Research Gaps in Demand Estimation - The Case of Indian Passenger Vehicles

1. **Anjali Khurana (Corresponding Author)**

Assistant Professor

Hansraj College

Delhi University

New Delhi - 110007

India

2. **Dr. Sumeet Singh Jasial (Co-author)**

Associate Professor

Department of Decision Science

Amity Business School

Amity University

Noida - 201303, U.P.

India

ABSTRACT

This paper is an attempt to elucidate demand estimation techniques for the automobile sector of some countries to spot research gaps for the Indian scenario using a systematic literature review. There are several reasons to analyse consumer demand patterns in the automobile sector. This sector contributes significantly to the economic growth and development of any economy as it generates gainful employment, boosts exports and FDI inflows and expedites the pace of technical progress and research and development. Demand analysis focuses on understanding the customer demand for a product - in this case, passenger vehicles in a target market and has tremendous managerial and theoretical implications. The automobile sector can use demand analysis techniques to ascertain whether they can successfully enter a specific market and generate the required expansion or profitability. A growing level of customer centricity backed by a significant demographic dividend, will enable the automobile sector to benefit from the growing demand for vehicles. This manuscript traces the pre published literature in the above regard to conclude that regression analysis, in particular multiple linear regression can be used to bifurcate demand for Indian passenger vehicles to arrive at meaningful results that would benefit theory as well as incumbent and potential automobile makers make rational decisions.

INTRODUCTION

Developing nations and other countries that focus on developing their manufacturing sectors recognize the significant role of the automobile industry in driving economic growth and overall development. The automobile sector has a profound impact on various aspects such as employment, including both organized and unorganized sectors through backward and forward linkages, exports, inflow of foreign direct investment (FDI), technological advancements, and research and development (R&D) advancements within a country. This research aims to analyze and evaluate consumer behavior patterns and demand estimation for automobiles in India and other countries. The objective is to review the existing techniques and variables that have been considered thus far, while also identifying areas that require further research in order to fill the existing gaps.

The Indian car market is one of the world's most important and fastest expanding. It includes a variety of sectors such as passenger automobiles, commercial vehicles, two-wheelers, and three-wheelers. Over the last few decades, the market has grown significantly, owing to reasons such as growing income levels, urbanisation, infrastructural development, and favourable government policies.

The passenger automobile industry in India has grown rapidly, with rising disposable income and changing lifestyles fueling an increase in car ownership. The arrival of major automakers, as well as the release of more cheap models, has stimulated demand even more. However, the industry is also distinguished by fierce rivalry and frequently changing client preferences (Jyoti & Sharma, 2019). What follows, is an elaboration of the constituent parts of the Indian automotive industry.

The commercial vehicle sector in India is critical to the country's economy, since it facilitates the transportation of products and passengers. Commercial vehicle demand is intimately related to economic growth and infrastructural development. Several government efforts, such as the "Make in India" campaign, have also promoted local and international investment in this area (Roy, 2020). Due to their cost, fuel economy, and manoeuvrability, two-wheelers dominate the Indian vehicle industry. They are a common means of transportation, particularly in metropolitan and semi-urban regions. The arrival of electric two-wheelers, as well as increasing environmental concerns, have begun to alter market dynamics (Chandrasekhar, 2021).

Three-wheelers, often known as auto-rickshaws, play an important role in India's public transportation system. They provide last-mile connection and are especially popular in cities and towns for short-distance travel. Because of the government's emphasis on boosting electric transportation, electric three-wheelers have been developed (Sharma & Singh, 2020).

Government policies and regulations have a considerable impact on the Indian vehicle sector. Policies concerning emissions, safety requirements, and fuel economy have a direct influence on the operations and product offers of the automobile sector. Furthermore, measures such as the adoption of Bharat Stage VI pollution limits and

incentives for electric cars seek to encourage environmentally friendly and sustainable transportation (Kumar & Sharma, 2018).

The Indian vehicle market is a vibrant and continuously growing industry. It offers substantial prospects to both domestic and foreign manufacturers. The market's potential for development, along with favourable government policies, makes it an appealing location for investment and expansion.

