

**A STUDY ON CONSUMER PREFERENCES TOWARDS AUTOMATIC TRANSMISSION
TECHNOLOGY IN AUTOMOBILES IN THE CITY OF VIJAYAWADA**

Dr M V A L NARASIMHA RAO, Associate Professor, Business School, Koneru Lakshmaiah Education Foundation, Green Fields, Vaddeswaram, Guntur, A.P., India– 522302

Dr Renati Jayaprakash Reddy, Professor of Commerce, Acharya Institute of Management and Sciences, Peenya, Bangalore

Dr Daniel Pilli, Assistant Professor, Business School, Koneru Lakshmaiah Education Foundation, Green Fields, Vaddeswaram, Guntur, A.P., India– 522302

DOI : 10.48047/IJFANS/V11/ISS8/338

ABSTRACT

Automotive transmissions facilitate the transmission of power from the clutch mechanism to the differential component. Manual transmissions employ mesh gears for power transmission. The utilization of manual gearbox necessitates regular gear shifts, particularly in urban areas. The process of engaging and disengaging the clutch is necessary for each gear shift. The study examines consumer preferences about automatic transmission technology in automobiles in the city of Vijayawada. The study used convenience sampling as the method for primary data gathering. A group of 500 consumers from Vijayawada were administered a structured online questionnaire, with a response from of 200 participants. The data is analysed using SPSS. Based on the results of the survey, it can be interpreted that a majority of the participants possess knowledge on the prevailing trend of automatic transmission in the city. Many of the participants express a favourable opinion towards the emerging automatic transmission technology. Basing on the analysis conducted, it was found that most of the participants opted for vehicles with automatic gearbox due to their superior shifting quality, user-friendly nature, and enhanced engine power.

KEYWORDS: Transmission, Engaging, Disengaging, Tiresome, Auto gear

INTRODUCTION

The majority of vehicle systems have undergone modifications to enhance usability as a result of advancements in automotive technology. Manual transmission systems, also referred to as "stick shift" or "standard transmission," were the initial form of gearboxes utilized in automobiles. The majority of contemporary automobiles are equipped with automated transmissions, in spite of manual gears. Automatic transmission technology has been developed to enhance various aspects of vehicles, including safety, comfort,

dependability, and versatility. These improvements are achieved by the utilization of mechanisms such as chained variation devices and planet gears. The third category pertains to the unique driving capabilities beside the present-day vehicle fuel efficiency and emission mitigation. These actions involve the activation of the transmission mechanism and require more exertion. The manual transmission technology was substituted with an automatic transmission system that facilitates gear shifting while the vehicle is in motion. There are three different types of automatic transmissions. The initial variant uses a hydro transformer and globe gear mechanism, whereas the subsequent variant utilizes a double coupler and cylindrical gear system. The latter option is characterized by its cost-effectiveness, simplified maintenance requirements, and enhanced suitability for urban driving scenarios. According to empirical evidence, it has been observed that a manual transmission exhibits a fuel consumption rate that is 10% higher than that of an automatic transmission. Additionally, in challenging driving scenarios, a manual transmission provides enhanced control compared to its automated counterpart. Manual transmission four wheelers possess a distinct advantage in terms of fuel efficiency on highways, contingent upon the driver's behavior while operating the vehicle. Operating a manual transmission car affords drivers a heightened level of control and minimizes potential distractions. Vehicles with automatic gearboxes allow drivers the ability to manipulate the steering and pedals using both their hands and feet, hence facilitating more rapid responsiveness. Both industrialized and developing nations are experiencing a rise in the production and utilization of automatic gearbox automobiles. Car owners are required to make a decision on the sort of transmission they wish to install in their vehicle. This study surveyed consumers in Vijayawada to study their preference between automatic and manual gearbox vehicles.

