AN INTELLIGENT MACHINE LEARNING STUDY ON AUTOMOTIVE QUALITY AND PERFORMANCE

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ABSTRACT

Customer satisfaction is playing a vital role for the success of every business. Today’s, business everywhere the world makes out that the buyer is the king. Thus, the present study has been carried out to the customer satisfaction towards TVS Bikes, the present study is proposed to analyze the respondent’s satisfaction levels towards TVS Bikes with the attention of various satisfaction factors in the area of Salem district.

Keywords: TVS Bikes, Two Wheelers, and customer satisfaction.

I. INTRODUCTION

In Modern India, Two wheeler is become one of the essential need of every people for personal and also for business purpose. These create a boost to two wheeler industry and it is reflection positive growth in Indian economy. The annual turnover of two wheeler industries is Rs. 6200 Cr. in recent year. This shows that the two wheeler industries move towards growth phase. Basically two wheeler as (a) used to personal – The people use two wheeler for the personal transportation according to need of family members, (b) Used for Job/ Business: The people use two wheeler for carry the loads, Visiting people directly to the place where to promote for sales/business purpose. Two wheeler is not rural or urban, Poor or Rich now it become common to all people for helping transportation [1-5].

Customer satisfaction is playing a vital role for the success of every business. Today’s, business everywhere the world makes out that the buyer is the king. So that the researcher taking the research to analyze the customer satisfaction towards TVS Bikes, by satisfying their customer’s needs, the producers may retain the prevailing customer and might they attract thenew customers.

During freedom, the number of inhabitants in India was almost a day and a half. The versatility and transportation necessity was moderately less. Significant methods for public vehicle like pony truck, bullock-truck, bike, train and so forth were not the methods for quick vehicle and furthermore were not the prerequisite of those days. Just some big time salary individuals were having private vehicles like vehicle. Some higher working class and people in the lower layers of rich individuals began utilizing bikes in 1950s. Working class and needy individuals were utilizing bikes for their transportation necessities. As the foundation was exceptionally poor in the country, public transportation was additionally a bottleneck. Proficiency level in India was likewise less during that time. Because of certain means taken by the Indian government, education level went up which lead to a superior pay which thusly improved the buying force of individuals. This assumed a significant part in financial improvement of India. Additionally, the populace was developing at very high rate. Furthermore, because of the industrialization, individuals began moving from country territories to metropolitan regions. This brought about extension of the limits of the urban areas, which made individuals to go longer distances contrasted with before ones. A proficient public transportation, consequently, got unavoidable. In any case, city districts couldn't adapt up to the consistently expanding request of the public transportation. Subsequently, individuals began looking for the quicker method of transport to arrive at their objections. In 1970s, public vehicle was attempting to satisfy the need of individuals. Bike was the most favored bike because of low upkeep cost and convenience. In any case, the primary issue with bike was its lethargic speed. During that time, twowheelers like bikes and cruisers were
India is the third biggest maker of bikes after Japan and China, and the second biggest buyer after China. The bike business in India has developed quickly since the declaration of progression in 1991 by the at that point Finance Minister Dr. Manmohan Singh. After advancement car industry, particularly bike area began showing upward pattern as for development. Beforehand, there were just a small bunch of bike models accessible in the country. However, after advancement, number of organizations presented bikes in India. Indeed, the clients likewise expanded due to the simple strategy of procurement. Possessing a twowheeler was the need, however turned into a pattern throughout the long term. This pattern of possessing bikes was because of assortment of realities curious to India. One of the central components was restricted public vehicle in numerous pieces of India. Furthermore, bikes offered a lot of comfort and portability for the Indian family. For the bikes, driving was additionally not a major issue similarly as with four wheelers. The sensation of opportunity and being unified with the nature was capable by riding a bike. Indians favored bikes in view of their sensible size prompting simple moving of the vehicle out and about, low support, moderate costs, and simple advance reimbursements. Indian roads began flooding with individuals of all age bunches riding a bike. Mechanized bikes were viewed as an image of status by the general population. Advancement, urbanization and expanded individual vehicle necessities were the significant wellsprings of development for bike industry in India. Right now, - 4 - India is the second biggest maker of bikes in the world. In the year 2005-2006, the yearly creation of bikes in India remained at around 7600801 units. Only couple of years back in India, the bike market was overwhelmed by mopeds and bikes. Yet, presently days, bike industry is overwhelmed by bikes. Despite the fact that mopeds and bikes fulfill the transportation needs of the clients, there is an expanding interest for the bikes from individuals of all monetary layers due to their presentation and properties like eco-friendliness, style, low upkeep cost, sturdiness and so on. The deals of the cruiser have radically expanded in correlation with other bikes everywhere on the country. As indicated by an examination led by Global Consulting Firm, Frost and Sullivan; the bike business is the quickest developing fragment of the vehicle business. Likewise the investigation said that of all work force transport vehicles, the cruiser section would become quicker, trailed by traveler vehicles. Every one of these turns of events and realities have made bike industry one of the center enterprises in Indian economy. Right now, an enormous number of Indian and unfamiliar organizations are working in this industry.

