

# Quantifying the Factors Influencing Buyer's Purchase Decision in the Light Commercial Vehicle: A Study Conducted In the Pune Region

Siddharth Sengar

**Abstract:** This study is to determine the customer preference when buying Light commercial Vehicle with various attributes like Mileage, Performance, Serviceability, Availability of spare parts, Technology, Down payment and to know which of the above attributes accolade and hike the sales of the vehicle. The duration of this study was done between the months of March-April of 2018. For this study, the Primary data had been collected from active users as well as customers with the help of a well-structured questionnaire. Buyers and Users of Light Commercial Vehicles in the Pune region were included for this study. Simple Random method of Sampling has been used, and 355 Buyers and Users were included for this study. Correlation, Factor, and regression analysis were used with the help of SPSS Software. The result obtained shows that the customer preference on the Light Commercial Vehicle has a high impact on the attributes like capacity loading, spare parts availability, Mileage, after sales service and Down payments.

**Keywords-** Principal Component Analysis, Percentage Analysis, Correlation Matrix.

## I. INTRODUCTION

Consumer preferences refer to individual interests or tastes, which can be determined by the usage of various types of goods by consumers. They allow consumers to rank these goods based on their usage derived by their consumption. These preferences need not be influenced by income and prices. An individual's interests or tastes need not necessarily depend upon one's capability to buy these products. Consumer preference sets the base for customer demand. Change in price, customer reaction to the change in the price, customer readiness to pay for the product, in turn affect profitability, which will help to understand customer behaviour. Based on customer requirements, customer preferences over light commercial vehicles depends on various factors. These factors include service quality, latest technology, and availability of vehicles, relationship management, resale value and comfort which would play a major role in determining customer preference.

## II. OBJECTIVES OF RESEARCH

- To identify the factors which influence consumer decision making process of Light Commercial Vehicles.
- To study association between demographic variables and different attributes of Light Commercial Vehicles.

## III. LITERATURE REVIEW

Though the literature in this area is plenty, the proposed study tries to incorporate some of the significant work related to various factors that influence a customer's buying behavior. Mrs. Beena John; Dr. S. Pragadeeswaran (2013) in their study identified that many national and international companies in Automobile business sector gives the customers many options to consider as to which brand they should prefer since they all provide similar products and also customers want a product which has a unique differentiation from other products in the market as their study highlights the parameters which influence purchase preference behavior patterns of the customer regarding passenger automobile small car owners in Pune City. Similarly, selection of brand is also an important factor which is preferred by most of the customer. Brands have been frequently studied and redefined in the marketing literature and there are numerous definitions for 'brand'. A definition of a brand by The American Marketing Association (AMA) in the 1960s (Keller, 1998:2) is "a name, term, sign, symbol, or design, or a combination of them, intended to identify the goods and services of one seller or group of sellers and differentiate them from those of competitors." For customers, when deciding between brands that are in the market will contain brands as an element to define the potentials of the product rather than employing their time to enhance their knowledge of the product in information searching activities. Therefore, consumers use brands as cues to make decisions to purchase or try products (Ger et al., 1993). In regard, Zeenat Ismail, Sarah Masood and ZainabMehmoodTawab (2012) conducted their study on the factors affecting consumer preference of international brands over local brands and they found out that the consumer has this perception that a branded product of low price is of low quality. KavitaDua and SavitaGautam (2014) had found out in their study that customers are mostly satisfied with the price, safety, design, interior space, mileage, comfort level, status brand name, spare parts, and after-sale service.

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Hence satisfaction varies from product to product depending on people to people, thus the importance of customer satisfaction in strategy development for customers and market-oriented is one thing that any company cannot overlook. Dr. Rajinder Singh (2011) conducted a study on "An empirical review of the product and customer satisfaction of Tata commercial vehicles" to find out the quality of service, performance of Tata motors and to detect the customer opinion towards Tata motors with the sample size of 100 customers and used the statistical techniques tables, bar charts etc.

This study concluded that consumer prefers the Tata commercial vehicles due to its brand image, easy availability of service stations, better quality, quality of spare parts etc. Dr. R. Renganathan, Dr. C. Vijayabanu, Dr. V. Srinivasakumar, Dr. V. Vijayanand, Vijayasumitha V (2018) conducted a study on Commercial vehicle maintenance and repair services from the user perspective in this study they revealed that the need and importance of after-sales service in the automobile industry are very crucial. TVS & Sons associated with Ashok Leyland being the corporate leader for Heavy Commercial Vehicles (HCV) & Intermediate Commercial Vehicles (ICV) range of products in Kerala, Tamil Nadu, Madhya Pradesh and Karnataka. Commercial Vehicles like Trailer, Tipper, Truck, Buses, and model the warranty ranges from 1 to 3 years. Owners and drivers of the commercial vehicle were asked some questions and responses were recorded which helped to understand their opinion of Commercial Vehicles about the services of TVS outlet, Trichy.