The government has taken numerous initiatives for the sector. To encourage the use of electric cars in India, the government has implemented a variety of incentives and subsidies. These incentives include tax breaks, lower customs duties on EV components, and financial assistance for the development of EV production and charging infrastructure. The Indian government has permitted 100% FDI in the automobile sector through the automatic route, encouraging multinational automakers to invest and construct production units or joint ventures in India. The AMP (Automotive Mission Plan) was established by the government to give a long-term blueprint for the sustainable expansion of the Indian automobile sector. The strategy focuses on overcoming obstacles, increasing competitiveness, and guaranteeing environmental sustainability. The FAME (Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles) initiative was created to encourage the use of hybrid and electric cars in India. The plan gives incentives to electric car makers and customers, as well as funding for the construction of EV charging infrastructure. The "Make in India" initiative promotes local production and wants to turn India into a worldwide manufacturing powerhouse. It has special target areas for the automobile industry, such as recruiting investment and encouraging domestic manufacturing.

The paper is organised as follows. The next section is an extensive discussion on the existing literature in the field. This is followed by the research methodology wherein the nuances of the systematic literature review are discussed. Further, results from the analysis have been presented in the next section. Managerial and theoretical implication follow, along with the conclusions and limitations.

LITERATURE REVIEW

Many efforts have been made to analyse the automobile sector, both in India and elsewhere. The exercise chronologically summarises the work completed over the previous six decades and follows the history of the industry, evolution of demand factors, changes in consumer behaviour in the sector, and research approaches for estimating demand in this sector.

A demand side perspective was explored for the US in a 1978 paper by Rodney L. Carlson. The goal of the study was to create a five-equation model that might explain demand. This was accomplished by segmenting the automotive market into subcompact, small, intermediate, full-size, and luxury vehicles. Using per capita data, a linear model was constructed. The influence of population change on automotive demand was eliminated using per capita statistics. Price elasticity coefficients were estimated as well. While automotive demand was the

dependent variable, the independent factors were selling price, automobile stock, petrol price, consumer attitude, and disposable income. According to the findings, the variable disposable income had the greatest effect on the model. Given that consumer purchasing power is the primary determinant of durable goods consumption, this was to be expected.

The car stock was determined to be insignificant in all equations and to have a low relative impact in the model. Furthermore, the influence of sales price on luxury vehicles was less than that of compact, intermediate, and full-sized vehicles. The model also revealed that the price of petrol has a significant negative impact on intermediate and full-sized car sales. This was recognised as the key explanation for the decline in sales of premium vehicles over the time period in question. The rise in automotive sales in the late 1960s and early 1970s in the United States was mostly due to the creation of the small car market. Small automobile sales accounted for 10% of the market in 1968, but by 1973, they accounted for 50% of overall sales. Smaller automobiles were eroding the market for full-size vehicles. The model also computed the price elasticities of demand, which grew from modest to large and expensive autos. This led to the conclusion that bigger vehicles were considered luxury.

Many scholars have analysed the American market. The researchers would want to draw special attention to a 1991 work by Fred Mannering, Clifford Winston, Zvi Griliches, and Richard Schmalensee. Who underlined the importance of brand loyalty and how corporations often struggle to maintain confidence in their products since a loss of brand loyalty is difficult to rectify. This also implies that any automotive research should investigate consumer brand loyalty as a major factor of demand. Brand loyalty might suffer if a consumer's experience with a company's product is frequently unfavourable. Reversing customer perception may be an extremely difficult and time-consuming process. Their research also found that customers who have previously had a specific brand of automobile are more inclined to purchase that brand in the future than customers who have never owned that brand.

