

Online App-Based Cabs: - Key factors influencing customers' usage behavior from data analytics perspective

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ABSTRACT

India being an evolving nation, comprises both urban and rural population. Although, major part of the population comprises middle and lower-class people. Hence, people are more likely to make use of public utilities being offered to them. Considering the transportation, or the people commuting from one place to another, major part of the population rely on public transports like buses, taxis cabs etc. With burgeoning urbanization along with trades and commerce, huge modification has been noticed in the field of transportation. People are no more required to wait hours and hours to get a bus to their workplace with that excessively congested and hectic travelling experience. With time, transport industry has come up with innovative and improvised ways to pace up with the needs of the commuters by providing them comfortable and hassle-free public as well as personal rides. One of these are online cabs or taxis, which provides smooth and convenient rides by providing major other perks as well, which includes, cost effective rides, ease of booking, flexible and safe rides and many more. Therefore, it is necessary to understand the behavior of various customers to acknowledge various attributes responsible for influencing the decisions of these customers. Hence, this study is directed towards understanding the motivating factors responsible for influencing the choices and perception of the customers towards online cabs and their services.

Total 732 responses were collected via structured questionnaire, based on various demographic factors like age, gender, income etc. It has been emerged that satisfaction of the commuters rely on five different components named, **“Utility and Privileges”**, **“Rewards”**, **“Car Amenities”**, **“Commuters' Loyalty”** and **“Drivers' Proficiency**. While the impact factor is high towards **Utility and Privileges**, it is low towards **Rewards** and negative towards **Car Amenities**.

INTRODUCTION

The whole vehicle framework is a basic piece of urbanization, which contributes towards the improvement of exchange and trade in the country. Data Innovation (IT) based transportation started during the '80s, including GPS, independent and electronic vehicles, and some more. With the appearance of the web and innovation transport industry has encountered a blast in the market as it facilitated the driving experience of the day-by-day suburbanites, in this manner adding to propelling urbanization of the country. Digitalized transportation framework permitted commuters to get to any information and data in regards to taxis and cabs alongside numerous different offices (financial or non-money related), (Balustrade and Stead, 2004).

In a couple of years, taxis and taxi administrations have advanced into one of the significant transportation structures by giving advantageous and agreeable rides to commuters. All things considered; the transportation business has matched up to its means to the requirements of the commuters quite well, subsequently adding to the progression of the whole transportation industry (Gupta & Tomar, 2018). The extension of the internet and continuous information sharing techniques have made it advantageous to utilize innovative viewpoints to get innovation in the transportation area (Thomas & Rajeev, 2018). The conventional call taxi administrations have been changed into versatile application-based taxis and taxi administrations with soaring development of the reception and use of internet providers and brilliant contraptions (Gupta & Tomar, 2018).

Studies accessible in the literature portray how the conventional taxi and taxi organizations changed with the use of man-made intelligence-based taxi and taxi administrations (Cramer & Krueger, 2016). It has been distinguished that with the expansion of new strategies like straightforward costs, adaptable instalment techniques, simple and speedy rides, the vast majority of the clients have begun to utilize application-based taxi administrations (Phuong & Trang, 2018). Outrageous changes taken by portable application-based taxi administrations have affected Indian transportation administrations. It's recognized that the taxi business in India has developed expressively with the expansion of portable application-based taxi administrations (Nimeshika & Pradeepa, 2019). As of now, in the Indian market, there are numerous versatile application-based taxi administrations, out of which, the world chief "Uber" and "Ola" are driving the market with neck-to-neck rivalry. Because of the presence of various portable application-based taxis and taxi administrations in India, there is a gigantic rush in the market to lead others. In the collection, with the countries' steadily developing IT area and education rate, it is guessed that the interest and utilization of portable application-based taxi administrations will likewise rise further. For portable application-based taxi and taxi administration organizations, fulfilling their clients needs is one of the urgent regions to focus on to end up being an innovator on the lookout. It is recognized that while

conveying administrations to the commuters, their general insight and fulfillment is a fundamental variable to upsurge the portion of the overall industry of the organization through repeating use and references.

Portable application-based taxi administrations work over the web-based platforms, which makes it simpler to distinguish the persuading variables or parts answerable for deciding the fulfillment level of the commuters (Pasharibu, et al., 2018). Various investigations are accessible in the literature, being directed to comprehend consumer loyalty regarding portable application-based taxis and taxi administrations (Kumar & Sentamilselvan, 2018; Mohamed et al., 2018). Nonetheless, less consideration was given in India concerning the variables influencing consumer loyalty in application-based taxi administrations. Earlier exploration concentrated on various angles connected with application-based taxi administrations, for example, the variables influencing while choosing application-based taxi administration in India, but quite less related with consumer loyalty.