Joyce M Dargee (2000) conducted a study on the effect of income on car ownership: Evidence of asymmetry. This paper highlights the Sunder effect of income on car ownership. It is hard to understand the effect of falling income on car ownership although there is that rising income sometimes lead to higher car ownership the object of this study is to test statistical that demand response symmetrically to rise and falling income For which econometric model relating household car ownership to income, car prices, number of adults and children in household etc. are employed to separately estimate elasticity with respect to rising and falling income. After all the tests the result indicated that car ownership response more strongly to rise in income compared to falling income does which provides a piece of evidence that elasticity of income declines with increasing car ownership.

D. Arokiaraj and Dr. M. Banumathi (2014) conducted a study on Factor influencing the purchase decision of passenger cars in Puducherry with the sample of 100 automobile user and they found out that customer work mostly focused on performance and technical features which were given the most importance while environmental factors and safety were given the least importance. Out of the 100 people surveyed, 30% responded preferred the white color car, 26% of people preferred Maruti car followed by Tata 23%, and small size car usage was found around 45%. Engine features and its efficiency, brand image and comfort driving were also major factors influencing the Purchase Decision of passenger cars. Thus there is a need to create

awareness among customers regarding environmental and safety usages.

Dr. Ronald Mani and Mrs. Laxmi Singh (2016) proposed a study in which he found that mileage plays a very important role. In this study, a structured questionnaire was used for collecting primary data from those who owned small cars in the city of Allahabad. Using Convenience sampling, a sample of 100 owners were selected and in order to reduce errors, a personal interviewing method was used for gathering the required information. A significant percentage of the respondents were Males (83%) and the majority of them belonged to the service class segment (64%). The result revealed that people had varying opinions on different features. However, a detailed analysis revealed that Mileage was the most important factor most of the respondents (56%) which were closely followed by the price of the vehicle and engine power whereas factors such as financing schemes and resale value had less influence on the decision making.

Dr. Ajoy S Joseph and Dr. H Y Kamble (2011) conducted a study in which they investigate the buying behavior of Passenger car customers towards auto finance in their research a structured questionnaire was circulated among 525 passenger car owners from Dakshina Kannada district in Karnataka. A pilot study was initially performed on 25 respondents to filter out the errors and to refine the model. The respondents consisted of professionals, public and private sector employees, entrepreneurs and agriculturalists and they were divided into three groups based on the price range of the vehicle. The study revealed that the availability of finance has helped many a family in purchasing a car for their day-to-day activities with most of them preferring quality service with minimum time from the banks. Also, low-interest rates and absence of latent charges were other factors that had a significant impact on the final decision.

### IV. RESEARCH METHODOLOGY

In this study, the exploratory type of research design is used, which includes questionnaires and expert interviews of different kinds of opinions from the buyers and users. The exploratory research design is used since there are very less amount of earlier studies done on the topic. The data gathered from the people are examined with the assistance of various factual instruments, to discover the perception factors of light commercial vehicle users and buyers. The simple random sampling method is used to collect the data from the users and buyers. For the study sample size of users and buyers combined 355 are chosen and their perception factors were obtained with a questionnaire. The analysis has been carried out through percentage analysis, Regression and correlation analysis.

- A. Percentage analysis: Percentage analysis along with the mapping is done using excel so that the most preferred scheme can be found out.

- B. Factor analysis: Factor analysis has been done using principal component methods to identify the most important factors consumers preferring.
- C. Correlation analysis: Correlation analysis has been performed on the factors to identify a positive correlation among the factors.
- D. Regression analysis: Regression analysis is performed to quantify the relation between the significant factors.

40-60 years with the percentage level of 57 %, out of 355 respondents who own Light commercial vehicles were men with the percent level of 97 % as compared to women in the region and for the respondents were taken equally from urban and rural areas with the percentage level of 50 % . The income level of the customers mostly falls between 6-10 lakhs per annum with the percentage level 42 % and 37 % falls under 2- 5 lakhs per annum and the remaining fall above 10 lakhs per annum.

**V. DATA ANALYSIS AND INTERPRETATION**

*A. Hypothesis*

**H0:** Null Hypothesis      **H1:** Alternative Hypothesis

H0: Influencing Factors identified depends on the purchase decision of LCV.