REVIEW OF LITERATURE

The accurate prediction of consumer preference remains challenging; nonetheless, it can be partially achieved through the utilization of consumer research activities. Globalization has ushered in increased competition in the compact car category, compelling corporations to focus on analysing consumer preferences in order to effectively please and keep customers over an extended period of time. The fluctuation in income levels and the rising cost of gas are key factors contributing to the surge in demand for tiny automobiles in India. The tiny car sector exhibits significant potential due to the relatively low penetration and consumption of small automobiles in Pune, in comparison to its population. In order to stimulate product consumption and raise awareness, manufacturers have employed advertising efforts to promote increased consumption of compact vehicles through the implementation of various

promotional offers (John &Pragadeeswaran, 2013). There is a consistent enthusiasm among individuals for little automobiles, as they offer many advantages such as a compact size and a small turning radius, making them easy for navigating traffic-laden roads, among other aspects. There is an increasing inclination towards the utilization of compact vehicles, which is expected to continue in the foreseeable future. Consequently, with the intention of effectively address the forthcoming competition, it is imperative for established automobile manufacturers to uphold and preserve their brand reputation. Automobile firms ought to provide a streamlined mechanism for the reception of complaints, while also promoting prompt recording of client grievances and expeditious resolution of those complaints. In the context of regular interactions with customers and dealers, utilizing telephone inquiries can be a viable alternative. It is recommended that automobile businesses engage in regular meetings with marketing and sales managers, production managers, and customer service officers in order to develop novel ideas (Rana &Lokhande, 2015).

The research pertaining to customer preferences for automobiles was conducted among a specific group of car owners residing in Krishnagiri. The study of consumer preference is highly intriguing because of its focus on comprehending the motivations behind individuals' purchase behaviours. The majority of consumer choice elements are closely related to economic theory. The element of mass communication has significantly transformed the fundamental principles underlying marketing strategies employed by marketers. Which individuals or groups were only targeting urban consumers? Companies have begun to redirect their focus towards rural areas as well. The heightened level of customer awareness regarding novel products has resulted in a discerning selection process. The preferences of consumers have been undergoing rapid changes in recent times (Lakshmanan & Gayathri, 2014).

Through expanding its operations internationally, the company will experience a growth in its market share, thereby signifying an upsurge in the demand for its products. By using economies of scale, the firm is able to enhance its production capabilities, leading to a reduction in the cost per unit and an improvement in production efficiency. Consequently, this enables the company to serve its clients effectively and inexpensively. One significant advantage of global brands, when compared to local brands, is their ability to enter new markets more readily. This stands true for both high-status and low status seeking consumers. By implementing an appropriate strategy, global brands can effectively cultivate an improved global image, as stated by Vikram Shende, 2014.

OBJECTIVES:

- To study the relationship between gender and preferences towards Automatic transmission
- To analyse the profile of consumers buying automatic cars
- To identify key factors that influence customer in buying the automatic transmission cars.
- To study the customers' awareness and preference towards automatic transmission cars.

HYPOTHESIS:

- H1- there is significant relation between the preference towards transmission system in cars before buying with age and profession.
- H2- there is significant relation between the technology and customers' ability to adapt in case of the automatic transmission technology of cars.
- H3- there is significant relation that the preference is going to vary based on the gender with income status per annum.
- H4- there is significant relation between technology and features with reference to age.

RESEARCH DESIGN:

- The study was done by the survey method.
- Sample size is 200 respondents.
- Sampling technique used is convenience sampling.
- Questionnaire is used as the instrument for primary data collection.
- Geographical area of study is Vijayawada city.

DATA ANALYSIS AND INTERPRETATION:

The data has been analysed using statistical tools such as percentage analysis and the chi-square test. To conduct the analysis of the aforementioned data, the statistical software utilized was SPSS. This software was employed to examine the inclinations of consumers in relation to the transmission technology employed in automobiles.

TEST 1: Preference of transmission system in cars with respect to age.

Age	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	25-35 years	100	50.0	50.0	50.0
	35-50 years	69	34.5	34.5	84.5
	50-60 years	11	5.5	5.5	90.0
	Below 25 years	20	10.0	10.0	100.0
	Total	200	100.0	100.0	

For the given question, out of 200 respondents about 10.00% of respondents are below 25 years, 50.00% respondents are 25-35years, 34.50% of respondents are 35-50years and remaining of respondents are 5.50% are above 50 years. This shows that 25-35 age group people prefers it most.

Chi-square tables of age:

AGE:

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17.268 ^a	3	.001
Likelihood Ratio	5.890	3	.117
N of Valid Cases	200		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .06.