India is the third biggest maker of bikes after Japan and China, and the second biggest buyer after China. Regardless of the helpless street framework and the pitiful buying power, the bike business in India has delighted in a more extensive allure with the majority as a methods for private transportation. Over the most recent couple of years, the Indian bike industry has seen a breathtaking development. It represents 60% of the homegrown market. Indians favor the bikes due to their little sensible size, low support, and valuing and simple advance reimbursements. Indian roads are loaded with individuals of all age bunches riding a bike. Lion's share of Indians, particularly the youths, incline toward engine bicycles instead of vehicles. Catching an enormous offer in the bike business, bicycles and bikes cover a significant fragment. Bicycles are viewed as the top pick among the young, as they help in simple compensation. Enormous assortments of bikes are accessible on the lookout, known for their most recent innovation and upgraded mileage. Indian bicycle address style and class for the two people in India. Showcasing procedures utilized by a developing industry are typically strikingly not quite the same as those of develop industry. Engine cycle industry in India is very in a period of quick development, while simultaneously, it has existed up to 55 years to be sufficiently adult. Today, when we get some information about his longing, the main thing that he requests is a bicycle. Bicycles, or by and large bikes, have made considerable progress from the times of Enfield and Rajdooth's ruling the market till today with Pulsar and Kariza hustling in similar roads. The discernment and the situating of the business may have changed, however the essential longing continued as before all consistently. (Source-BhandariBhupesh, Bajaj Gets in Gear, Business World, January 24th 2000.) Two-wheelers are normally characterized into three sorts - Scooters, Motorcycles and Mopeds. A gander at the post-autonomy time uncovers that the bike business has seen three unmistakable periods of development. Stage I: The Indian bike structure was very monopolistic during the initial a long time since Independence, when volumes developed at a sluggish speed. Bajaj Auto had an undisputed authority over the market. Customer needed to in a real sense hang tight for quite a long time prior to getting a Bajaj vehicle. The business enlisted an accumulated development pace of 12% during the Seventies.
Stage II: The subsequent stage started during the Eighties when the area was halfway liberated. This stage saw Japanese organizations tying up with homegrown players and fresher models were presented in explicit sections. Despite the fact that the interest was clearly solid for bikes, the greater part of the Japanese endeavor selected to create cruisers with the exception of Kinetic Honda which decided to make bikes. The yearly development rate for the bikes business during this stage remained at 16.4%. This stage stretched out till the mid Nineties, and there was a severance during the last piece of this stage i.e., 1992-93. The creation of bikes fell by a stage 16% in 1991-92 and by 8% the next years. Stage III: This stage started in 1994 when deals fired getting. The market saw a lofty expansion in the interest. IN 1995, the business created around 1,000,000 bikes, 6 lakh bikes and 5 lakh mopeds. The cruiser portion has seen deals develop by 27.08% from April 1995 to December 1995. During a similar period, bike deals developed by 17.26% and sulked by 20.7%. Practically all organizations are going in for limit development. The Demand Drivers: The essential justification the development of the bike market is credited to the way that Indians particularly in the rustic and semi-metropolitan zones, are attempting to hoist their way of life, and individuals in metropolitan urban areas are totally frustrated with the public vehicle framework. Variables influencing the interest are as he didn't follows: (A) Rising buying power: In the underlying years, the Indian shopper was anxious to purchase, yet he didn't have a decision. In the post-progression time frame, the buying force of the Indian working class saw an amazing increment. The eagerness to secure man durables likewise expanded. The coming of TV prompted project ways of life, and inspired even the heretofore economical masses to have a bike, a shopper's first road to have some mechanized transportation. That is the reason most of the vehicles employing on Indian streets are represented by bikes. (B) Rise in fuel costs: The equivalent can't be said of the bike business. Truth be told, most riders lean toward bikes, since they are both less expensive and eco-friendly when contrasted with vehicles. (C) Direct expenses: Increase in direct assessments goes about as an obstacle to the interest for bikes. Diminishing these will additionally build the interest for bikes.