A 1991 paper by Gregory A. Trandel claimed that quality was important. However, because quality is subjective in nature, the author cites this as a reason why most studies have disregarded it. The researcher adds a "quality" metric to Levinsohn's (1998) model of the US vehicle market, and the findings show that excluding "quality" might produce a considerable bias in the model's projected price elasticity. The quality metric was developed using new automobile studies provided in Consumer Reports magazine. Consumer Reports offered thorough ratings of many automotive attributes as part of their evaluations. Fuel economy, engine drivability, acceleration, temperature control, controls, displays, noise, and other attributes were translated to a five-point scale and averaged from 1982 to 1985. Every new automobile examined by the magazine received a single "quality score" in this manner.

Another paper published in 2012 by Ahmet ZAM and Dilek SALIK ZAM looked at how car demand varies depending on the country of origin. The authors also claimed that projecting demand for autos may be difficult, especially when it swings greatly throughout an economy's booms and busts. Because it is not a requirement, an

automotive expenditure may be readily postponed. The discovery that multiple research with the same time period for the same nation showed significantly contradicting price elasticities of demand bolstered the idea that vehicle demand prediction might be problematic.

Vikram Shende published a paper in the Indian context in 2014 that investigated the purchase decision process of passenger vehicles and its interaction with behaviour parameters across all car segments such as small & hatchback segment, Sedan class segment, SUV & MUV segment, and Luxury Car segment. Shende went on to say that consumer behaviour is highly complex since purchasing an automobile entails a high level of social and psychological engagement. Consumer purchasing behaviour is influenced by economic, technical, political, cultural, demographic, and natural elements, as well as the customer's attitude, motivation, perception, personality, knowledge, and lifestyle. In addition, value for money, safety, and driving comfort are the most important client requirements. At the same time, customer perception of quality is heavily influenced by brand image. According to the survey, the demand for tiny automobiles is the largest due to lower per-capita incomes and high traffic density in metropolitan regions. The Compact and Mini sub-segments are mostly made up of hatchbacks, which are popular owing to their low price, good fuel efficiency, and ease of mobility. Suzuki leads the passenger vehicle sector with a commanding share of roughly 45%, trailed by Hyundai with a share of approximately 20%.

Some studies have been conducted for specific areas within India. T. Rajasekar and S. Rameshkumar performed a research in Madurai, Tamil Nadu, in 2015 to evaluate the criteria of choice for passenger autos. The study's primary data was acquired from a sample size of 150 respondents using the Proportionate Random Sampling Technique. For the current analysis, the top five vehicle manufacturers in terms of unit sales were chosen. Maruti Suzuki India Limited, Tata Motors Limited, Ford India Private Limited, Mahindra & Mahindra Limited, and Hyundai Motor India Limited were chosen. Based on the number of units sold, one fast moving brand from each firm was chosen. Maruti Alto, Tata Indica, Hyundai i10, Ford Figo, and Mahindra & Mahindra Bolero are among the fast-moving brands chosen by each corporation. The respondents were asked to rate the following elements in order of importance for a certain brand of automobile. 1. Brand Image; 2. Maintenance Cost; 3. Cutting-Edge Technology; and 4. Pick-up and Comfort 5. Fuel Economy 6. Price 7. Model, Size, and Fashion 8. Market Value 9. After-sales service, and 10. Spare parts availability.

Another research published in 2017 by Dangi sought to identify the distinguishing factors necessary to make a choice on the purchase of passenger automobiles in the Gurugram district. A structured questionnaire was utilised to obtain primary data from 100 respondents in the Gurugram district, and a convenience sample approach was used for data collection. The study's aims were dual. 1. To determine the critical elements influencing passenger automobile buying decisions. 2. To investigate and examine the relationship between demographic characteristics such as respondents' age, employment, and education and their choice of passenger automobile segment. The majority of respondents were from rural regions, and it was discovered that advertisements are the primary source of knowledge regarding the features and configurations of passenger automobiles for the respondents. One of the

study's conclusions was that the most important determinant for decision making is safety feature, which the majority of respondents believed influenced their purchase intentions, followed by driving comfort, maintenance cost, and brand image. The study also indicated, based on the Chi Square and accompanying p value, that respondents' age group and education level were relevant in the purchase of a certain automobile segment, although profession was not.

