Decoding Consumer Behaviour: Analysing Preferences and Influencing Factors Among Non-Users of Automatic and Automated Manual Transmission Cars

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ABSTRACT

This research delves into the underlying consumer behaviour of individuals who have not yet adopted Automatic Transmission (AT) or Automated Manual Transmission (AMT) vehicles. With a focus on 197 respondents, the study aims to uncover the key preferences, inhibitions, and influencing factors that govern their decision-making process regarding car purchases. Through a detailed analysis of demographic variables such as age, gender, income level, educational background, and driving experience, the study establishes patterns that influence transmission choices. Socio-economic conditions and psychological perceptions, including cost-effectiveness, ease of maintenance, and fuel efficiency, also emerged as significant determinants. One of the prominent findings suggests that individuals with lower annual income and limited driving experience tend to favour manual transmissions due to perceived affordability and better control. Conversely, a growing awareness of urban traffic challenges and convenience is slowly shifting attitudes towards AT/AMT vehicles. Additionally, the influence of peer groups, family advice, and brand perception play a crucial role in shaping consumer attitudes. The study highlights the need for automobile manufacturers and marketers to address consumer misconceptions, offer targeted communication strategies, and design affordable AT/AMT options. Ultimately, the research offers a comprehensive understanding of non-user perspectives and suggests pathways to increase adoption through tailored outreach and education.

Keywords**: **Transmission preference, Automated Manual Transmission, Automatic Transmission, driving capability, consumer behaviour.

A. INTRODUCTION

The automotive industry is undergoing a rapid transformation with increasing adoption of automatic transmission systems. However, a considerable segment of consumers still prefers manual transmission due to economic, technical, and cultural reasons. This study focuses on understanding the factors that drive preferences among non-users of automatic/manual transmission (AT/AMT) cars. By examining demographic, socio-economic, and behavioural variables, the study aims to uncover patterns and correlations to guide marketing and

production strategies. Globally, the preference for manual or automatic transmission systems varies significantly. Factors such as affordability, performance, maintenance costs, and cultural norms play a pivotal role. Understanding these preferences in specific market segments provides manufacturers and policymakers with a strategic advantage in addressing unmet consumer needs.

B. LITERATURE REVIEW

Understanding consumer preferences in the automotive industry, particularly concerning vehicle transmission types, has been the focus of numerous studies. This literature review synthesizes findings from recent research to examine the factors influencing transmission preferences in emerging markets. Patel and Kumar (2020) explored the impact of socio-economic factors on vehicle transmission choices, revealing that income levels, educational background, and urbanization significantly influence consumer preferences. Higher income groups and urban residents show a stronger preference for automatic transmissions, attributed to the convenience and ease of driving in congested areas. Conversely, rural consumers and those with lower incomes are more inclined toward manual transmissions due to affordability and perceived reliability. Tiwari and Sharma (2018) conducted an in-depth analysis of consumer behaviour in the Indian automotive market, highlighting cultural and economic considerations as critical determinants. The study emphasized that price sensitivity, fuel efficiency, and maintenance costs heavily sway transmission preferences. Manual transmissions continue to dominate due to their lower initial cost and better fuel efficiency, aligning with the budget constraints of the average consumer in these markets. Srinivasan and Gupta (2019) examined the relationship between driving experiences and car preferences. Their empirical analysis suggested that drivers with more exposure to diverse driving conditions, such as heavy traffic or long commutes, are more likely to opt for automatic transmissions. This shift is driven by the perceived reduction in driving fatigue and increased convenience. Zhang and Chen (2020), analysed the role of technological advancements in shaping consumer adaptation to automatic transmissions. Innovations such as improved fuel efficiency, smoother gear shifts, and integration with advanced driver-assistance systems have enhanced the appeal of automatic transmissions. However, the study also noted that consumer adaptation is gradual, constrained by traditional biases and higher costs associated with advanced technology. Chugh and Singh (2021) conducted a comparative study of transmission preferences across various emerging markets. Their findings revealed regional variations influenced by economic development levels, infrastructure, and government

