

Two-Wheeler Consumer behaviour towards Perceived Quality

Datrika Venkata Madhusudan Rao¹ & Prof. Mohd. Akbar Ali Khan²

Datrika Venkata Madhusudan Rao, Research Scholar (PhD), Rayalaseema University, Kurnool.

Contact: madhu4m@gmail.com Cell: 9701877449

¹Prof. Mohd. Akbar Ali Khan, Research Guide, Former Vice-Chancellor, Telangana University, Nizamabad, Telangana State. Presently, Professor & Additional Director, DDE, Maulana Azad National Urdu University, Gachibowli, Hyderabad-32, Telangana State. (maakhan1155@gmail.com)

Abstract

This original exploratory research study was to examine the impact of Select independent and demographic variables on Perceived Quality. As per ACMA May month data, top four brands, namely Hero, Bajaj, Honda and TVS were selected for study and 600 two-wheeler consumers samples collected, using random sampling, based on the Geographical segmentation of Hyderabad. The data was analysed with descriptive statistics and non-parametric tests, to know the impact of independent variables and demographic variables on Perceived Quality and found no impact, further given various research and managerial implications.

Keywords: Two-wheeler Consumer Behaviour, Perceived Quality, Joint Venture preference, Heritage Design, Technology development, Safety features, Corporate Social Responsibility.

Introduction:

Automotive Industry, globally, as well as in India, is one of the key sectors of the economy due to its strong forward and backward linkages. This “Sun Rise Industry” had grown in clusters of inter-

connected companies, which were linked by commonalities and complementarities (Ministry of Heavy Industries and Public Enterprises 2006). In a Global Competitiveness Survey of 104 countries, India ranked only 55th. To address this issue, Competitive landscape of the industry was developed using the Porter (1990) Diamond Framework by India Brand Equity Foundation (2006); Automotive Mission Plan 2006-16 and Automotive Mission Plan 2016-26 – A Curtain Raiser.

Two-wheeler Industry - Indian Scenario:

The Indian two-wheeler industry attracted worldwide attention after the major reforms (LPG) in 1991 and after, even though it had its beginnings in the late fifties when Enfield set up its plant to make ‘bullet’ motorcycles. A number of foreign players entered the market and prominent among them were Suzuki, Honda, Yamaha and Kawasaki in Joint Venture route (refer Table 1), later on some break-ups also observed. Motorcycles became the largest segment (more than 80 per cent) in the two-wheeler industry (refer Table 2), with economy (100cc-125cc), executive (125cc-150) and premium (150cc & above) segments. The

break-ups reasons varied, as a result, Indian companies were forced to invest heavily in research and development for manufacturing indigenously developed models. The Auto market changed dramatically in terms of technology also viz., four-stroke motorcycles, fuel injection motors, looks, benefitted features, power, mileage (fuel economy), environmental compliance, performance, comfort, alternative fuel, and electric two-wheelers. The industry is growing every year due to inadequate public transport, better financing, availability of models, increasing urbanization and increase in skilled youth population and per capita income.

Literature Review:

Computerised searches were done on subject gateways, directories, search engines and meta search engines using key words and wildcards, which account for multi-variations of key words. The searched online databases include EMERALD, EBSCO and JSTOR. Manual searches were conducted on journal articles' references identified through the online databases search.

Gupta et al (2014) in their article suggested, comparative study between two companies, increase in sample size; used random sampling and segmentation in consumer class.

Shindey Keshav Dr. et al (2014) proposed to use chargeable batteries and solar energy bikes to cut cost and environment friendly.

Corton G. Jimmy (2012) recommended exporting to developing countries and

analysing the spatial distribution of automobile industry in India and inquired, why not developing it in other states of India?

Vinodhini. Y. (2010), Ashok. Y (2010) in their PhD theses advocated, conduct periodic surveys, due to on-going changes in consumers' behaviours.

As per Mission 2006-2017's 'Made in India' objective, Modi Government's 'Make in India' initiative, to keep India at No.1 position, she needs a good indepth research on consumer behaviour in two-wheeler industry.

Review of literature shows some papers on "Consumer Behaviour towards Two-wheeler Industry" and/or in its divisions to some level and majority number of accidents happened by Two-wheelers resulted to death or fatal injuries. But none found, on researcher's Doctoral study covering all the select constructs in any paper at national and global level. Hence, researcher took this dynamic natured study, to explore "Two-wheeler Consumers Behaviour towards Perceived Quality".

Importance of the Study:

Consumer Behaviour is the study of how individuals, groups, and organisations select, buy, use, and dispose of goods, services, ideas, or experiences to satisfy their needs and wants. A consumer's buying behaviour is influenced by cultural, social, and personal factors. A Consumer's buying decision-making process is a psychological understanding of who will buy, how they buy, what they buy, when they buy, where they buy and why they

buy (Kotler Philip, Keller L.K, Koshy A and Jha M 2009).

India, being 2nd populous country with 70 per cent young, skilled generation of below 35 years of age, rising disposable income levels, growing urbanisation, developing road network, easier finance availability, oligopolistic local or foreign manufacturers with wider choice of models, and favourable government policies is a challenge to manufacturers /sellers.