(D) Proliferation of brands and models: The bike business currently furnishes the customer with more decision via models and brands. As of now, in the bike fragment there are 14 brands, 26 in the bike and 20 in the sulked section. Each model is putting forth a cognizant attempt to draw in the customer by a blend of highlights. For instance, highlights like eco-friendliness, ergonomics, speed and style are presently featured. (E) Replacement interest: In the year 1985-86, 1.3 million vehicles were produced in the country. Accepting that the existence of the bike is 10 years, practically 80% of these vehicles are going to be supplanted. With an increment in the decision and style, the substitution interest in the fragment is truly expanding. (F) Public vehicle framework: the helpless public vehicle framework in metropolitan zones has supported the interest for bikes. Advantages of bikes Two-wheelers are the most mainstream and exceptionally searched out mode of transport in India. The pattern of claiming bikes is because of its- • Economical cost • Safety • Fuel-proficient • Comfort level However, scarcely any Indian bicycle fans lean toward elite imported bicycles. Probably the most famous rapid bicycles are Suzuki Hayabusa, Kawasaki Ninja, Suzuki Zeus, Hero Honda Karizma, Bajaj Pulsar and Honda Unicorn. These superbikes are uncommonly intended for the individuals who have an enthusiasm for fast drive

<table>
<thead>
<tr>
<th>S. N</th>
<th>Two Wheeler Company</th>
<th>Market Share Dec,20 (%)</th>
<th>Market Share Dec,19 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hero Motocorp Ltd</td>
<td>39.25%</td>
<td>38.74%</td>
</tr>
<tr>
<td>2</td>
<td>Honda Motorcycle and Scooter India P Ltd</td>
<td>24.55%</td>
<td>24.47%</td>
</tr>
<tr>
<td>3</td>
<td>TVS Motor Company Ltd</td>
<td>14.35%</td>
<td>14.07%</td>
</tr>
<tr>
<td>4</td>
<td>Bajaj Auto Ltd</td>
<td>11.30%</td>
<td>11.97%</td>
</tr>
<tr>
<td>5</td>
<td>Royal Enfield</td>
<td>3.58%</td>
<td>3.77%</td>
</tr>
</tbody>
</table>
II. ABOUT THE TVS COMPANY

Sundaram-Clayton Ltd, a subsidiary company of TVS Group in the year 1979 started to manufacture TVS 50 mopeds in Hosur plant. Three years after company need to technical support for manufacturing of 100 cc motorcycles so the TVS decided to enter foreign collaboration with Suzuki company of Japan. After four years company buy the entire moped division from Sundaram Clayton, The name also changed TVS Suzuki Ltd. These two companies shared a Nineteen years of technical and manufacturing of two wheelers and introduced new modes in Indian market models like Suzuki Supra, Suzuki Samurai, Suzuki Shogun and Suzuki Shaolin, after that company name was changed TVS Motors in the year of 2001. BMW company plane to bring their G310R bike model in India, so they decided to enter strategic partnership with TVS company in 2013 and start to manufacturing G310R model bikes in India [5-15].

III. CURRENT SCENARIO OF TVS COMPANY

TVS Two Wheeler Company has registered total sales of 2,31,571 units in December 2019. The Indian automotive industry gears up for the Bharat Stage VI (BS6) emission regulations from April 1, 2020, TVS said in a statement that the company has started producing and dispatching BS6 models of the 2020 TVS Apache RTR series, the TVS Jupiter Classic and TVS XL models from December 2019. In the domestic market, TVS reported sales of 1,57,244 units in December 2019, the company reporting 73,512 units of exports in December 2019, up 22 per cent from 60,262 units in December 2018. Two-wheeler exports grew by 20%.

The Company an initial attempt to electric vehicle space with the launch of its first e-Scooter TVS iQUBE. The product came with 58 thrilling features, 'Industry-first' fundamentals like Geo-fencing Ride Statistics Telematics Remote Charge Status and Direction finding Assist all brought together to give the customer an awesome experience. In the existing product categories new launches like TVS NTORQ 125 racing edition TVS Jupiter Grande "Smart Xonnect" and TVS XL100 Comfort"i-TouchStart" further enhanced its positioning as a company with attention on state-of-the-art technology and passion for customers.