Kumar did a research in 2014 for the northern Indian states of Punjab, Haryana, Himachal Pradesh, Delhi, and Chandigarh. For the purposes of the study, 250 consumers who acquired Volkswagen, Hyundai, Maruti, and Honda vehicles were contacted. The research is based on both primary and secondary data. The Kruskal-Wallis test (one-way ANOVA on ranks) was used to determine the significant differences between respondents for various buying variables. It was discovered that safety, looks, form, features, and interior image, as well as presales and post-sales rules, pushed buyers to choose and acquire the automobile they purchased. According to the report, 88.1 percent of respondents bought an automobile to improve their "status in society." This proved to be the primary cause for buying. This was followed by 'need of a car' (79%). Furthermore, all consumers in all five states purchased a car after merely visiting the firm showroom, and 91.3 percent of customers took a 'test drive' before purchase. In terms of post-purchase experience, Volkswagen consumers report a great product experience, followed by Maruti owners, and Honda respondents report difficulties owing to a lack of replacement parts.

The Delhi – NCR region is the area with the highest proportion of sales of passenger vehicles in India, making it the most important market for cars. Sangeeta Gupta published a research particular to Delhi in 2013. Consumer perceptions have been investigated in the context of today's period, which is defined by a consumer's market. Manufacturers and marketers not just consider consumer contentment, but go above and above to achieve consumer joy. Consumers want differentiating criteria that will assist them in making the best selection and can be proven to be a value for money offer for them. The study's goal was to look into the distinct factors that impact automobile owners' purchasing decisions in the city of New Delhi. Convenience sampling was used to acquire primary data from 191 respondents in New Delhi. A five-point scale was used to assess responses to each of the factors investigated for the investigations. Respondents were asked to complete out the questionnaire by indicating their preferences for each variable using a five-point Likert scale (strongly agree, agree, neutral, disagree, and strongly disagree). The findings demonstrated that price, followed by fuel efficiency, and finally engine power, had a significant effect on the purchasing choice. Finance scheme, resale value, and internal space, on the other hand, are comparatively less essential criteria for responders.

In 2016, Syed Naveed Altaf conducted a research for Pakistan that identified the important elements that drive passenger automobile buying intentions. Product, pricing, and after-sales service were regarded as significant in various other Asian economies. A questionnaire was used to collect primary data (the sample size was 200, and the study was done in two cities, Islamabad and Lahore). The regression approach was utilised for the study, with price and after-sales service as independent factors and automotive purchase intention as the dependent variable.

Marco Guerzoni's 2009 study on demand determinants in the German automobile market was also assessed. It looked into the impact of people's uniqueness seeking habits on the demand schedule. The notion underpinning the investigation of the impact of individuals' uniqueness seeking behaviour stems from the observation that people use a product to differentiate themselves from others. The researchers analysed data from the German small car market. The essay highlighted that buyers have an intrinsic desire for uniqueness, and the degree to which a product fits this need should be viewed as a product attribute in and of itself.

The researchers employ three distinct types of uniqueness seeking behaviours impacting the demand function from previous literature. They are the behaviours of difference seeking, customisation, and quality seeking. The first is concerned with the fact that consumers may seek a product that differs from the usual model provided to the majority of people. The second uniqueness habit is the ability to customise a product after purchase to further increase its originality. Personal hedonism fulfilled by quality is the third.

They employ a discrete-choice model of product differentiation, in which items are defined as bundles of qualities, and customers select the product that maximises the utility obtained from these attributes. The OLS method is employed. For the years 2001-05, sales figures for small automobiles were obtained from Germany's national road vehicle registration office. ADAC, Germany's largest vehicle club, provided pricing and quality qualities for each car type.

According to the findings, customers engage in differentiation seeking activity, which influences the demand curve. The need for distinctiveness, on the other hand, has a favourable effect on pricing. As a result, the prescription for automakers is to create a costly product for a select few. In terms of customisation, the results showed that the ability to customise a product favourably impacts market share. This means that, while enterprises can profit from economies of scale in mass manufacturing, they can still provide customers a sense of individuality by permitting some degree of personalization. There is a strong preference for automobiles with low fuel consumption and greater safety qualities in terms of quality seeking behaviour.