The central thrust of the marketing activities of an organization is to develop, maintain and enhance customer loyalty towards its products or services. Hence manufacturers/ sellers need to provide quality products coupled with remarkable services, as their competitive advantages to win customers.

Objectives of the Study:

This research study broadly aimed at *identifying the causes of poor sales or impact of perceived quality on consumer outcomes*. By improving the Perceived Quality (dependent variable) of select brands which increases the demand and the market share of them in the region. Hence, the study had following research objectives:

1. To study the impact of select independent variables on Perceived quality.
2. To examine the impact of demographic variables on Perceived quality.

Hypotheses of the study:

Based on the above objectives following **two Null Hypotheses** were formulated.

H₁: There is NO influence of Independent variables (Safety features, Tech. Devt., Joint Venture, Heritage Design and Corporate Social Responsibility) on Perceived Quality.

Sub Hypothesis: If impact is found, the impact of each variable is the same.

H₂: There is NO influence of Demographic variables (14 items) on Perceived Quality.

Sub Hypothesis: If impact is found, the impact of each variable is the same.

Research Methodology:

In this exploratory research, top four brands, namely Hero, Bajaj, Honda and TVS were selected for study and 600 two-wheeler consumers samples collected, using random sampling, based on the Geographical segmentation of Hyderabad. A pilot study of 100 consumers of select four brands was collected through questionnaire and received 0.700 as reliability through Croanbach Alpha test. Later, other 500 two-wheeler consumers' data were collected, processed using SPSS version 23 software. For analysis descriptive statistics and non-parametric tests were used. References were noted in American Psychological Association (APA) style.

Limitations:

Though every care was taken and all intervening factors considered still, the following limitations were inevitable.

1. The study was confined to two wheeler consumers in Hyderabad only.
2. The study was carried out, on certain time period and hence it was influenced by prevailing factors during the period.
3. The study was the result of a sample size, considered to enable a smooth conduct and hence was not a total representation of the whole.

Period of the study:

The primary data was collected from January to May, 2017 and the secondary data was from 2005 to 2017.

Analysis and Results:

The following tables were the Primary data results of data analysis on SPSS software.

Hypothesis 1 Testing:

Table 3: Descriptive Statistics

Interpretation: Std. Deviation was 18.09 per cent, means independents were highly varying.

Table 4: Correlations

Interpretation: Linearity exists between dependent and independent variables, correlation means (Sig values) were close to .000

Table 5: Model Summary

Interpretation: In this multiple linear Regression, we had more than one predictor variable in the equation. We predict Perceived Quality from independent variables {CSR of the brand, JV Preference, HD (Antique) Preference,

Safety (Accident Prevention) Features and Technology Development}. Standard Adjusted R Square value must be above 50%, which was 0.602; hence it was a good model.

Table 6: ANOVA

Interpretation: Regression related ANOVA's results indicate that the overall model is statistically significant ($F=182.119$, $p=0.000$). Hence it was not a bad model. At least one independent variable was relevantly contributing (good model).

Table 7: Coefficients

Interpretation: Significant values were nearer to 0.000 in Safety features, Technology Development, CSR, reveal impact exists; whereas Sig. values for Heritage Design (Antique) preference (0.369) and Joint Venture Preference (0.076), reveal no impact. Standard 't' value must be above 1.96 and Beta value below 0.05. To find out impact Highest Standardised Beta value of Technology Development (0.339) and unstandardised Beta value of Technology and Development (0.409) leads to an extent of 40 units against 100 units, whereas HD (0.036) and JV (0.055) leads to 3 and 5 units against 100 units. There was no multi collinearity problem with data, because VIF (Variance Inflation Factor) value was <5.

Table 8: Collinearity Diagnostics

Interpretation: Condition Index was <30. Variance Proportion was highest (0.95) in Technology Development, whereas

Heritage Design Preference (0.66) and Joint Venture Preferences (0.62) were instrumental.

Table 9: Residual Statistics

Interpretation: From the Residual Statistics table and a histogram of the standardized residual based on our model. Note that the unstandardized residuals should be a mean of zero (Assumptions of Linear Regression), and so do standardized predicted values and standardized residuals.

Graphs

Interpretation: From the **histogram** we can see a couple of values at the tail ends of the distribution. The Normal Probability Plot shows the distribution as normal, because we had seen the points to cluster around the horizontal line and the difference in the tail distributions of the P-P plot. **Scatterplot** appears that the relationship of standardized predicted to residuals is roughly linear around zero. We conclude that the residuals seem to be randomly scattered around zero.

Hypothesis 1 Result: Overall from the above tables it was concluded that there was NO influence of independent variables {Safety (Accident Prevention) Features, Technology Development, HD (Antique) Preference, JV Preference, and CSR of the brand} on Perceived Quality. Hence Hypothesis 1 was **rejected**.

Hypothesis 2 Testing:

The data was of non-linearity, the impact of demographic variables on Perceived Quality tested with Mann-Whitney test and Kruskal-Wallis Test against a Standard Significance Value of $<2.5\%$.