As the chi-square value of relation between the transmission system in cars before buying with age is 0.001 which is ≤ 0.050 , we accept H_1 and reject H_0 . Therefore, there is significant relation between the transmission system in cars with regard to age.

TEST:2 Automatic Transmission Technology in cars is being satisfied by the customers/not.

Income status p.a.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Above Rs. 1500000	90	45.0	45.0	45.0
	Below Rs. 500000	3	1.5	1.5	46.5
	Rs. 1000000 – Rs. 1500000	86	43.0	43.0	89.5
	Rs. 500000 – Rs. 1000000	21	10.5	10.5	100.0
	Total	200	100.0	100.0	

For the given question, out of 200 respondents about 45.00% of them are above Rs1500000, 1.50% respondents are below Rs500000, 43% of respondents are Rs100000-Rs1500000 and remaining of respondents are 10.50% are Rs500000-Rs1000000. This shows that above Rs1000000 are interested in automated technology.

Chi-square table of income status per annum:

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	41.321 ^a	6	.000
Likelihood Ratio	12.124	6	.059
N of Valid Cases	200		

a. 9 cells (75.0%) have expected count less than 5. The minimum expected count is .02.

As the chi-square value of the technology and customers' ability in case of the automatic transmission technology of cars with income status 0.000 which is ≤ 0.050 , we accept H_1 and reject H_0 . Therefore there is significant relation between the technology and customers' ability in case of the automatic transmission technology of cars.

TEST: 3 Preference is going to vary basing on the gender with income status p. a.

Income status p.a.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Above Rs. 1500000	90	45.0	45.0	45.0
	Below Rs. 500000	3	1.5	1.5	46.5
	Rs. 1000000 – Rs. 1500000	86	43.0	43.0	89.5
	Rs. 500000 – Rs. 1000000	21	10.5	10.5	100.0
	Total	200	100.0	100.0	

For the given question, out of 200 respondents about 45.00% of respondents are above Rs1500000, 1.50% respondents are below Rs500000, 43% of respondents are Rs100000-Rs1500000 and remaining of respondents are 10.50% are Rs500000-Rs1000000. This shows that above Rs1000000 are interested in automated technology.

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	83	41.5	41.5	41.5
	Male	117	58.5	58.5	100.0
	Total	200	100.0	100.0	

For the given question, out of 200 respondents about 41.50% of respondents are female and 58.50% respondents are male. This shows that males are preferring it most in terms of technology updation.

Chi-square table of Income status p.a.:

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	43.336 ^a	12	.000
Likelihood Ratio	19.476	12	.078
N of Valid Cases	200		

a. 11 cells (55.0%) have expected count less than 5. The minimum expected count is .03.

As the chi-square value of the preference is going to vary basing on gender with income status p.a. is 0.000 which is less than or equal to 0.050, we accept H_1 and reject H_0 . Therefore, there is significant relation between the preference is going to vary basing on the gender with income status per annum.

TEST: 4 PREFERENCE OF AUTOMATIC TRANSMISSION TECHNOLOGY IS BECAUSE OF THE FEATURERS AND COMFORT THEY OFFER.

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent

Valid	25-35 years	100	50.0	50.0	50.0
	35-50 years	69	34.5	34.5	84.5
	50-60 years	11	5.5	5.5	90.0
	Below 25 years	20	10.0	10.0	100.0
	Total	200	100.0	100.0	

For the given question, out of 200 respondents about 10.00% of them are below 25 years, 50.00% of them are 25-35years, 34.50% of the respondents are 35-50years and remaining of respondents are 5.50% are above 50 years. This shows that 25-35 age group people prefers it most.

Chi-square table of Age:

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.879 ^a	6	.031
Likelihood Ratio	10.512	6	.105
N of Valid Cases	200		

a. 5 cells (41.7%) are expected to count less than 5. The minimum expected count is .11.

As the chi-square value of the relation between technology and features with respect to age is 0.031 which is ≤ 0.050 , we accept H1 and reject H0. Therefore, there is significant relation between technology and features with respect to age.