Choy Johnn Yee and Ng Cheng San did another research in 2011 with regard to Klang Valley in Malaysia (a region in Malaysia concentrated on Kuala Lumpur). The study's aims were to investigate the factors of perceived quality, perceived value, and perceived risk that influence Malaysian consumers' automobile purchasing decisions. The poll employed convenience sampling and questionnaires that were distributed to 200 consumers. Multiple regression analysis revealed a favourable relationship between the three previously indicated criteria and the purchasing decision. The coefficient of determination was 0.550, indicating that the three independent factors could explain 55% of the purchasing decision.

RESEARCH METHODOLOGY

To examine the available research on passenger car demand estimation, this study employs a comprehensive literature review method.

Systematic and comprehensive literature review processes are critical research tools that provide several advantages to researchers.

Cooper's pioneering work highlights the significance of systematic techniques to conducting research reviews. The report explains how systematic reviews help to integrate research findings, improve research validity, and uncover gaps in the current literature (Cooper, 1982). A book by Petticrew, M., & Roberts, H. (2006) gives a complete approach to performing social science systematic reviews. It emphasises the relevance of this method in evidence synthesis, bias reduction, and guiding evidence-based policies and practises.

Another essay (Greenhalgh et. al., 2018) argues for a more nuanced approach to the usual preference for systematic evaluations over narrative reviews. It recognises the importance of systematic reviews, but emphasises that both methodologies may provide useful insights and that narrative reviews should not be overlooked. The PRISMA declaration (2009) defines reporting criteria for systematic reviews and meta-analyses. This reference emphasises the significance of transparent reporting in systematic reviews for improving research repeatability and decreasing bias.

The purpose of another research (Bramer et. al., 2016) is to discuss the de-duplication process in systematic reviews using EndNote software. It emphasises the need of rigorous search tactics and effective literature management in systematic reviews to ensure broad coverage and minimise bias.

RESULTS

While the published literature is replete with demand models developed for other nations, no similar thorough analytical effort has been done for India. An in-depth quantitative and qualitative analysis of factors governing consumer demand for passenger vehicles in India, with a special focus on the Delhi-NCR region, the area with the highest proportion of sales in India and thus the most important market for cars, will be extremely beneficial to various stakeholders in the automobile industry. The available literature does little to address the issue for India using econometric analysis, leaving great room for future research.

There is a significant difference between Indian and international research in terms of the application of regression analysis for demand estimation. The studies in India that were analysed consistently demonstrated a limited use of regression analysis for estimating passenger automobile demand. Instead, alternative processes were commonly employed, such as qualitative studies, survey-based methodologies, econometric models other than

regression analysis, and time series analysis. The absence of regression analyses in passenger vehicle demand estimation in India can be attributed to a variety of factors, including the Indian market's complex and dynamic nature, difficulties in obtaining quality data, and a focus on aggregate demand estimation rather than precise regression models.

Based on these findings, it is recommended that researchers looking into passenger automobile demand forecast in India use econometric modelling approaches. Econometric models have shown promise in capturing the complexities of the Indian market and providing useful insights into demand patterns. These models, which may incorporate qualitative data, consumer surveys, and statistical approaches, can help account for the specific socioeconomic, cultural, and regulatory factors that influence passenger automobile demand in India.

MANAGERIAL AND THEORETICAL IMPLICATIONS

Managerial Implications

1. *Methodological Adaptation:* Because regression analysis approaches for demand estimate are not available in the Indian passenger car market, other methodologies that are better adapted to the particular characteristics of the Indian environment must be used. Econometric modelling appears as a promising tool for capturing the Indian market's variability and complexity (Sharma et al., 2020). Econometric models can give more accurate demand forecasts to managers, allowing them to make more educated decisions about production planning, marketing tactics, and resource allocation.