REVIEW OF LITERATURE

The possibility of consumer loyalty has acquired enormous interest lately in the taxi business. For each fixed, consumer loyalty is an enthusiastic viewpoint that needs wary consideration. This is basically because of the better result of the way that more prominent client satisfaction can prompt a solid situation in the competitive commercial center utilizing declining value flexibility, falling business costs, diminishing disappointment costs along decreasing every one of the costs of getting new shoppers (C. G. Fornell & D. R. Lehmann, 1993). Consumer loyalty is an essential thought for that large number of associations that wish to make and maintain an upper hand in a present cutthroat situation (Henard, D. H., 2001). Distinguished by few grounded variables of consumer loyalty like standpoints, disconfirmation of chances, execution, influence, and value. What's more, administration event, dependability, comfort, and transparency are administration quality variable amounts that are viewed as significant in consumer loyalty (R. Y. Cavana & L. M. Corbett, 2007). It is a mind-boggling cycle to amount client view of administration greatness. A few investigations have contributed hugely to the smart estimation of administration quality (C. Groenroos, 2001). To acquire a benefit over players, consumer loyalty ought to be estimated and evaluated routinely (P. Patterson and G. Paul, 1993). Recognizable proof and estimation of the variables influencing the fulfillment level of taxi clients in India are important because of the fluctuating idea of the exceptionally cutthroat market. With consumer loyalty, neighbourhood taxi organizations might have the option to keep up with the current development and improvement of a bigger portion of the overall industry in contrast with their members (i.e., Uber, Ola, etc).

Client devotion, the fundamental significance of consumer loyalty, has been characterized in numerous different ways throughout the most recent many years. Characterizes client dependability as the association a client proceeds with the dealer after the main exchange (Andreassen & Lindestad, 1998). Have wanted for that the overall sensation of fulfillment felt by a client is an aftereffect of the buy, it need not be founded on past value-based and experience. Nonetheless, it is quite significant that consumer loyalty isn't the just one, for example, market focus can likewise influence the long existing relationship (Storbacka, et al., 1994). The way the board works show developing consideration in relationship procedures where the emphasis is plainly on building consumer loyalty and dependability. One of the most significant contributions to the literature about commuter devotion estimation is as per (V. Kumar and D. Shah, 2004), the significant objective of each firm is an achievement and one method for accomplishing this for an organization is to acquire and keep faithful clients. Initially, it was considerably less costly to hold a current customer than it is to look for new ones (Kotler & Kelle, 2006). Second, steadfast customers are bound to specify previous encounters than non-faithful customers, setting out freedom for informal publicizing at no extra expense for the specialist co-op (Shoemaker & Lewis, 1999). To finish up, it shields the association among customers and specialist co-op which implies dependable customer will give extra time and cash to the organization.

Hamalainen (2015) awards the review on trust foundations in person-to-person communication publics and other online-based organizations. Trust is significant in human interchanges and it is required in esteem correspondence and critical thinking. The outcomes clarify that clear genuine mass, interpersonal organizations, urban commitment, and life fulfillment positively affect trust in friendly cooperating and online-based administrations. Hakansson et.al (2015) analyses online media trust which was found with the loopholes where the web-based media foundations delay to perform well. There is a connection between online media and advantages both in sure attributes and negative perspectives. Sarvepalli et.al (2016) present the synopsis of the taxi blend industry in India and concentration to search for the various advantages according to our requirements. Customers have the advantage of the latest denying or cancelling the ride. The creators portrayed that internet-based taxi gatherers who align themselves to the changing patterns are the ones that at long last whether their situation is on the lookout. The organization should acknowledge innovation as indicated by the current circumstance. Waldman (2016) presents the review on trust. Satisfaction of the requirements with appropriate advantages and offices is the hindering component for the customer to share the data. Wanda (2016) uncovers that web-based trust-building is significant for little web-based business originalities.

The build of administration quality as articulated by Parasuraman, et al., (1985) has been broadly examined across different businesses. Lately, transportation has seen an unexpected development in movement with the appearance of the radio taxis specialist organizations. While administration quality has been considered as a development in a gathering of administrations, exceptionally ostensible exploration has happened at this point on the radio taxis, which makes this an extremely extraordinary investigation of its sort. The review was acknowledged on clients of different radio taxis to quantify the angles that they were hoping to lead while utilizing the radio taxi administrations. From a legitimate perspective it could be interpreted that by understanding the effects of different factors on consumer loyalty, advertisers are probably going to envision and plan the activities in the administrations.

OBJECTIVE OF THE STUDY

To understand the factors responsible for influencing the decision of the commuters and the level of satisfaction derived by them with respect to app-based cabs and taxis.

