumers. About 180 respondents (30%) are aware of Bharat NCAP, while 96 respondents (16%) are familiar with both agencies. However, 72 respondents (12%) are unaware of any safety rating organizations. This indicates the need for greater awareness regarding vehicle safety ratings.

4. Checking Safety Ratings Before Purchase

Checking Safety Ratings Before Purchase

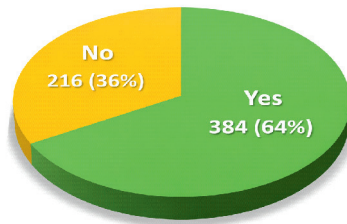


Figure 4: Checking Safety Ratings Before Purchase

Figure 4 indicates that 64% of respondents check safety ratings before purchase. A total of 384 respondents (64%) check safety ratings before purchasing a car. This suggests that safety information has become an important consideration in the decision-making process. However, 216 respondents (36%) do not check safety ratings before buying vehicles. This indicates that some consumers still prioritize factors such as price, brand reputation, or fuel efficiency rather than safety ratings.

5. Most Important Safety Feature

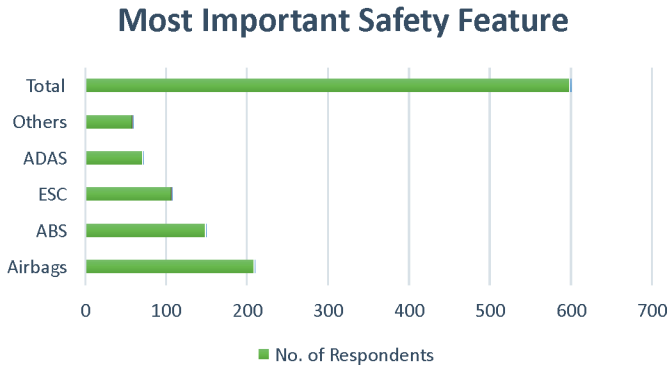


Figure 5: Most Important Safety Feature

The data shows that airbags are considered the most important safety feature by 210 respondents (35%). Anti-lock Braking System (ABS) is preferred by 150 respondents (25%). Advanced safety technologies such as Electronic Stability Control (ESC) and ADAS are also gaining importance among consumers. This indicates that while traditional safety features remain highly valued, awareness about advanced safety technologies is gradually increasing

6. Willingness to Pay Extra for Safety

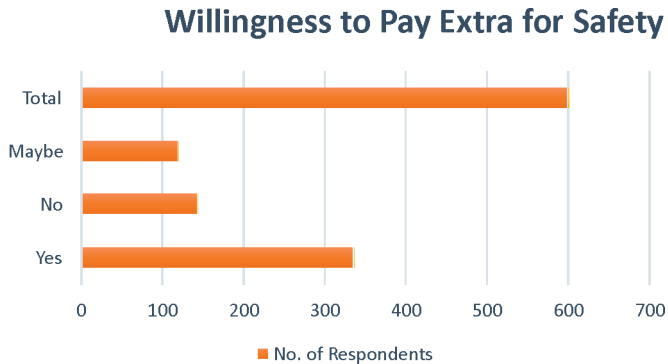


Figure 6: Willingness to Pay Extra for Safety

The figure x shows that 336 respondents (56%) are willing to pay a higher price for vehicles with better safety features and higher safety ratings. Around 120 respondents (20%) are uncertain and may consider paying extra depending on other factors. Only 144 respondents (24%) are not willing to pay additional costs for safety. This suggests that many consumers value safety and are ready to invest more for safer vehicles.

7. Factor Influencing Car Purchase

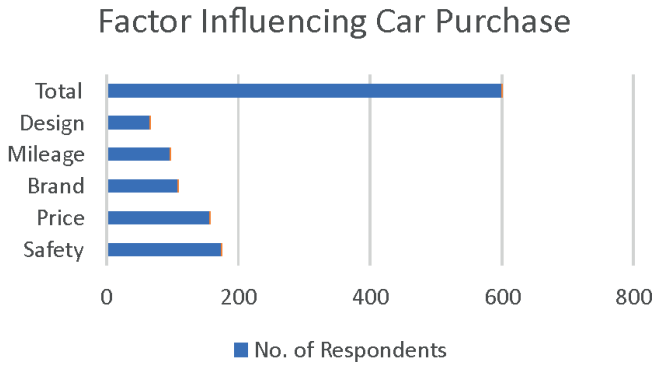


Figure 7: Factors Influencing Car Purchase

The results indicate that safety is the most influential factor for 174 respondents (29%) while purchasing a car. Price follows closely with 156 respondents (26%). Brand reputation, mileage, and vehicle design also influence consumer decisions but to a lesser extent. This suggests that consumers are increasingly prioritizing safety when selecting vehicles in the automobile market.