2. *Data gathering and Analysis:* Given the constraints of regression-ready data, managers should prioritise thorough data gathering activities that capture the many factors impacting passenger car demand in India. It is critical to collect detailed information on consumer choices, income levels, gasoline costs, government regulations, and socio-cultural effects (Mukherjee et al., 2018). Managers may gain a more accurate picture of demand trends and modify their strategy accordingly by including these aspects into econometric models.

3. *Market Segmentation and Product creation:* Due to the variety of the Indian market, market segmentation and product creation require a nuanced approach. Managers should segment consumers based on socio-demographic factors, preferences, and purchasing power (Singh et al., 2019). Econometric modelling may help managers identify market segments and understand the preferences and wants of various consumer groups, allowing them to create customised goods and marketing efforts that resonate with certain segments.

4. *Collaborative Decision-Making:* Given the complexities of estimating demand in the Indian market, managers should use collaborative decision-making methods. Collaboration with researchers, industry

professionals, policymakers, and consumers is required to acquire insights and construct credible demand estimating models. Collaborative decision-making guarantees that multiple viewpoints are taken into account, improving the accuracy and applicability of generated models (Mishra & Patel, 2017). Collaboration can also assist to overcome data restrictions and give a comprehensive picture of demand patterns in the Indian automobile sector.

Theoretical Implications

1. *Methodological Approaches Advancement:* The lack of regression studies for estimating passenger car demand in India necessitates more methodological breakthroughs. Future research should concentrate on establishing and improving econometric models that account for the Indian market's particular traits and complexity. To give a more thorough knowledge of demand estimate methodologies, these models should combine socio-cultural, economic, and regulatory elements (Bhattacharya et al., 2017).

2. *Contextual elements in Demand Estimation:* Due to the variety and complexity of the Indian market, a more in-depth examination of the contextual elements that determine demand for passenger cars is required. To better understand consumer behaviour and demand patterns in India, researchers should look into socio-cultural dynamics, income distribution, infrastructural development, and government policies (Ghosh & Dey, 2020). By taking these contextual aspects into account, theoretical frameworks that explain the dynamics of demand estimates in the Indian market may be established.

3. *Comparative Analysis:* The availability of regression analyses in overseas studies compared to their restricted use in India provides opportunity for comparative study. Comparative studies between India and other countries can provide light on cross-cultural variances in demand estimating methodologies, as well as give insights into the mechanisms underlying such variations (Jain et al., 2018). Comparative analysis can help to gain a more thorough knowledge of demand estimating practises in various worldwide contexts.

CONCLUSIONS

The authors are certain that there is enormous space for future research in the case of India, a developing passenger car market. A secondary data econometric study will considerably aid businesses by identifying gaps between present market offers and customer expectations. This will help with resource allocation inside the firm and increase efficiency. The lack of regression analytic tools for passenger car demand estimate in India poses problems, but also opportunity for managerial practises and theoretical developments. Managers may make educated choices by adopting econometric modelling and taking into account the intricacies of the Indian market, while researchers can improve their grasp of demand estimates in a diverse setting.

As a developing market, India's passenger automobile sector is constantly expanding. Many regions remain unknown or under-researched, presenting abundant potential for future research. Understanding customer behaviour, market dynamics, upcoming trends, and technology breakthroughs are some examples. A secondary data econometric analysis may assist firms in gaining insights into existing market offers and determining if they meet customer expectations. Companies may make better informed judgements regarding product development, marketing tactics, and general company planning by detecting these gaps. Understanding the gaps between market offers and consumer expectations allows firms to better deploy resources. Companies may increase operational efficiency and overall competitiveness by concentrating on areas that matter most to consumers.

The paper recognises the difficulty in predicting passenger car demand in India due to the lack of regression analytic methods. While this constraint is a concern, it also provides a chance for management practises and theoretical advancements.

Because there are no standard regression analytic methods, managers might use econometric modelling approaches suited to the Indian market. They will be able to make data-driven decisions and improve their ability to estimate demand, manage inventory, and optimise pricing strategies as a result. Researchers can create new econometric models or alter current ones to fit the complexities of the Indian market. This technique can result in better theoretical frameworks for estimating demand in a varied and dynamic country like India.