RESEARCH METHODOLOGY

Quantitative study was conducted with the administration of structured questionnaire. Our data was collected from four major metropolitan cities of India that is Mumbai, Chennai, Kolkata and Delhi. Total 732 data were collected and analysed to achieve the aim of the study.

Factor analysis helps to find out major components responsible for influencing decision of people, with respect to certain aspects. It analyses and frame a number of variables taken in the study to form several components, with significant association in between them.

Hence, factor analysis was done with respect to app-based cabs, to understand the level of satisfaction derived by the commuters, based on various components found in the study.

FINDINGS AND ANALYSIS

Table 1:- KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.798
Bartlett's Test of Sphericity	Approx. Chi-Square	8030.036
	Df	190
	Sig.	.000

Kaiser-Meyer-Olkin (KMO) value always lies in between 0 and 1. The minimum value required for the study is 0.6. From Table 1, it can be seen that the KMO value being calculated is 0.798, which is above 0.6 and reflect good study. Similarly, Bartlett's Test of Sphericity indicates the strength of the relationship among the variables. Bartlett's test below 0.05 indicates that there is a significant correlation in the data. From the mentioned table it can be seen that the value of Bartlett's Test of Sphericity is below 0.05 (that is significant value is 0.000), which signifies that there is a significant association in the data. Both KMO and Bartlett's Test of Sphericity is considered as the principal methods to conduct ideal factor analysis

Table 2:- Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.592	37.959	37.959	7.592	37.959	37.959	3.094	15.472	15.472
2	1.721	8.603	46.563	1.721	8.603	46.563	2.995	14.973	30.445
3	1.415	7.073	53.636	1.415	7.073	53.636	2.705	13.523	43.968
4	1.361	6.807	60.443	1.361	6.807	60.443	2.396	11.981	55.950
5	1.171	5.857	66.3	1.171	5.857	66.300	2.070	10.35	66.300
6	0.908	4.54	70.84						
7	0.844	4.219	75.059						
8	0.723	3.616	78.675						
9	0.655	3.277	81.952						
10	0.59	2.951	84.903						
11	0.494	2.471	87.374						
12	0.481	2.407	89.781						
13	0.414	2.072	91.853						

14	0.342	1.711	93.564
15	0.318	1.591	95.155
16	0.259	1.296	96.451
17	0.246	1.228	97.679
18	0.191	0.953	98.632
19	0.155	0.774	99.406
20	0.119	0.594	100

In Table 2 (Total Variance Explained), each component holds a quality score called an eigenvalue, represented under the column 'Total' of 'Initial Eigenvalues'. Components with high eigenvalues are more likely to present true and real factors underlying. For conducting a study, the minimum required eigenvalue is 1 or more. Thus, from the mentioned table, we got the first five components with eigenvalue 1 or greater than 1. It can be seen that factor 1 accounts for 37.959 % of the variance, factor 2 accounts for 8.603 % of the variance, factor 3 accounts for 7.073 % of variance while, factor 4 accounts for 6.807 % of the variance and factor 5 accounts for 5.857 % of the variance. Similarly, the minimum required value of total variance should be 60% and, in our study, we have got the total percentage of variance as 66.3.

Table 3-: Rotated Component Matrix^a

	Component				
	1	2	3	4	5
App based cabs have made movement quick	0.769				
App based cabs have simple UI	0.718				
App based cabs are convenient	0.702				
App based cabs have made movement effortless	0.648				
App based cabs are safe	0.515				
The promotion benefits I earn on referring is fair		0.756			
The promotion benefits I earn on travelling regularly is fair		0.736			
There are various fair promotion benefits		0.691			
The discount given on the basis of promotion benefit is fair		0.659			
The promotion benefits fairly apportions to cash value		0.550			
Cabs arrive on time			0.788		
Cabs are clean and well sanitized			0.742		
I recommend my favourite cab service to my friends and family			0.644		
I have only good things to say about app-based cabs			0.521		
App based cabs are my first preference				0.778	
I wish to keep using app-based cabs in the future				0.701	
I prefer travelling by app-based cabs instead of other means of transport				0.682	
Drivers are professional					0.841
Drivers ensure my safety					0.834
Drivers have a pleasant behavior					0.497

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization. ^a

a. Rotation converged in 8 iterations.

The table of the Rotated Component Matrix (Table 3) indicates the correlation between the components and their associated variables taken in the study. A factor represents a common feature that all the variables possess. From the mentioned, it can be seen

that the first component consists of variables representing the ease and comforts provided by the app-based cabs to the commuters by providing various utilities and privileges to them, hence this factor can be termed as “**Utility and Privileges**”. Similarly, second component consists of the variables representing rewards and cashbacks that commuters earn by using app-based cabs frequently, hence this component can be termed as “**Rewards**”. Third component consists of the variables representing amenities and comforts available to the commuters with respect to the cabs they are using for commuting from one place to other. Hence this component can be termed as “**Car Amenities**”. Fourth component is comprised of the variables representing the level of trust and loyalty, on the part of commuters, with respect to app-based cabs. Hence, this component can be termed as “**Commuters’ Loyalty**”. While, fifth component consists of the variables representing the skills and proficiency of the driver riding the cabs, hence this component can be termed as “**Drivers’ Proficiency**”.