H1: Influencing Factors identified does not depend upon the purchase decision of LCV.

Below Table 1-shows that Out of 355 respondents the education level of most of them falls under HSSC (12th) level with the percentage of 34 % followed by SSC level with the percentage of 29%, the age of respondents who own Light Commercial Vehicle mostly falls under the age of

From the figure 1 we can infer that the percentage of businessman in the Pune region with >10 Lakh is having HSSC background i.e. 16 persons than with the income group of 2-5 Lakh belongs to SSC background i.e. 8 persons and finally people with 6-10 Lakh is from again HSSC background i.e. 29 persons where from the urban region the businessman population was 23% which was higher than those business people residing in rural areas 19%. We can also infer that the percentage of self-employed in Pune region with >10 Lakh is having Diploma background i.e. 5 persons than with the income group of 2-5 Lakh belongs to HSSC background i.e. 47 persons and finally people with 6-10 Lakh is from again Diploma background i.e. 32 persons similarly whereas research found that 31% of self-employed people reside in rural areas in the comparison with urban area i.e. 27%.

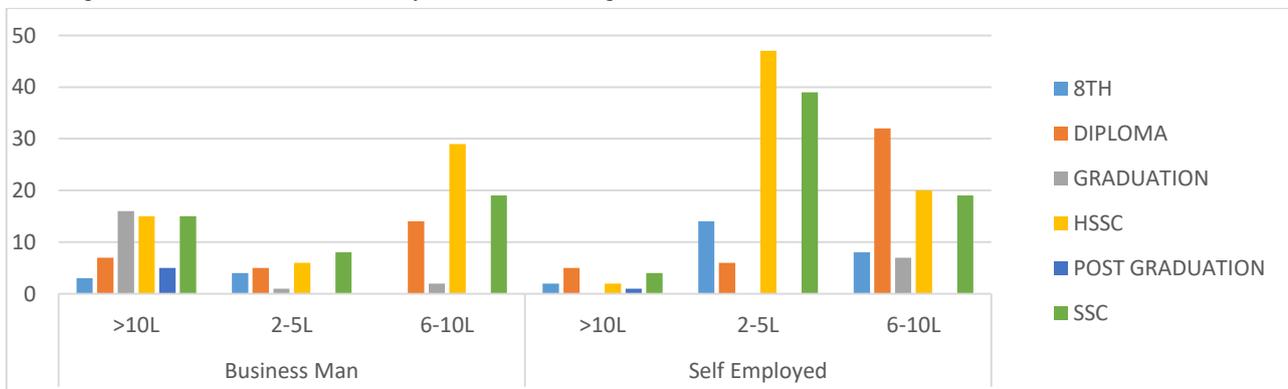


Figure1: Percentage Analysis of Demographic Variable

Variable	Number of Respondent	Percentage of Respondent (%)
Age		
20-40	132	37
40-60	204	57
>60	19	5
Education		
8 <sup>th</sup>	31	9
SSC	104	29
HSSC	119	34
Diploma	69	19
Graduate	26	7
Post graduate		

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Occupation		
Business	149	42
Self-Employed	206	58
Gender		
Male	344	97
Female	11	3
Total	355	
Residence		
Urban	178	50
Rural	177	50
Total	355	

Table 1: Percentage Analysis of Demographic Variable

After comparing both the occupation we came to the conclusion that people who are self-employed with the

### MOST PREFERRED RESPONSE

	MOST	INDIVIDUAL	OVERALL
TATA	246	0.692958	33.42%
M&M	160	0.450704	21.74%
PIAGGIO	206	0.580282	27.99%
ASHOK	124	0.349296	16.85%
LEYLAND			
TOTAL	355	2.073239	100.00%

minimum qualification of HSSC and SSC are the major users of the light commercial vehicle in the Pune region.

Banners & Flexi	99	28%
News Paper	62	17%
Social Media	1	0%
T.V. advertisements	29	8%
Word of mouth	164	46%
	355	100%