FINDINGS:

- It is found that 41.50% of respondents are female and 58.50% respondents are male. This shows that males are preferring it most in terms of technology updation.
- It is found that 10.00% of respondents are below 25 years, 50.00% respondents are 25-35years, 34.50% of respondents are 35-50years and remaining of respondents 5.50% are above 50 years. This shows that 25-35 age group people prefers it most.
- It is found that 84.00% of respondents are married and 16.00% respondents are unmarried, where few are students. This shows that married showing interest to purchase automatic technology for having comfort life.
- It is found that 45.00% of respondents are above Rs1500000, 1.50% respondents are below Rs500000, 43% of respondents are Rs100000-Rs1500000 and remaining of respondents are 10.50% are Rs500000-Rs1000000. This shows that above Rs1000000 are interested in automated technology.
- This shows that business and private employees are interested in automatic transmission as they constitute for 81% of total respondents.
- Hyundai is most preferred by people, next comes the Toyota by some of them, and next comes the Maruti Suzuki, followed by Honda and others in case of automatic transmission.

- It is found that 19.50% of respondents are preferring hatchback and SUV, 18% have chosen hatchback and sedan, remaining prefer their own choice like MUV and prestige.
- Most of the buyers use hatchbacks as they are convenient to drive and it costs less to them when preferring a car.
- I found that 17% of respondents are preferring brand, design/build quality, 7.50% feel about price, mileage and the remaining prefer the safety and service.
- They are giving most preference to safety and service in case of automatic transmission technology.
- 71% of respondents are interested in diesel cars, 25.50% respondents are interested in petrol cars, remaining prefer CNG, LPG and electric cars.
- It is found that 46% of respondents are taking part in decision making to finalize when purchasing car, 28.50% respondents are the only decision makers, 23.50% are one of the decision makers, 2% of them are letting the decision taken by others when buying a car.
- It is found that 99% of the respondents are interested in driving automatic cars, only 1% respondents are interested in manual transmission.
- Most of them were having an idea about automatic transmission system which is present trend in the city.
- Most of them have visited showroom to know about automatic transmission and some know through advertisement, and others know through friends/reference groups.
- It is found that most of the respondents are satisfied with new technology of automatic transmission.
- It is found that respondents are interested to purchase automatic transmission technology considering price as secondary.
- The respondents have agreed that it is tiresome and monotonous to drive this automatic transmission technology.
- Most of respondents have disagreed that spare parts and service are costlier in case of ATT.
- Most of respondents agree that feel of drive is comfortable in the case of ATT and they prefer it most.
- Most of them have agreed that preference of choosing car varies basing on the gender.
- Most of them have disagreed with the question they don't prefer this technology due to Indian roads and they prefer it.

- It is found that most of respondents prefer ATT due to features and comfort they offer.
- Most of them prefer ATT by not taking into consideration mileage issues.
- It is found that most people prefer ATT due to the new technology which is a trend in the city.

SUGGESTIONS:

- A good number of respondents expressed that while they are using the automatic technology it is smooth to drive and comfortable.
- Here we can see that many people are preferring this technology and can drive it without any problem.
- People expressed the possibility of problems with it and cost must also be considered, so the company should resolve this type of problem.
- Many respondents did not express any problems and they are preferring new cars to purchase from manufacturers.
- People facing technical errors regularly, so company should identify the specific problem which customers are facing regularly.
- As taking into consideration of customer's preference towards the ATT cars they must concentrate on more mileage and less pricing. So the companies should concentrate on the services provided by them and make the customers feel loyal towards them.
- Future is on this type of technology and produce more cars which are eco-friendly to the environment.
- Providing safety features, latest technology, and affordable price can help the companies to sustain in the competition.
- Produce more electrical vehicles such that the consumption of fuels and pollution will be decreased.