H₀: B₁ = 0

The null hypothesis implies that there is no correlation between **Customer Satisfaction** and the components “**Utility and Privileges**”, “**Rewards**”, “**Car Amenities**”, “**Commuters’ Loyalty**” and “**Drivers’ Proficiency**”.

H₁: B₁! = 0

The alternative hypothesis implies that there is no correlation between **Customer Satisfaction** and the components “**Utility and Privileges**”, “**Rewards**”, “**Car Amenities**”, “**Commuters’ Loyalty**” and “**Drivers’ Proficiency**”.

Table 4-: Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.715 ^a	0.512	0.508	0.556

a. Predictors: (Constant), Drivers’_Proficiency, Commuters’_Loyalty, Car_Amenities, Rewards, Utility_and_Privileges

Model Summary indicates the goodness of the regression model to the data. In a model summary, R or multiple correlation coefficients measures the quality of prediction of the dependent variable. From Table 4, it can be seen that the value of R or the multiple correlation coefficient is 0.715, which indicates a good level of prediction. While R Square or the coefficient of determination represents the variability of dependent variables with the help of an independent variable. It can be seen that the R Square value is 0.512 which means our independent variables describe 51.2% of the variability of our dependent variable.

Table 5-: ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	235.367	5	47.073	152.094	.000 ^b
	Residual	224.699	726	0.31		
	Total	460.066	731			

a. Dependent Variable: Customer_Satisfaction

b. Predictors: (Constant), Drivers’_Proficiency, Commuters’_Loyalty, Car_Amenities, Rewards, Utility_and_Privileges

ANOVA table, Table 5, tests the fitness of the data to the regression model of the study. It can be seen from the mentioned table that the regression model is predicting the dependent variable significantly well and it is statistically significant as the p-value is less than 0.05.

Table 9:- Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	3.852	0.021		187.353	.000
Utility and Privileges	0.514	0.021	0.648	24.966	.000
Rewards	0.094	0.021	0.119	4.577	.000
Car Amenities	-0.011	0.021	-0.014	-0.557	0.577
Commuters' Loyalty	0.162	0.021	0.204	7.874	.000
Drivers' Proficiency	0.151	0.021	0.190	7.341	.000

a. Dependent Variable: Customer_Satisfaction

The coefficients table, Table 6, represents the information required to predict the dependent variable from independent variables and to understand whether these independent variables are contributing to the model of the study significantly or not. In the table mentioned above, it is explicated that the overall satisfaction is derived from the components **Utility and Privileges**, **Rewards**, **Commuters' Loyalty** and **Drivers' Proficiency**, barring **Car Amenities** as it is not contributing to the study. It can be seen these components are statistically significant (as all the components have a significant value of less than 0.05 that is 0.000, except the component 3, whose significant value is greater than 0.05 that is 0.577). Thus, the regression equation or model being formed is given below:

Customer Satisfaction: 3.852 + 0.648*Utility and Privileges + 0.119*Rewards + 0.204*Commuters' Loyalty + 0.19*Drivers' Proficiency

CONCLUSION

India has encountered a blast in the movement business, with the coming and ramifications of imaginative innovation in it. Online application-based taxis and taxicabs have assumed control over a significant part of the vehicle area and have become perhaps the most helpful methods of transportation for most commuters. Notwithstanding, a significant piece of the populace actually needs admittance to trend-setting innovation and the web. They are neither mindful of the predominant computerized equipment accessible in the market nor have any information on the advantages that they can utilize through accessible advanced devices. Along these lines, it is vital that individuals are made mindful of such utilities accessible to them so they also contribute towards the urbanization and the digitalization of the country. Likewise, the discernment and decisions of the workers are fundamental for making this a stride further.

Parts found in the review will help the vehicle area to comprehend the key parts answerable for managing the degree of fulfilment of the commuters. It has been observed that the conveniences given to the commuters by application-based taxis affect the view of the commuters. Additionally, various prizes and cashback accessible to the commuters on utilizing application-based taxis often, further adds to the degree of fulfillment of the commuters. While commuters are less happy with efforts and solaces received from the taxis and taxicabs. This is on the ground that a few taxis are either not very much improved or don't give great solace depending on the needs of the commuters. Thus, more investigations can be led in view of the trust and loyalty of the commuters, related to application-based taxis.

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