policies. For instance, markets with significant urbanization and higher disposable incomes exhibit a faster shift toward automatic transmissions. In contrast, regions with limited infrastructure and cost-conscious consumers remain loyal to manual transmissions. Across these studies, key themes emerge: socio-economic factors, technological advancements, and cultural influences collectively shape transmission preferences in emerging markets. While manual transmissions remain prevalent due to cost and fuel efficiency considerations, the gradual adoption of automatic transmissions indicates an evolving market dynamic. Increasing urbanization and advancements in technology are expected to accelerate this transition. The adoption of automatic transmissions has grown globally, driven by advancements in technology, improved fuel efficiency, and changing consumer expectations. Previous studies suggest that driving experience, income levels, and cultural factors significantly influence transmission preference. For instance, studies have shown that younger drivers and urban dwellers are more likely to opt for automatic transmissions due to convenience. Conversely, manual transmissions remain popular among cost-conscious and performance-oriented consumers. This study builds upon these findings by exploring a dataset of 197 respondents, analysing correlations and patterns specific to non-users of AT/AMT cars.

C. OBJECTIVE OF THE STUDY

1. To identify the demographic and socio-economic factors influencing transmission preferences among non-users.
2. To evaluate the impact of driving capability and experience on transmission choices.
3. To assess the role of brand perception and reliability in shaping consumer preferences.
4. To analyse the influence of economic and social factors on purchase decisions.
5. To provide actionable insights for manufacturers to better cater to the needs of this consumer segment.

D. RESEARCH METHODOLOGY

Data Collection

The data used in this study was collected from 197 respondents through a structured questionnaire among non-users. Variables included demographic information (age, gender, income), driving capability, car ownership, brand preference, and transmission choice. The survey was designed to capture both qualitative and quantitative data, ensuring a comprehensive understanding of the factors influencing transmission preferences.

Analytical Techniques

Descriptive statistics, correlation analysis, and cross-tabulation methods were employed to analyse the data. Pearson correlation coefficients were used to measure relationships between variables, while frequency tables provided insights into distribution patterns. Crosstabulation analysis helped identify associations between transmission preference and influencing factors such as economic and social influences.

Advanced statistical techniques, including regression analysis, were used to determine the predictive power of specific variables, such as income and driving experience, on transmission preference.

Sample Characteristics

- **Age**: Majority of respondents were aged 31-40 years (36%).
- **Gender**: Predominantly male (89.3%).
- **Educational Qualification**: 66.5% were postgraduates.
- **Annual Income**: 54.8% earned above 12 Lakh annually.
- **Driving Capability**: 93.9% reported driving capability.
- **Car Ownership**: 51.3% did not own a car.

Data Interpretation

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-30	54	27.4	27.4	27.4
	31-40	71	36.0	36.0	63.5
	41-50	47	23.9	23.9	87.3
	51-60	16	8.1	8.1	95.4
	Above 60	9	4.6	4.6	100.0
	Total	197	100.0	100.0	

The largest age group is 31-40 years (36%), followed by 18-30 years (27.4%) and 41-50 years (23.9%).Smaller groups include 51-60 years (8.1%) and Above 60 years (4.6%).This distribution suggests a predominance of respondents in the age range of 31-40 years.

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	176	89.3	89.3	89.3
	Female	21	10.7	10.7	100.0
	Total	197	100.0	100.0	

A significant majority of the respondents are male (89.3%), while females constitute 10.7%.This gender distribution indicates a male-dominated sample.

Educational Qualification					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Others	3	1.5	1.5	1.5
	Under-graduate	2	1.0	1.0	2.5

	Graduate	56	28.4	28.4	31.0
	Post-graduate	131	66.5	66.5	97.5
	Diploma	5	2.5	2.5	100.0
	Total	197	100.0	100.0	

Most respondents are post-graduates (66.5%), followed by graduates (28.4%).A very small proportion of respondents have a diploma (2.5%), are undergraduates (1%), or have others educational qualification (1.5%).This indicates a highly educated sample.

Annual Income					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 5 Lakh	26	13.2	13.2	13.2
	Between 5 to 8 Lakh	18	9.1	9.1	22.3
	Between 8 to 12 Lakh	45	22.8	22.8	45.2
	above 12 Lakh	108	54.8	54.8	100.0
	Total	197	100.0	100.0	

The largest income group earns above 12 Lakh annually (54.8%), followed by those earning between 8 to 12 Lakh (22. 8%).Smaller groups include those earning below 5 Lakh (13.2%) and between 5 to 8 Lakh (9. 1%).This shows a sample with a relatively high annual income.

Driving Capability					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	7	3.6	3.6	3.6
	Yes	185	93.9	93.9	97.5
	Learning	5	2.5	2.5	100.0
	Total	197	100.0	100.0	

A vast majority of respondents have driving capability (93.9%), with a small percentage learning (2.5%) or not capable of driving (3.6%).