CONCLUSION:

Automatic transmissions consist of various components, including mechanical systems, electrical systems, hydraulic systems, and computer controls, which function in a synchronised manner. Automatic vehicles are more user-friendly, especially for individuals who are new to driving. The operation of a manual system necessitates exceptional driving skills, while an automatic system possesses the capability to autonomously manage all tasks. This feature confers particular benefits to drivers who are new or lack expertise, as well as in scenarios of heavy traffic congestion when frequent gear shifting poses challenges. The

utilisation of an automatic gearbox reduces the level of attention and concentration demanded from the driver, as the gear shifting process is initiated promptly by the system when it deems a gear change to be essential. In the case of vehicles equipped with manual transmissions, drivers are required to exercise heightened vigilance and coordination throughout operation. Automatic vehicles has an enhanced ability to regulate traction while encountering steep inclines, employing engine braking on descents, and navigating through congested traffic conditions. As a result, there is a consumer preference for automatic gearboxes over manual gearboxes. The advancement of technology has led to alterations and adaptations in vehicle systems. The shift from manual gearbox to automatic gearbox is an example of such a system. The determination to acquire an automobile equipped with this particular technology is contingent upon various aspects. Based on the analysis of the aforementioned elements, the study's findings indicate a clear preference among individuals for automobiles equipped with automatic gearboxes. Likewise, the choice of automobiles equipped with manual transmissions is contingent upon the aforementioned three factors: repairability (ease of repair), dependability, and enhanced fuel efficiency. A significant proportion of participants exhibit a preference for automobiles equipped with manual transmissions. Nevertheless, a significant proportion of female drivers exhibit a preference for vehicles equipped with automatic gearboxes due to their enhanced ease of operation. Every system possesses distinct advantages and disadvantages in comparison to the others.

REFERENCES

1. John, B., &Pragadeeswaran, S. (2013). A study of small car consumer preference in Pune city. *TRANS Asian Journal of Marketing & Management Research (TAJMMR)*, 2(3and4), 1-14.
2. Rana, V. S., & Lokhande, M. A. (2015). A Study of Consumer Preferences & Attitude towards Passenger cars of Maruti Suzuki & Hyundai Motors in Marathwada Region of Maharashtra. *International Journal of Science, Spirituality, Business and Technology*, 3(2), 37-42.
3. Lakshmanan, D., & Gayathri, K. (2014). A Study on consumer preference on users of car in Krishnagiri town. *International Journal of Business and Administration Research Review*, 1(5), 132-139.
4. Shende, V. (2014). Analysis of research in consumer behavior of automobile passenger car customer. *International Journal of Scientific and Research Publications*, 4(2), 1-8.

5. M. Nageswara Rao and K. Narayana Rao and G. Ranga Janardhana, " Integrated Scheduling of Machines and AGVs in FMS by Using Dispatching Rules," Journal of Production Engineering, vol. 20(1), pp. 75-84, 2017.
6. M. Nageswara Rao and K. Narayana Rao and G. Ranga Janardhana,. "Machines and AGVs Scheduling in Flexible Manufacturing System with Mean Tardiness Criterion," International journal of Advanced Materials Manufacturing and Characterization, vol. 4, pp. 100-105, 2014.
7. M. Nageswara Rao, K. Dileep, Shaik Khadar Basha, Vara Kumari S., "Modrak Algorithm to Minimize Completion Time for n-Jobs m-Machines Problem in Flexible Manufacturing System," International Journal of Emerging Trends in Engineering Research, vol. 8(8), pp. 4560-4566, 2020.
8. M. Nageswara Rao, et al., "Simultaneous Scheduling in FMS through priority rules," Journal of Advanced Research in Dynamical and Control Systems, vol. 9, pp. 1995-2008, 2017.
9. M. Nageswara Rao, K. Dileep, Shaik Khadar Basha, Vara Kumari S., "Application of BPSO in flexible manufacturing system scheduling," International Journal of Mechanical Engineering and Technology, vol. 8(5), pp. 496–503, 2017.
10. M.Nageswara Rao et al., "Scheduling of Machines and Automated Guided Vehicles in FMS using Shuffled Frog Leap Algorithm," International Journal of Mechanical Engineering and Technology, vol. 8(5), pp. 496–503, 2017.
11. M. Nageswara Rao, "Simultaneous Scheduling through Heuristic Algorithm," International Journal of Engineering & Technology, vol. 7 (2.32), pp. 125-130, 2018.
12. M. Nageswara Rao and K. Narayana Rao and G. Ranga Janardhana, "Machines and AGVs Scheduling in Flexible Manufacturing System with Mean Tardiness Criterion," International journal of Advanced Materials Manufacturing and Characterization, vol. 4, pp. 100-105, 2014.