Table 10: Mann-Whitney Test for Gender:

The **Ranks table** is the first table that provides information regarding the output of the actual Mann-Whitney U test. It shows mean ranks and sum of ranks for the grouping variable Gender tested (i.e., the Male and Female groups). In this case, female had highest mean rank (306.61) compared to male mean rank (296.76). **Test Statistics table** shows us the actual significance value of the test. Specifically, it provides the test statistic, U statistic, as well as the asymptotic significance (2-tailed) p -value. From this data, it can be concluded that Perceived Quality in the female group was statistically, significantly differ, being higher than the male group ($U= 41015.500$) and $p= 0.498$ was higher than the standard (p value $<2.5\%=0.025$).

Interpretation: Gender had no impact on dependent variable (Perceived Quality).

Table 11: Mann-Whitney Test for most often, a pillion rider rides with me:

The **Ranks table** shows mean ranks and sum of ranks for the grouping variable: Most often, a pillion rider rides with me tested for Yes or No groups. In this case, No group had highest mean rank (315.71) for Perceived Quality than Yes group mean rank (288.47). **Test Statistics table** data, it can be concluded that Perceived Quality in the No group ($W= 96636.000$) was statistically, significantly higher than the Yes group ($U= 40356.000$) and $p= 0.055$ was higher than the standard (p value $<2.5\%=0.025$).

Interpretation: Pillion driver riding with consumer had no impact on Perceived Quality.

Table 12: Mann-Whitney Test for vehicle is shared with:

The **Ranks table** shows mean ranks and sum of ranks for the grouping variable vehicle is shared with, tested for Family members and others or Not shared, used by myself groups. In this case, Family members and others had highest mean rank (302.88) for Perceived Quality than Not shared, used by myself (293.37) mean rank. **Test Statistics table** data conclude that Perceived Quality in the Family members and others ($W= 44005.000$) was statistically, significantly higher than the Not shared, used by myself ($U= 32680.000$) and $p= 0.560$ was higher than the standard (p value $<2.5\% =0.025$).

Interpretation: Vehicle sharing had no impact on Perceived Quality.

Table 13: Mann-Whitney Test for Gear Status:

The **Ranks table** shows mean ranks and sum of ranks for the grouping variable vehicle is shared with, tested for with Gears and Gearless. In this case, Gearless had highest mean rank (306.36) for Perceived Quality than with gears (296.11) mean rank. **Test Statistics table** data results suggest, there was statistically difference between the underlying distributions of the Perceived Quality, with gears and gearless. Gearless ($W= 101565.000$) was statistically, significantly higher than with

gears ($U= 42569.000$) and $p= 0.472$ was higher than the standard (p value $<2.5\% =0.025$).

Interpretation: Gear status had no impact on Perceived Quality.

Table 14: Mann-Whitney Test for Engine Capacity:

The **Ranks table** shows mean ranks and sum of ranks for the grouping variable: Engine Capacity for below 126cc and above 126 cc. In this case, Above 126 cc had highest mean rank (301.58) for Perceived Quality than with Below 126 cc (299.89) mean rank. **Test Statistics table** data results suggest, there was statistically difference between the underlying distributions of the Perceived Quality, below 126cc and above 126 cc. Above 126 cc ($W=115159.000$) was statistically, significantly higher than, below 126cc ($U= 41239.000$) and Asymptotic Sig. value ($p= 0.909$) was higher than the standard (p value $<2.5\% =0.025$).

Interpretation: Engine Capacity had no impact on Perceived Quality.

Table 15: Mann-Whitney Test for Distance from home to Service centre:

The **Ranks table** shows mean ranks and sum of ranks for the grouping variable: Distance from home to Service center, tested for close-by and far-off. In this case, close by had highest mean rank (253.88) for Perceived Quality than far-off (247.15) mean rank. **Test Statistics table** data suggest, there was statistically difference between the underlying distributions of the Perceived Quality, close-by and far-off.

Close-by ($W=62034.000$) was statistically, significantly higher than far-off ($U=30408.000$) and $p=0.602$ was higher than the standard (p value $<2.5\% = 0.025$).

Interpretation: Distance from home to service centre had no impact on Perceived Quality.

Table 16: Kruskal-Wallis Test for Age

The **Ranks table** results indicate that there were statistically significant differences among the four classes of Age. Lowest Mean rank represents highest value; 31-45 years (283.77), 61-75 years (285.35), 46-60 years (304.69) and 18-30 years (305.89) were ranked 1, 2, 3, 4 and 5 respectively. 31-45 years were ranked high. **Test Statistics table** data suggest, Asymptotic Sig. value ($p=0.624$) was higher than the Sig. value $<2.5\% = 0.025$.

Interpretation: Age had no impact on Perceived Quality.