Driving Experience					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NO	7	3.5	3.5	3.5
	Less than 1 Yr	42	21.3	21.3	24.8
	Between 1 to 5 Yrs	48	24.3	24.3	49.1
	More than 5 Yrs	100	50.9	50.9	100.0
	Total	197	100.0	100.0	

Half of the respondents have more than 5 years of driving experience (50.9%), followed by those with 1 to 5 years (24.3%) and less than 1 year (21.3%).A smaller proportion has no driving experience (3.5%).This indicates a sample with considerable driving experience.

Car Ownership					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	101	51.3	51.3	51.3
	May be letter	18	9.1	9.1	60.4
	Only MT	78	39.6	39.6	100.0

	Total	197	100.0	100.0	

More than half of the respondents do not own a car (51.3%), while 39.6% own only an MT (manual transmission) car.A small proportion may own a car later (9.1%). This shows a mix of car ownership among the respondents.

Brand Choice					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Maruti	64	32.5	32.5	32.5
	Hyundai	36	18.3	18.3	50.8
	Tata	35	17.7	17.7	68.5
	Mahindra	20	10.1	10.1	78.6
	Renault	6	3	3	81.6
	Nissan-Datsun	6	3	3	84.6
	Toyota	22	11.1	11.1	95.7
	Others	8	4.3	4.3	100.0
	Total	197	100.0	100.0	

The most preferred car brand is Maruti (32.5%), followed by Hyundai (18.3%) and Tata(17.7%). Other brand preferences include Renault (3%), Nissan-Datsun (3%), Mahindra (10.1%), and Toyota (11%).This indicates diverse brand preferences with a leaning towards Maruti.

Model					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Hatch Back	101	51.3	51.3	51.3
	Sedan	19	9.6	9.6	60.9
	Compact SUV	47	23.8	23.8	84.7
	SUV	19	9.6	9.6	94.3
	others	11	5.7	5.7	100.0
	Total	197	100.0	100.0	

The most common car model among respondents is Hatch Back (51.3%), followed by Compact SUV (23.8%). Some preferences include Sedan (9.6%) and SUV (9.6%).This shows a preference for smaller car models, particularly Hatchbacks including premium one.

Preference_Purchase					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	DCT	8	4.1	4.1	4.1
	AT/CVT	27	13.7	13.7	17.8
	AMT	73	37.1	37.1	54.8
	MT	84	42.6	42.6	97.5
	IMT	5	2.5	2.5	100.0

	Total	197	100.0	100.0	

The highest preference for car purchase is for MT (manual transmission) (42.6%), followed by AMT (37. 1%).Smaller preferences include AT/CVT (13.7%), DCT (4.1%), and IMT (2. 5%).This suggests a strong preference for manual transmission cars among respondents.

Cross Tabulation

The crosstabulation analysis was performed on the data set containing Preference Purchase and various influencing factors such as Relative Advantage, Economic Factor, Reliability Perception, Social Influence, Understanding of Technology, Car Ownership, Driving Capability, Driving Experience, Annual Income and Educational Qualification. The objectives are to identify patterns and relationships between these factors and the preference for different types of car transmissions (DCT, AT/CVT, AMT, MT, IMT).

Preference Purchase Vs Relative Advantage														
		Relative Advantage												Total
		25.00	27.00	28.00	29.00	30.00	31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	
Preference_Purchase	DCT	0	0	0	0	0	1	2	2	2	0	1	0	0	8
	AT/CVT	0	0	2	0	2	1	6	3	5	1	4	2	1	27
	AMT	0	0	1	5	4	5	10	11	15	10	9	3	0	73
	MT	1	1	1	5	5	6	6	15	14	11	9	6	4	84
	IMT	0	0	0	0	0	0	1	0	2	2	0	0	0	5
Total		1	1	4	10	11	13	25	31	38	24	23	11	5	197

Observation: AMT (Automated Manual Transmission) and MT (Manual Transmission) have the highest counts across various levels of Relative Advantage.