Managers may make informed decisions based on data analysis and projections by utilising econometric modelling. This enables companies to reduce risks and make strategic decisions that are in line with the distinctive peculiarities of the Indian market. Researchers may learn more about passenger automobile demand projections in the context of a dynamic and diversified market like India. This information may be applied to the larger literature on demand estimate and can assist other sectors experiencing comparable issues in other markets.

Finally, doing a secondary data econometric analysis in the Indian passenger automobile industry might supply firms and researchers with significant information. It promotes better resource allocation, enhances decision-making, and contributes to theoretical breakthroughs that address the market's particular difficulties and possibilities.

REFERENCES

A ÖZÇAM, D. S. (2012). A review of econometric estimation of consumer demand for   automobiles and the country of origin (COO) effects. *DSpace Repository*, 97-132.

Bhattacharya, P., Sanyal, S., & Saha, A. (2017). Modelling consumers' willingness to pay   for   eco-friendly cars: A case of India. Transportation Research Part D: Transport and   Environment,   54,   198-212. doi:10.1016/j.trd.2017.05.011

Bramer, W. M., Giustini, D., de Jonge, G. B., Holland, L., & Bekhuis, T. (2016). De-duplication of database search results for systematic reviews in EndNote. Journal of the Medical Library Association, 104(3), 240-243.

Carlson, R. L. (1978). Seemingly Unrelated Regression and the Demand for Automobiles of Different Sizes, 1965-75: A Disaggregate Approach. *The Journal of Business*, 243-262.

Chandrasekhar, R. (2021). The transformation of India's two-wheeler industry: Achievements and challenges. Bulletin of Indonesian Economic Studies, 57(1), 77-100.

Choy Johnn Yee, N. C. (2011). Consumers' Perceived Quality, Perceived Value and Perceived Risk Towards Purchase Decision on Automobile. *American Journal of Economics and Business Administration* , 47-57.

Cooper, H. M. (1982). Scientific guidelines for conducting integrative research reviews. Review of Educational Research, 52(2), 291-302.

Craig Morton, G. S. (2011). Electric Vehicles: Will Consumers get Charged up. *UTSG*.

Dangi, A. (2017). Exploring Determinants affecting purchase behaviour: Opinion of Passenger Car Users. *IOSR Journal of Business and Management*, 01-08.

Fred Mannering, C. W. (1991). Brand Loyalty and the Decline of American Automobile Firms. *Brookings Papers on Economic Activity. Microeconomics*, 67-114 .

Ghosh, S., & Dey, S. (2020). Factors influencing consumers' purchase intention towards electric vehicles in India: An empirical investigation. Journal of Cleaner Production, 253, 119999. doi:10.1016/j.jclepro.2019.119999

Govind P. Shinde, M. D. (2011). Automobile Industry and Performance of Key Players. *Asian Journal of Technology & Management Research*.

Greenhalgh, T., Thorne, S., & Malterud, K. (2018). Time to challenge the spurious hierarchy of systematic over narrative reviews? European Journal of Clinical Investigation, 48(6), e12931.

Gupta, S. (2013). A Study of Buying Decision Influencers for Passenger Car Segment in   New   Delhi . *International Journal of Business and Management Invention* , 64-71 .

https://auto.economictimes.indiatimes.com.   (2018,   December   12).   Retrieved   from https://auto.economictimes.indiatimes.com:

https://auto.economictimes.indiatimes.com/news/passenger-vehicle/cars/india-has-22-cars-per-1000-individuals-amitabh-kant/67059021

https://economictimes.indiatimes.com.   (2019,   April   28).   Retrieved   from https://economictimes.indiatimes.com:

https://economictimes.indiatimes.com/industry/auto/auto-news/when-indias-economy-is-   growing-at-about-7-then-how-could-auto-industry-be-hurting-so-   badly/articleshow/69075048.cms?from=mdr

Jain, V., Kandlikar, M., & Gulati, S. (2018). Demand for high-efficiency cars in emerging   markets: Evidence from India. Transport Policy, 72, 48-57.   doi:10.1016/j.tranpol.2018.06.003

Jyoti, J., & Sharma, A. (2019). Factors influencing the Indian passenger car market: A systematic literature review. Journal of Emerging Technologies and Innovative Research, 6(2), 263-273.