Table 17: Kruskal Wallis Test for Economic Status:

The **Ranks table** results indicate that there were statistically significant differences among the three classes of Economic status. Lowest Mean rank represents highest value; Rich (254.37), Middle (303.32) and Upper-Middle (308.06) were ranked 1, 2 and 3 respectively. Rich were ranked high for their branded product purchases. **Test Statistics table** data suggest, Asymptotic Sig. value ($p=0.132$) was higher than the standard (Sig. value $<2.5\% = 0.025$).

Interpretation: Economic status had no impact on Perceived Quality. Rich class were buying branded products.

Table 18: Kruskal Wallis Test for Formal Education:

The **Ranks table** results indicate that there were statistically significant differences among the five classes of Formal education. Lowest Mean rank represents highest value; Professionals (237.64), PG & above (269.09), 10-12 grade (296.14), below 10 (315.04) and Graduate (320.24) were ranked 1, 2, 3, 4 and 5 respectively. Professionals were ranked high. **Test Statistics table** data suggest, Asymptotic Sig. value ($p=0.022$) was lower than the standard (Sig. value $<2.5\% = 0.025$).

Interpretation: Education had impact on Perceived Quality.

Table 19: Kruskal Wallis Test for Two-Wheeler Brand Owned:

The **Ranks table** results indicate that there was statistically significant difference among the five classes of two-wheeler Brand owned. Lowest Mean rank represents highest value; Perceived Quality of Hero (279.27), Bajaj (287.79), TVS (289.68), Honda (298.88) and others (390.65) were ranked 1, 2, 3, 4 and 5 respectively. Hero motorcycles were ranked high. **Test Statistics table** data suggest, Asymptotic Sig. value ($p=0.000$) was lower than the standard (p value $<2.5\% = 0.025$).

Interpretation: Two-wheeler brand owned had impact on Perceived Quality.

Table 20: Kruskal Wallis Test for Occupation:

The **Ranks table** results indicate that there was statistically significant difference among the five classes of Occupation. Lowest Mean rank represents highest value; Govt. employee (200.87), Business (205.26), Professional (215.34), Private Employee (238.30) and Students (266.42) were ranked 1, 2, 3, 4 and 5 respectively. Govt. employees were ranked high. **Test Statistics table** data suggest, Asymptotic Sig. value ($p = 0.010$) was lower than the standard (Sig. value $< 2.5\% = 0.025$).

Interpretation: Occupation had impact on Perceived Quality.

Table 21: Kruskal Wallis Test for Length of usage:

The **Ranks table** results indicate that there was statistically significant difference among the three classes of length of Usage. Lowest Mean rank represents highest value; Above 5 years (242.12), 1-3 years (244.25) and 3-5 years (267.85) were ranked 1, 2, and 3 respectively. Above 5 years were ranked high. **Test Statistics table** data suggest, Asymptotic Sig. value ($p = 0.233$) was higher than the standard (p value $< 2.5\% = 0.025$).

Interpretation: Length of usage of vehicle had no impact on Perceived Quality.

Table 22: Mann-Whitney Test for Marital Status:

The **Ranks table** shows mean ranks and sum of ranks for the grouping variable: Marital Status tested for Married and Unmarried. In this case, Unmarried had

highest mean rank (243.13) for Perceived Quality than married (226.86) mean rank. **Test Statistics table** data results suggest, there was statistically difference between the underlying distributions of the Perceived Quality, for married and unmarried. Unmarried ($W = 27450.000$) was statistically, significantly higher than married ($U = 20069.500$) and Asymptotic Sig. value ($p = 0.261$) was higher than the standard (p value $< 2.5\% = 0.025$).

Interpretation: Marital status had no impact on Perceived Quality.

Table 23: Mann-Whitney Test for Brand Recall:

The **Ranks table** shows mean rank and sum of ranks for the grouping variable Brand Recall: tested for Yes or No classes. In this case, yes class had highest mean rank (314.11) for Perceived Quality than with no (288.02) mean rank. **Test Statistics table** data results suggest, there was statistically difference between the underlying distributions of the Perceived Quality, yes or no of Brand Recall. Yes option ($W = 90149.000$) was statistically, significantly higher than No option ($U = 41008.000$) and Asymptotic Sig. value ($p = 0.065$) was higher than the standard (p value $< 2.5\% = 0.025$).

Interpretation: Brand Recall had no impact on Perceived Quality.

Hypothesis 2 Result:

Decision, since p -value was < 0.025 , we **reject** the null hypothesis. There was no impact of (Demographic variables) Gender, Pillion driver, Gear status, Engine capacity Distance from home to service

centre, Vehicle sharing, Age, Economic status, Length of service, Marital status, Recall of vehicles on Perceived Quality; whereas vehicle Brand owned, education and Occupations had a moderate impact on Perceived Quality.