Table 2. Percentage analysis of Advertisement Channel

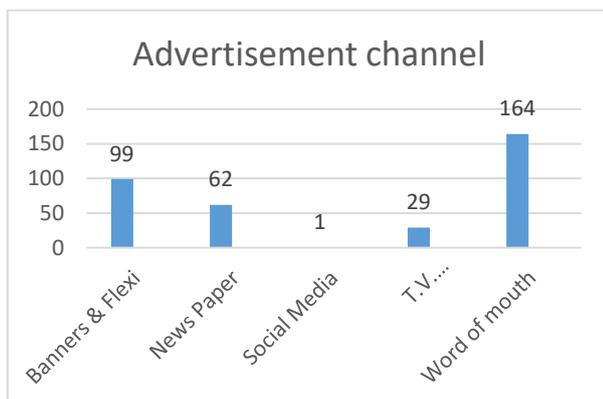


Figure 2. Graph of Advertisement Table

From the above table 2, it is inferred that out of 355 respondents, 46% respondents purchased vehicles through word of mouth, 28% respondents purchased vehicles from

after seeing advertisement through banners and flex' (Hoardings), 17% respondents purchased vehicles after seeing the article in daily Newspapers in Pune region. The graphical representation shows that approximately 50% of all the respondents have purchased the vehicle through a reference from the friend and family.

Table 3 most preferred response

From the above table 3, it was found that out of 355 respondents, 33.42% respondents gave preference to TATA Motors, where 27.99% respondents preferred vehicles from Piaggio 21.74% respondents preferred Mahindra & Mahindra in Pune region. Therefore most of the respondents purchased Light commercial vehicles from TATA Motors rather than other brands.

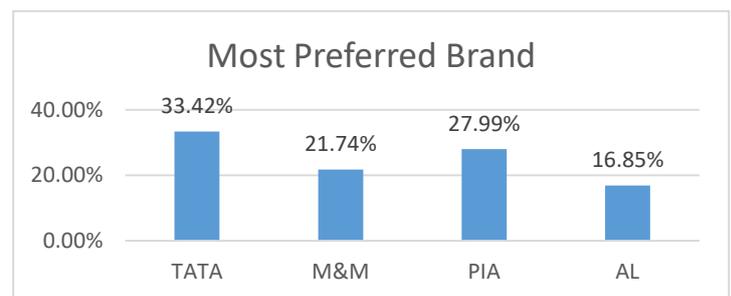


Figure 3. Graph of Most preferred brand

	Availability of spare parts	Technology	Loading Capacity	After sale service	Mileage of vehicle	Down payment	Recommendation from known	Service Life	Brand
Availability of spare parts	1.000	.785	.785	.549	.385	.518	.543	.829	.374
Technology	.785	1.000	.755	.661	.564	.608	.736	.820	.624
Loading Capacity	.785	.755	1.000	.393	.336	.750	.627	.740	.381
After sale service	.549	.661	.393	1.000	.653	.166	.586	.612	.704
Mileage of vehicle	.385	.564	.336	.653	1.000	.137	.523	.474	.772
Down payment	.518	.608	.750	.166	.137	1.000	.578	.574	.250
Recommendation from known	.543	.736	.627	.586	.523	.578	1.000	.651	.686
Service Life	.829	.820	.740	.612	.474	.574	.651	1.000	.499
Brand	.374	.624	.381	.704	.772	.250	.686	.499	1.000

Table 4 Factor Analysis Correlation Matrix

From the above determinants of the correlation matrix table 4, we can infer that the availability of spare parts is positively correlated with loading capacity, technology, and service life. Whereas technology is positively correlated with loading capacity, the recommendation from another, service life and brand. On the other hand Loading capacity

is found positively correlated with down payment and Recommendation from known is positively correlated with the brand. The correlation coefficient between a variable and itself is always 1, hence the principal diagonal of the correlation matrix contains 1s. The correlation coefficients above and below the principal diagonal are the same.

	Rotated Component Matrix <sup>a</sup>		
	Component		
	1	2	3
Brand	.911		
Mileage of vehicle	.867		
After sale service	.753	.509	
Availability of spare parts		.896	

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Service Life		.781	
Technology		.646	
Down payment			.906
Loading Capacity		.640	.655
Recommendation from known	.609		.630

Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization (a) Rotation converged in 7 iterations.

## B. Regression Analysis

Table 5 Principal Component Matrix

From the principal component analysis table 5, 9 factors were brought down to 3 components shown in the above table these are those factors which directly affects Buying decision of light commercial vehicle and these factors are grouped into the components i.e. Component 1 is vehicle information which includes Brand, Mileage, After Sale service because customers are mostly attracted due to these factors because these lead to major cost of the use of these vehicles the lesser the cost it makes customer more interested towards the vehicles. Whereas Component 2 is identified as reliable sources which include Availability of spare parts, service life, and technology of the vehicle because the owners of these vehicles are relying on these to make livelihood the faster the spare parts are available, longer service interval and new technology will help them to increase output from these vehicles which lead to benefit to customers and Component 3 is identified as Profitability which includes down payment and loading capacity because the overall income depends on the money spent and money earned the higher the loading capacity earnings also increases as well as when down payment is lower the financial liability will be less which leads to overall income growth.