Explanation: Users who perceive a higher relative advantage are more likely to prefer AMT (Automated Manual Transmission) and MT (Manual Transmission). The even distribution in MT suggests a consistent preference across different levels of perceived advantage

Preference_Purchase vs Economic_Factor															
		Economic_Factor													Total
		11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	
Preference_Purchase	DCT	1	0	0	0	0	1	1	2	2	1	0	0	0	0	8
	AT/CVT	0	0	0	1	2	1	2	4	9	3	2	3	0	0	27
	AMT	0	0	1	0	4	11	8	9	8	14	8	5	4	1	73
	MT	0	1	0	1	1	7	15	12	14	15	11	6	1	0	84
	IMT	0	0	0	0	0	0	1	1	0	3	0	0	0	0	5
Total		1	1	1	2	7	20	27	28	33	36	21	14	5	1	197

2. Preference Purchase and Economic Factor

Observation: AMT and MT dominate at various Economic Factor levels.

Explanation: Economic factors significantly influence the preference for AMT(Automated

Manual Transmission) and MT(Manual Transmission). Individuals who find economic factors favorable tend to prefer these transmission types.

Preference_Purchase vs Reliability_Perception													
		Reliability_Perception											Total
		15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	27.00	
Preference_Purchase	DCT	0	0	1	0	2	3	0	1	0	1	0	8
	AT/CVT	0	0	2	5	7	1	5	4	2	1	0	27
	AMT	3	3	3	5	14	8	7	12	10	8	0	73
	MT	3	1	7	12	10	12	13	4	14	7	1	84
	IMT	0	0	1	0	2	0	0	1	0	1	0	5
Total		6	4	14	22	35	24	25	22	26	18	1	197

3.Preference_Purchase and Reliability_Perception
Observation: AMT and MT dominate across different levels of Reliability Perception.
Interpretation: Reliability perception is a key factor for AMT and MT preferences. The stable preference for MT irrespective of changes in reliability perception indicates its reliability in the eyes of respondents.

Preference_Purchase vs Social_Influence															
		Social_Influence													Total
		10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	
Preference_Purchase	DCT	0	0	0	0	0	3	4	0	1	0	0	0	0	8
	AT/CVT	0	1	1	8	3	1	7	2	3	0	0	1	0	27
	AMT	3	2	5	9	7	14	12	5	9	3	0	3	1	73
	MT	6	4	4	6	12	13	11	10	10	6	1	1	0	84
	IMT	0	0	0	0	1	0	0	2	1	1	0	0	0	5
Total		9	7	10	23	23	31	34	19	24	10	1	5	1	197

4.Preference_Purchase and Social Influence
Observation: AMT and MT have higher counts at various levels of Social Influence.
Interpretation: Social influence impacts the preference for AMT and MT. Strong social influence likely leads to increased preference for these transmission types.

Preference_Purchase * Understanding_Technology Crosstabulation								
		Understanding_Technology						Total
		2.00	3.00	4.00	5.00	6.00	7.00	8.00	
Preference_Purchase	DCT	0	0	3	5	0	0	0	8
	AT/CVT	2	8	5	9	2	1	0	27
	AMT	2	15	22	20	8	6	0	73
	MT	3	17	21	24	14	5	0	84
	IMT	0	0	2	1	1	0	1	5
Total		7	40	53	59	25	12	1	197

5. Preference of Purchase by Understanding of Technology

Observation: AMT and MT show higher counts across different levels of Understanding Technology.

Interpretation: A better understanding of technology correlates with higher preferences for AMT and MT. The consistent counts for MT suggest a stable preference regardless of technological understanding.

Preference_Purchase Vs Car_Ownership					
		Car_Ownership			Total
		No	May be letter	Only MT	
Preference_Purchase	DCT	4	1	3	8
	AT/CVT	18	1	8	27
	AMT	37	5	31	73
	MT	39	11	34	84
	IMT	3	0	2	5
Total		101	18	78	197

6. Preference of Purchase and Car Ownership

Observation: AMT and MT have higher counts, with MT having a slightly higher edge.

Interpretation: Car ownership status affects transmission preference, with non-owners and those with only MT cars preferring Manual Transmission cars which is followed by Automated Manual Transmission Cars.

Preference Purchase Vs Driving Capability					
		Driving_Capability			Total
		No	Yes	Learning	
Preference_Purchase	DCT	1	7	0	8
	AT/CVT	3	24	0	27
	AMT	2	69	2	73
	MT	0	82	2	84
	IMT	1	3	1	5
Total		7	185	5	197

7. Preference of Purchase and Driving Capability

Observation: AMT and MT dominate, with the majority of counts under the Yes category for driving capability.