Findings:

The following observations were found on Perceived Quality:

- 1) Standard Deviation was 18.09 per cent, means independents were highly varying.
- 2) Linearity exists between dependent and independent variables, correlation means (Sig values) were close to .000
- 3) Standard Adjusted R Square value was 0.602, hence it was a good model.
- 4) Regression related ANOVA's Significance value was close to 0.000. Hence it was not a bad model. At least one independent variable was relevantly contributing (good model).
- 5) Significant values were nearer to 0.000 in Safety features, Technology Development, CSR, reveals impact exists, but sig. values for Heritage Design preference (0.369) and Joint Venture Preference (0.076) reveals no impact. We can see highest impact of Technology Development (.339) in Standardised Beta value and unstandardised Beta value of Technology and Development (0.409) leads to an extent of 40 units against 100 units. There was no multi collinearity problem with data, because VIF value was <5.
- 6) Condition Index was <30. Variance Proportion was highest (.95) in Technology Development, whereas Heritage Design Preference and Joint Venture Preferences were instrumental.
- 7) The data was of non-linearity, the impact of demographic variables on Perceived Quality tested with Mann-Whitney test and Kruskal-Wallis test against Significance (p) value of <2.5% (0.025).
- 8) Mann-Whitney test for Gender, Pillion driver riding with consumer, Vehicle sharing, Gear status, Engine Capacity, Distance from home to Service centre, Marital status and Brand Recall had **NO** impact on Perceived Quality
- 9) Kruskal-Wallis test for Age, economic status, Length of usage of vehicle had **NO** impact on Perceived Quality; whereas for Education, Two-wheeler brand owned and Occupation has **IMPACT** on Perceived Quality.

Conclusion: After the two mentioned hypotheses testing, which were rejected based on collected quantitative data. Hence both the Objectives were met. To confirm those results, 20 Senior (citizens) consumers were contacted for qualitative input, which proved the same.

Future/Research implications:

Our research should be seen as a preliminary attempt at addressing an issue that has important implications for services marketing theory and practice. Any preliminary attempt will involve a number of limitations. However, acknowledgement of these limitations suggests new directions for future studies.

1. As present research sample was geographically limited and single time framed. It was observed that consumer two wheeler purchases were linked to their native regional manufacturer. Hence some areas had more sales of regional two wheelers. Hypothesis should be tested further with larger sample frame, more brands, and multiple time framed in other districts/ states/ countries to get a universal data.

2. The present research study was confined to some practices, hence left out constructs like Brand Equity, Social media (Web 2.0 Applications), switching behaviour, and Goods and Services Tax (GST) etc., can be an opportunity of research.

Managerial implications:

Based on collected data analysis, manufacturer has to add more Technological Developments, Safety features, and CSR activities, and no need to concentrate on Heritage (Antique) Design Preference and Joint Ventures.

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Table 1: Details of firms within the two wheeler industry

Period of Entry	Name of the Indian Firm	Name of Foreign Collaborator	Segment	Brand Name of the Product
1955-1969	Enfield India Ltd (EIL)*	Enfield Ltd, UK	Motorcycle	Royal Enfield 350cc
	Automobile Products of India (API)*	Innocenti Ltd. Italy	Scooter	Lambretta
	Bajaj Auto Ltd (BAL)	Piaggio Ltd. Italy	Scooter	Vespa
	Ideal JawaPvt. Ltd (IJPL)*	Jawa Ltd. Czechoslovakia	Motorcycle	Yezdi, 250cc
1970-1980	Escorts Ltd (EL)*	CEKOP, Poland	Motorcycle	Rajdoot, 175cc
	Kinetic Engineering Ltd	-	Moped	Luna
	Scooters India Ltd *	-	Scooter	Vijai
	Maharashtra Scooters Ltd	-	Scooter	Priya
	Majestic Auto Ltd	-	Moped	Hero Majestic
	Sundaram Clayton Ltd	-	Moped	TVS 50cc
1981-1990	TVS	Suzuki, Japan	Motorcycle	Ind-Suzuki 100cc
	Bajaj Auto Ltd (BAL)	Kawasaki, Japan	Motorcycle	Kawasaki Bajaj 100cc
	Escorts Ltd	Yamaha, Japan	Motorcycle	Yamaha RX 100cc
	Hero Majestic Ltd	Honda, Japan	Motorcycle	Hero Honda 100cc
	Kinetic Engineering Ltd	Piaggio, Italy	Scooter	NH 100cc
	Lohia Machinery Ltd	Zundapp-WerkeGmbH	Scooter	Vespa XE

	Enfield India		Moped-Motr Cycle	50cc, 80cc, 100cc
1991-1999	Bajaj Auto Ltd (BAL)	-	Moped-Scooterette	Sunny
	TVS	-	Scooter-Scooterette	Scooty
	Kinetic	Honda	Scooter-Scooterette	Marvel
	TVS	-	Scooter	Spectra
	Kinetic Motors**	-	Scooterette	Style
2000-2017	Hero Moto Corp		Scooterette, MC	CD, CBZ, Glamour, Splendour, Hunk, Passion, HS Deluxe, Pleasure, CBR, Duet, Maestro
	Bajaj Auto Ltd (BAL)	-	Scooterette ,MC	Kristal, Wave, Blade dtsi125, CT , Pulsar, Discover, Platina, Boxer, KTMDuke, Avenger
	TVS Motor	-	Moped, Scooterette, MC	XL Super, Apache, StaRcity, Sport, Flame, Jive, Teenz, Pep+, Streak, Zest, Wego, Jupiter
	Mahindra & Mahindra	-	Scooterette, MC	Duro DZ, Kine, Rodeo, Flyte, Gusto, Stallio
	Enfield India	-	Motorcycle	Classic 350,
	Honda Motorcycle & Scooters (India)	Honda, Japan	Scooterette, MC	Dio, Aviator, Activa, 4G, Livo, Dream, Yuva, Shine, ...
	Suzuki (India) Ltd	Suzuki, Japan	Scooterette, MC	Slingshot, Gixxer 250, Access, Swish
	Piaggio (I) Ltd	Piaggio Ltd, Italy	Scooterette	Vespa LX125
	Yamaha (India) Ltd	Yamaha, Japan	Scooterette-MC	YBR, G5, H2, MT 03, FJR 1300, Fascino, RayZR
		Harley Davidson, USA Hyosung, South Korea Ducati, Italy	Motorcycle	Street 750, Iron 883 GV 250, GV650 Diavel, 821 Dark, 1200