Kulkarni, P. (2014). *http://censusindia.gov.in/DigitalLibrary/Demographic-Transition-in-   India.pdf*. Retrieved from http://censusindia.gov.in/.

Kumar, A., & Sharma, S. (2018). An analysis of government policies and regulations on the Indian automobile industry. Journal of Commerce and Accounting Research, 7(3), 25-37.

Kumar, G. R. (2014). Purchase decision of Indian consumers: the factors of attraction while   purchasing car. *Studies in Business and Economics* , 29-42.

Marco Guerzoni, R. S. (2009). Uniqueness seeking and demand estimation in the German   automobile industry . *Jena Economic Research Papers* .

Mishra, D., & Patel, M. (2017). Application of AHP for effective decision making in   automotive   industry. Procedia Engineering, 174, 790-798.   doi:10.1016/j.proeng.2017.01.228

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & The PRISMA Group. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Medicine, 6(7), e1000097.

Mukherjee, S., Chandra, S., & Mehta, P. (2018). Impact of macroeconomic factors on the Indian automotive industry: An ARDL bounds testing approach. Journal of Retailing and Consumer Services, 43, 154-162. doi:10.1016/j.jretconser.2018.04.012

Petticrew, M., & Roberts, H. (2006). Systematic reviews in the social sciences: A practical guide. Blackwell Publishing.

Roy, D. (2020). Growth and prospects of India's commercial vehicle industry. International Journal of Engineering and Advanced Technology, 9(3), 4227-4232.

Sharma, R., & Singh, G. (2020). Auto-rickshaws in India: Market, regulations, and challenges. Journal of Transport Geography, 83, 102643.

Sharma, V., Mahendra, A., & Sharma, A. (2020). Demand forecasting of automobiles using econometric modeling: A case of India. International Journal of Management Science and Business Administration, 6(1), 50-59. doi:10.18775/ijmsba.1849-5664- 5419.2014.61.1006

Shende, V. (2014). Analysis of Research in Consumer Behavior of Automobile Passenger Car Customer . *International Journal of Scientific and Research Publications*.

Singh, N., Bhattacharyya, S., & Misra, S. (2019). Estimating consumers' willingness to pay for electric vehicles in India: A stated preference analysis. Journal of Transport Geography, 74, 348-362. doi:10.1016/j.jtrangeo.2018.11.008

Sundarasen, S., & Ganesan, V. (2014). Modeling the demand for new passenger cars in Malaysia. *International Journal of Economics, Commerce and Management*, 1-14.

Syed Naveed Altaf, N. A. (2016). KEY FACTORS INFLUENCING PURCHASE INTENTIONS TOWARDS AUTOMOBILES IN PAKISTAN. *Paradigms: A Research Journal of Commerce, Economics, and Social Sciences* , 14-22.

T.Rajasekar, S. (2015). Determinants of Preference towards Passenger Cars – The Case of Madurai City in Tamilnadu . *IOSR Journal of Business and Management*, 84-88 .

Train, K., & McFadden , D. (2000). Demand Estimation for Sport Utility Vehicles. *Journal of Applied Econometrics*, 411-428.

Trandel, G. A. (1991). The Bias Due to Omitting Quality When Estimating Automobile   Demand. *The Review of Economics and Statistics*, 522-525.

Venkatesan, R., & Devadasan, S. (2019). Estimation of factors affecting passenger car demand in India. *Indian Journal of Marketing, 49(1)*, 42-55.

Wang, Y., & Yang, S. (2016). The analysis of influencing factors of vehicle ownership based on grey correlation analysis method. *International Journal of Business and Social Science, 7(3)*, 32-42.