Interpretation: Respondent with driving capability tend to prefer AMT and MT cars.

Preference_Purchase VS Driving_Experience						
		Driving_Experience				Total
		NO	Less than 1 Yr	Between 1 to 5 Yrs	More than 5 Yrs	
Preference_Purchase	DCT	2	1	1	4	8
	AT/CVT	3	4	5	15	27
	AMT	5	12	22	34	73

	MT	11	9	19	45	84
	IMT	0	2	1	2	5
Total		21	28	48	100	197

8. Preference of Purchase and Driving Experience
Observation: Higher counts for AMT and MT across all levels of driving experience.
Interpretation: Respondents with more driving experience tend to prefer MT and AMT cars.

Preference_Purchase Vs Annual Income						
Count						
		Annual Income				Total
		Below 5 Lakh	Between 5 to 8 Lakh	Between 8 to 12 Lakh	above 12 Lakh	
Preference_Purchase	DCT	1	1	4	2	8
	AT/CVT	1	3	4	19	27
	AMT	9	8	18	38	73
	MT	13	6	19	46	84
	IMT	2	0	0	3	5
Total		26	18	45	108	197

9.Preference of Purchase and Annual Income
Observation: AMT and MT have higher counts across different income levels.
Interpretation: Higher income individuals tend to prefer MT and AMT cars.

Preference_Purchase Vs Educational Qualification							
Count							
		Educational Qualification					Total
		0	Under-graduate	Graduate	Post-graduate	Dipolma	
Preference_Purchase	DCT	0	0	5	3	0	8
	AT/CVT	1	1	4	20	1	27
	AMT	1	0	20	50	2	73
	MT	1	1	26	54	2	84
	IMT	0	0	1	4	0	5
Total		3	2	56	131	5	197

10. Preference_Purchase by Educational Qualification
Observation: Higher counts for AMT and MT among Graduate and Post-graduate categories.
Interpretation: Higher educational qualifications correlate with a preference for MT and AMT cars .
The crosstabulation analysis exposes that AMT and MT are the most preferred transmission types across various influencing factors. Economic factors, reliability perception, social influence, understanding of technology, and personal attributes like driving capability,

experience, income level, and educational qualification significantly influence the preference for these transmission types. Specifically, individuals with higher economic status, better understanding of technology, greater driving experience, and higher educational qualifications show a strong preference for AMT and MT.

E. FINDINGS

1. **Economic Factors**: Consumers perceiving favourable economic conditions showed higher preferences for AMT and MT. Respondents in higher income brackets tended to favor convenience-oriented options.
2. **Reliability Perception**: AMT and MT preferences were influenced significantly by reliability considerations. Manual transmissions, in particular, were favored for their perceived durability and low maintenance costs.
3. **Social Influence**: Strong social influence correlated with higher preferences for AMT and MT. Peer recommendations and societal norms played a critical role.
4. **Driving Experience**: Experienced drivers (more than five years) predominantly preferred MT and AMT. This reflects the confidence of experienced drivers in handling both manual and automated systems.

F. DISCUSSION AND IMPLICATIONS

The findings highlight key trends and preferences among non-users of AT/AMT cars. Economic considerations, driving capability, and brand perception emerged as critical factors. The preference for manual transmission aligns with cost-efficiency and control, while AMT appeals to those seeking a balance between convenience and affordability. Gender and age distributions further reveal the demographic profiles likely to influence future market trends.

The study also underscores the importance of addressing barriers to adoption for AT/AMT systems. Misconceptions about cost, reliability, and performance must be addressed through targeted marketing campaigns. Additionally, offering diverse financing options could help mitigate economic constraints.

Manufacturers can leverage these insights by offering diverse options tailored to different consumer segments. For instance, focusing on reliability and cost-effectiveness can attract budget-conscious consumers, while integrating advanced features can appeal to tech-savvy buyers. Expanding the range of hybrid and electric vehicles equipped with AMT/AT systems

could also cater to environmentally conscious customers.

G. CONCLUSION

This study provides valuable understandings into the preferences and factors influencing non-users of AT/AMT cars. Significant correlations between income, driving experience, and brand choice underline the complexity of consumer decision-making. By understanding these dynamics, manufacturers can develop strategies that resonate with diverse consumer needs.

Future research could explore the impact of emerging technologies, such as autonomous driving, on transmission preferences. Additionally, longitudinal studies tracking changes in consumer preferences over time could offer deeper insights into evolving market trends.

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