* indicates firms/brands whose sales declined in the eighties

** In 1998, the JV between the Firodias Group of India (Kinetic) and Honda of Japan came to an end when the former bought out Honda's stake of 51%. However in return for royalty and technical fees Honda continued to supply technical know-hoe to the new Kinetic Motors Company Ltd. (KMCL).

Secondary Source: CMIE, the Evolution and structure of the two-wheeler industry in India, 2000

Table 2: Automobile Production Trends

Category	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Pass.Vehicles	1,309,300	1,545,223	1,777,583	1,838,593	2,357,411	2,982,772	3,146,069	3,231,058	3,087,973	3,220,172	34,65,045	37,91,540
Com.Vehicles	391,083	519,982	549,006	416,870	567,556	760,735	929,136	832,649	699,035	697,083	7,86,692	8,10,286
3-Wheelers	434,423	556,126	500,660	497,020	619,194	799,553	879,289	839,748	830,108	949,021	9,34,104	7,83,149
2-Wheelers	7,608,697	8,466,666	8,026,681	8,419,792	10,512,903	13,349,349	15,427,532	15,744,156	16,883,049	18,499,970	1,88,30,227	1,99,29,485
GrandTotal	9,743,503	11,087,997	10,853,930	11,172,275	14,057,064	17,892,409	20,382,026	20,647,611	21,500,165	23,366,246	2,40,16,068	2,53,14,460

Secondary Source: SIAM

Table 3: Descriptive Statistics

Variables	Mean	Std. Deviation	N
Perceived Quality (PQ)	21.71	4.784	600
Safety (Accident Prevention) Features	14.11	3.433	600
Technology Development (TD)	17.75	3.970	600
Heritage (Antique) Design Preference (HD)	13.35	3.606	600
Joint Venture Preference (JV)	16.96	4.512	600
Corporate Social Responsibility (CSR) of the brand	17.02	4.049	600

Source: Primary data

Table 4: Correlations

Variables	Perceived Quality	Safety (Accident Prevention)	Tech Devt	Heritage (Antique) Design	Joint Venture Preference	CSR of the brand
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			Features		Preference		
Pearson Correlation	Perceived Quality	1.000	.621	.690	.359	.352	.678
	Safety Features	.621	1.000	.623	.285	.290	.582
	Tech. Devt.	.690	.623	1.000	.385	.334	.615
	HD (Antique) Pref	.359	.285	.385	1.000	.417	.378
	JV Preference	.352	.290	.334	.417	1.000	.363
	CSR of the brand	.678	.582	.615	.378	.363	1.000
Sig. (1-tailed)	Perceived Quality		.000	.000	.000	.000	.000
	Safety Features	.000		.000	.000	.000	.000
	Tech. Devt	.000	.000		.000	.000	.000
	HD (Antique) Pref	.000	.000	.000		.000	.000
	JV Preference	.000	.000	.000	.000		.000
	CSR of the brand	.000	.000	.000	.000	.000	
N	Perceived Quality	600	600	600	600	600	600
	Safety Features	600	600	600	600	600	600
	Tech. Devt	600	600	600	600	600	600
	HD (Antique) Pref	600	600	600	600	600	600
	JV Preference	600	600	600	600	600	600
	CSR of the brand	600	600	600	600	600	600

Source: Primary data

Variables Entered/Removed ^a			
Model	Variables Entered	Variables Removed	Method
1	CSR of the brand, Joint Venture Preference, Heritage Design (Antique) Preference, Safety (Accident Prevention) Features, Technology Development ^b		Enter
a. Dependent Variable: Perceived Quality			
b. All requested variables entered.			