Considering alpha as 0.5 and Y as Brand , from Table 6 ,

$$\text{Brand} = -1.25561 - 0.1772(\text{Availability of spare parts}) + 0.1851(\text{Technology}) + 0.00734(\text{Loading capacity}) + 0.2818(\text{After sales service}) + 0.5146(\text{mileage of vehicle}) - 0.0252(\text{Down Payment}) + 0.4642(\text{Recommendation from known}) - 0.04532(\text{Service Life})$$

Factors available are Loading capacity, Down Payment and Service Life.

Considering alpha as 0.5 and Y as Recommendation from known

Recommendation from Other from Table 7

$$\text{Recommendation from known} = 0.8584 - 0.0768(\text{Availability of spare parts}) + 0.159(\text{Technology}) + 0.098(\text{Loading capacity}) + 0.0953(\text{After sales service}) - 0.050(\text{mileage of vehicle}) + 0.20655(\text{Down Payment}) + 0.095007(\text{Service Life}) + 0.29005(\text{Brand})$$

Factors Available are Loading capacity, Availability of spare parts

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	-1.25561	0.170502	-7.36418	1.31484E-12	-1.590961937	-0.92026	-1.59096	-0.92026
Availability of Spare Parts	-0.1772	0.050452	-3.51228	0.000503182	-0.276432893	-0.07797	-0.27643	-0.07797
Technology	0.185108	0.069474	2.664422	0.008073188	0.048463631	0.321753	0.048464	0.321753
Loading Capacity	0.007348	0.064915	0.11319	0.909945324	-0.120329343	0.135025	-0.12033	0.135025
After Sales Service	0.281816	0.051081	5.517098	6.76335E-08	0.181348826	0.382284	0.181349	0.382284
Mileage of Vehicle	0.514604	0.045041	11.42534	7.23194E-26	0.426016051	0.603192	0.426016	0.603192
Down Payment	-0.02512	0.054597	-0.46006	0.645759479	-0.132503061	0.082266	-0.1325	0.082266
Recommendation from Others	0.464216	0.063268	7.337314	1.5645E-12	0.339777799	0.588654	0.339778	0.588654
Service Life	-0.04532	0.073627	-0.61553	0.538606845	-0.190133354	0.099493	-0.19013	0.099493

Table 6 Brand Regression Output

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.858492	0.137408	6.247756	1.22E-09	0.588232	1.128753	0.588232	1.12875

Availability of Spare Parts	-0.0768	0.040374	-1.90231	0.057961	-0.15621	0.002605	-0.15621	0.00261
Technology	0.159951	0.054806	2.918498	0.003747	0.052156	0.267746	0.052156	0.26775
Loading Capacity	0.098011	0.051042	1.92022	0.055652	-0.00238	0.198402	-0.00238	0.1984
After Sales Service	0.095353	0.041802	2.281061	0.023152	0.013135	0.177572	0.013135	0.17757
Mileage of Vehicle	-0.05074	0.041693	-1.21701	0.224431	-0.13274	0.031263	-0.13274	0.03126
Down Payment	0.206559	0.041717	4.951406	1.15E-06	0.124508	0.288611	0.124508	0.28861
Service Life	0.095007	0.058006	1.637874	0.102357	-0.01908	0.209096	-0.01908	0.2091
Brand	0.29005	0.039531	7.337314	1.56E-12	0.212299	0.3678	0.212299	0.3678

Table 7 Recommendation from known Regression Output

## VI. CONCLUSION

The study in this article focused to understand the customer perception towards the light commercial vehicle in the urban and rural region and is intended to help marketing managers to increase sales of a light commercial vehicle in both of the regions. The respondents in the Pune city who owns Light commercial vehicle have their education up to HSSC level with 34%, the age of respondents who owns the Light commercial vehicle majority falls under the age of 40- 60 with 57 % adding to that most of them are male respondents and the total 355 light commercial vehicle user customers were taken, and Simple random sampling was used for commercial vehicle user. The major finding of the proposed study is that factors like availability of spare parts, loading capacity, down payment and brand, mileage of the vehicle, after sale service are the important contributors to the buyers while making purchasing decisions of the vehicle. Similarly, word of mouth and banners and flex are advertisement channel components that majorly influencing factors to the decision against the purchase of the vehicle. However, the study in this article is limited to a particular geographical region in India. The scope of the study was to find out various contributing factors when decisions are made from the perceive of the light commercial vehicle users.

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