8. Trust in Safety Ratings

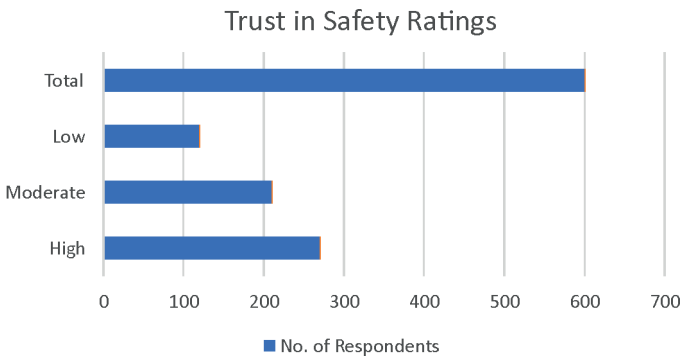


Figure 8: Trust in Safety Ratings

The figure x indicates that 270 respondents (45%) have a high level of trust in safety ratings provided by independent agencies. About 210 respondents (35%) show moderate trust, while 120 respondents (20%) show low trust. This indicates that most consumers consider safety ratings to be reliable sources of information when evaluating vehicle safety and making purchasing decisions.

9. Influence of Safety Ratings on Final Purchase Decision

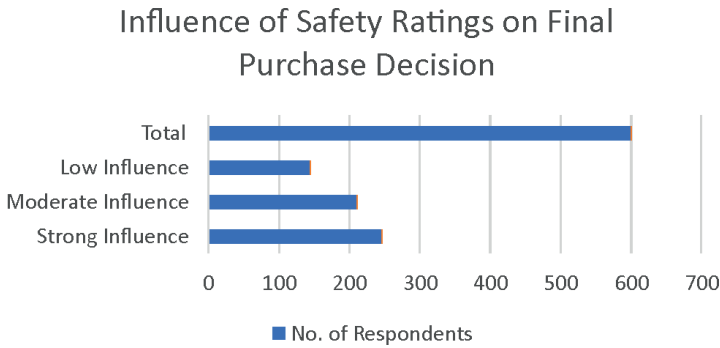


Figure 9: Influence of Safety Ratings on Purchase Decision

Figure 9 indicates that safety ratings strongly influence purchase decisions. Safety ratings strongly influence the purchase decisions of 246 respondents (41%). About 210 respondents (35%) believe that safety ratings moderately influence their decisions, while 144 respondents (24%) consider them less influential. This indicates that safety ratings play an important role in shaping consumer preferences and purchasing behavior in the automobile market.

CHI-SQUARE TEST

Hypothesis

A Chi-square test was conducted to examine the relationship between consumer awareness of safety ratings and their purchase decision for four-wheelers. The test is appropriate because both variables are categorical in nature and it helps to determine whether a significant association exists between them.

Table 1: Chi-Square Test Results

Value	Result
Calculated Chi-Square	25.43
Figure x Value (df = 1, 5%)	3.84

At the 5% significance level, the calculated chi-square value (25.43) is higher than the table value (3.84).

Therefore, the null hypothesis (H_0) is rejected.

This indicates that there is a significant relationship between consumer awareness of safety ratings and their purchase decision. Consumers who

are aware of safety ratings are more likely to consider safety features while purchasing a vehicle.

The null hypothesis (H_0) states that there is no significant relationship between awareness and checking behaviour, while the alternative hypothesis (H_1) states that a significant relationship exists. Based on the observed and expected frequencies, the calculated Chi-square value is 33.43 with 1 degree of freedom. At a 5% significance level, the critical value is 3.84.

As the calculated value exceeds the critical value ($33.43 > 3.84$), the null hypothesis is rejected. This indicates a significant relationship between awareness of safety ratings and checking behaviour. Therefore, consumers who are aware of safety ratings are more likely to consider them before making a purchase decision, highlighting the importance of awareness in influencing safety-oriented consumer behaviour.

FINDINGS

- Most respondents are aware of vehicle safety ratings provided by organizations such as Global NCAP and Bharat NCAP (figure 1)
- Safety is considered an important factor by consumers when purchasing four-wheelers. (Figure 2)
- Global NCAP is the most recognized safety rating agency among respondents. (Figure 3)
- A majority of consumers check safety ratings before making a vehicle purchase decision. (Figure 4)
- Airbags are the most preferred safety feature among consumers. (Figure 5)
- Many consumers are willing to pay extra for vehicles with higher safety ratings. (Figure 6)
- Safety ratings significantly influence the final purchase decision of consumers. (Figure 7)

CONCLUSION

The study concludes that vehicle safety ratings play a significant role in influencing consumer purchase decisions in the four-wheeler market. With the increasing number of road accidents and growing awareness about passenger safety, consumers are paying greater attention to safety features and

crash test ratings when selecting a vehicle. The findings of the study indicate that a majority of consumers are aware of safety rating systems and consider them an important factor while comparing different car models. The research also shows that safety features such as airbags, ABS, and electronic stability control are highly valued by consumers. Many respondents are willing to pay a higher price for vehicles that provide better safety ratings and advanced safety technologies. This reflects a shift in consumer priorities from traditional factors such as design and mileage towards safety and reliability.

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