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.778 ^a	.605	.602	3.019	1.721
a. Predictors: (Constant), CSR of the brand, JV Preference, HD (Antique) Preference, Safety (Accident Prevention) Features, Technology Development					
b. Dependent Variable: Perceived Quality					

Source: Primary data

Table 6: ANOVA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8298.351	5	1659.670	182.119	.000 ^b
	Residual	5413.189	594	9.113		
	Total	13711.540	599			
a. Dependent Variable: Perceived Quality						
b. Predictors: (Constant), CSR of the brand, JV Preference, HD (Antique) Preference, Safety (Accident Prevention) Features, Technology Development						

Source: Primary data

Table 7: Coefficients

Coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.616	.691		3.786	.000		
	Safety (Acci. Pevn) Features	.275	.049	.197	5.664	.000	.547	1.827
	Technology Development	.409	.044	.339	9.254	.000	.494	2.024

1	HD (Antique) Preference	.036	.040	.027	.899	.369	.744	1.344
	Joint Venture Preference	.055	.031	.052	1.778	.076	.769	1.301
	CSR of the brand	.384	.042	.325	9.163	.000	.528	1.893

a. Dependent Variable: Perceived Quality

Source: Primary data

Table 8: Collinearity Diagnostics

Collinearity Diagnostics ^a									
Model	Eigenvalue	Condition Index	Variance Proportions						
			(Constant)	Safety (Accident Prevention) Features	Tech Devt	HD (Antique) Preference	JV Preference	CSR of the brand	
1	1	5.838	1.000	.00	.00	.00	.00	.00	.00
	2	.056	10.221	.00	.13	.04	.26	.28	.04
	3	.039	12.200	.00	.00	.00	.66	.62	.00
	4	.027	14.756	.94	.02	.01	.03	.08	.13
	5	.022	16.239	.03	.60	.00	.03	.02	.67
	6	.018	18.015	.02	.26	.95	.02	.00	.16

a. Dependent Variable: Perceived Quality

Source: Primary data

Table 9: Residual Statistics

Residuals Statistics ^a					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	9.35	30.01	21.71	3.722	600
Residual	-13.682	13.372	.000	3.006	600
Std. Predicted Value	-3.320	2.230	.000	1.000	600
Std. Residual	-4.532	4.430	.000	.996	600

a. Dependent Variable: Perceived Quality

Source: Primary data

Graphs

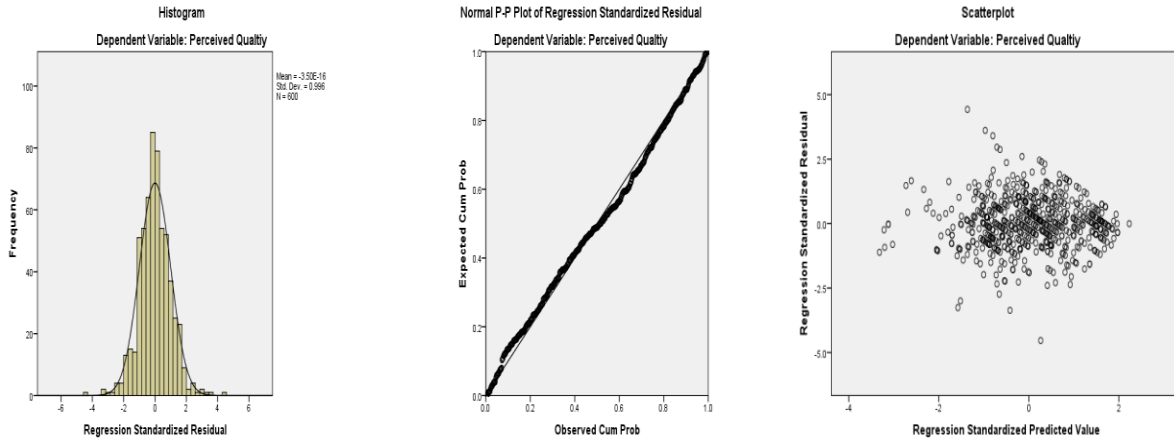


Table 10: Mann-Whitney Test for Gender:

Test Statistics^a

Ranks				
Gender		N	Mean Rank	Sum of Ranks
Perceived Quality	Male	372	296.76	110393.50
	Female	228	306.61	69906.50
	Total	600		

Source: Primary data

	Perceived Quality
Mann-Whitney U	41015.500
Wilcoxon W	110393.500
Z	-.677
Asymptotic Significance (2-tailed) p	.498

a. Grouping Variable: Gender

Table 11: Mann-Whitney Test for most often, a pillion rider rides with me:

Test Statistics^a

Ranks				
Most often, a pillion rider rides with me:		N	Mean Rank	Sum of Ranks
Perceived Quality	Yes	335	288.47	96636.00
	No	265	315.71	83664.00
	Total	600		

Source: Primary data

	Perceived Quality
Mann-Whitney U	40356.000
Wilcoxon W	96636.000
Z	-1.916
Asymp. Sig. (2-tailed) p	.055

a. Grouping Variable: Most often, a pillion rider

Table 12: Mann-Whitney Test for vehicle is shared with:

Test Statistics^a

Ranks				
Vehicle is shared with		N	Mean Rank	Sum of Ranks
Perceived Quality	Family members and others	450	302.88	136295.00
	Not shared, used by myself	150	293.37	44005.00
	Total	600		

Source: Primary data

	P Quality
Mann-Whitney U	32680.000
Wilcoxon W	44005.000
Z	-.583
Asymp. Sig. (2-tailed)	.560

a. Grouping Variable: Vehicle is shared with:

Table 13: Mann-Whitney Test for Gear Status:

Test Statistics^a

Ranks				
Gear status		N	Mean Rank	Sum of Ranks
Perceived Quality	With gears	343	296.11	101565.00
	Gearless	257	306.36	78735.00
	Total	600		

Source: Primary data

a. Grouping Variable: Gear status

Table 14: Mann-Whitney Test for Engine Capacity:

Test Statistics^a

Ranks				
Engine capacity	N	Mean Rank	Sum of Ranks	
Perceived Quality	Below 126 cc	384	299.89	115159.00
	Above 126 cc	216	301.58	65141.00
	Total	600		

	Perceived Quality
Mann-Whitney U	41239.000
Wilcoxon W	115159.000
Z	-.115
Asymp. Sig. (2-tailed)	.909

Source: Primary data

a. Grouping Variable: Engine capacity

Table 15: Mann-Whitney Test for Distance from home to Service centre:

Test Statistics^a

Ranks				
Distance from home to service center	N	Mean Rank	Sum of Ranks	
Perceived Quality	Close by	249	253.88	63216.00
	Far-off	251	247.15	62034.00
	Total	500		

Results/ Outputs	PQ/ Variable
Mann-Whitney U	30408.000
Wilcoxon W	62034.000
Z	-.522
Asymp. Sig. (2-tailed)	.602

Source: Primary data

a. Grouping Variable: Distance from home to service centre

Table 16: Kruskal-Wallis Test for Age

Test Statistics^a

Ranks			
Age	N	Mean Rank	
Perceived Quality	18-30 yrs	416	305.89
	31-45 yrs	132	283.77
	46-60 yrs	39	304.69
	61-75 yrs	13	285.35
	Total	600	

	Perceived Quality
Chi-Square (χ^2)	1.760
degrees of freedom (df)	3
Asymptotic Significance (p)	.624

Source: Primary data

Table 17: Kruskal Wallis Test for Economic Status:

Test Statistics^a

Ranks			
Economic Status	N	Mean Rank	
Perceived Quality	Middle Class	379	303.32
	Upper Middle Class	170	308.06
	Rich	51	254.37
	Total	600	

	Perceived Quality
Chi-Square	4.050
df	2
Asymp. Sig.	.132

Source: Primary data

Table 18: Kruskal Wallis Test for Formal Education:

Test Statistics^a

Ranks			
Formal Education	N	Mean Rank	
P. Qlty	Below 10	39	315.04
	10-12	119	296.14
	Graduate	284	320.24

Chi-Square	11.438
df	4
Asymp. Sig.	.022

	PG & Above	136	269.09
	Professional	22	237.64
	Total	600	

Table 19: Kruskal Wallis Test for Two-Wheeler Brand Owned:

Ranks			
Two-wheeler brand owned		N	Mean Rank
Perceived Quality	Hero	164	279.27
	Bajaj	98	287.79
	Honda	187	298.88
	TVS	85	289.68
	Others	66	390.65
	Total	600	

Source: Primary data

Test Statistics^a

Perceived Quality	
Chi-Square	21.270
df	4
Asymp. Sig.	.000

Table 20: Kruskal Wallis Test for Occupation:

Ranks			
Occupation		N	Mean Rank
Perceived Quality	Student	327	266.42
	Professional	70	215.34
	Govt. Employee	23	200.87
	Private Employee	61	238.30
	Business	19	205.26
	Total	500	

Source: Primary data

Test Statistics^a

Perceived Quality	
Chi-Square	13.182
df	4
Asymp. Sig.	.010

Table 21: Kruskal Wallis Test for Length of usage:

Ranks			
Length of usage		N	Mean Rank
P. Quality	1-3 yrs	240	244.25
	3-5 yrs	143	267.85
	Above 5 yrs	117	242.12
	Total	500	

Source: Primary data

Test Statistics^a

Perceived Quality	
Chi-Square	2.918
df	2
Asymp. Sig.	.233

Table 22: Mann-Whitney Test for Marital Status:

Ranks				
Marital Status		N	Mean Rank	Sum of Ranks
Perceived Quality	Married	121	226.86	27450.50
	Unmarried	356	243.13	86552.50
	Total	477		

Source: Primary data

Test Statistics^{a,b}

Perceived Quality	
Mann-Whitney U	20069.500
Wilcoxon W	27450.500
Z	-1.123
Asymp. Sig. (2-tailed)	.261

a. Grouping Variable: Marital Status

Table 23: Mann-Whitney Test for Brand Recall:

Ranks	
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Test Statistics^a



Brand Recall (Vehicle was repaired or replaced by Orgn)		N	Mean Rank	Sum of Ranks
Perceived Quality	Yes	287	314.11	90151.00
	No	313	288.02	90149.00
	Total	600		

Source: Primary data

	P. Quality
Mann-Whitney U	41008.000
Wilcoxon W	90149.000
Z	-1.846
Asymp. Sig. (2-tailed)	.065

a. Grouping Variable: Brand Recall