In March 2020, the TVS Apache Series reached a milestone of 3.8 million global customers. TVS Apache has created an unrivaled experience over the years, backed by 38 years of TVS Racing full-blooded engineering proficiency and stylish fashion.

Via one of the Company's foreign subsidiaries, the Company purchased Norton Motorcycles for GBP 16 million in an all-cash deal. This historic motorcycle company's segment offers the "Norton" "Commando" "Dominator" and the more recent "V4RR." The first of several 'Isle of Man' victories occurred in 1908. An important part of the heritage and history of British popular culture.

This acquisition broadens the Company's global portfolio by incorporating adjacent product lines, customers, and technologies into the fold. Norton Motorcycles will also use its additional regional network coverage and global supply chain capability to penetrate into new markets and audiences for current and future goods, according to the company.
IV. INVESTMENTS IN NEW TECHNOLOGIES

At present TVS company concentrate on investing new technologies like electric vehicles, artificial intelligence this is part of TVS motors Singapore subsidiary company, almost they invested Rs 72.4 crore in the Singapore subsidiary Rajesh Narasimhan, the chief executive of the Singapore entity, whispered: “We are the leading provider of IoT solutions in the supply chain and logistics. For this purpose company acquired a 14.1% stake in US Based Altizon company in the year of 2019.

In the new era renting of car and motorcycles is new trends, for this TVS company buy a 24% of shares in Rentongo, this is a company giving motorcycles to rent, it’s a Bengaluru-based start-up operated by Condivision in the year of 2017 [16-22].

V. REVIEW OF LITERATURE

Vijayalakshmi. D, ShanthaKumari. M and Deepika. S (2015) in their study find that the level of satisfaction to quality of selected all brands is highly satisfied. Mahalakshmi. M (2014) in her study find that most of the respondents use the TVs XL for their comfortand satisfaction. Balakrishna Swarna and Krishna Banana (2018) in their study found that the satisfaction is high towards all other factors except the availability of newly introduced bikes. Priyanka Jain (2015) in her study result Yamaha bikes satisfaction level is high towards all other factors except mileage [1-6]. Akutar J. expressed that consumer loyalty is the key of business achievement. Likewise whoever else is the best adjudicator of what fulfills the client than client himself. Akutar recorded ten unique measurements that prompted consumer loyalty specifically, validity, security, access, correspondence, understanding the buyer, physical assets, unwavering quality, responsiveness, ability and politeness. For recognizing the effect of consumer loyalty [52][53],

J. Jeffrey Inman and Marcel Zeelenberg inspected the outcomes of rehash buying (keeping up the norm) as opposed to exchanging with regards to data in regards to the justification the choice (e.g., earlier utilization scene, brand history), and it was discovered that there were circumstances in which rehash buying may have caused so a lot or much more lament than exchanging. Creators fought that the previously mentioned impact relies upon whether there was a reasonable reason for the choice. In a progression of four examinations, Authors showed that if there was adequate inspiration to warrant a switch, shoppers would feel less lamented despite a resulting negative result acknowledged by means of a switch than in one understood through a recurrent buy. The outcomes suggested that sensations of disappointment were alleviated when the shopper reflects and reasons that the choice was fitting considering the present situation.

An investigation by Ton Van Der wiele, Paul Boselie and Martijn Hesselink zeroed in on the examination of observational information on consumer loyalty and the relationship with hard authoritative execution information. The investigation was identified with flaxo organization with its settle in the Netherlands however was working in different nations in Europe as well. The experimental information on consumer loyalty and business execution come from 1998 to 1999. The Flaxo organization utilized the poll study. The clients were agents of organizations that purchased impermanent staff.

VI. OBJECTIVE

To examine the customers satisfaction level towards TVS bikes in Salem District

VII. METHODOLOGY

A. Data
Primary data has been used in this research to collect data with the support of questionnaire and

Secondary data also used in this research to support this research.

B. Area of Study
To Study on the customers satisfaction Towards TVS bikes the researcher selected Salem District as Area of study.

C. Sample Design
Convenient sampling method was used in this research. 105 TVS Bike customers have been selected in Salem Districts for this research.

D. Framework of Analysis

The researcher used Garrett Ranking method to analyze and to interpret data.

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Garrett ranking test</th>
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<tbody>
<tr>
<td>Satisfaction Factor</td>
<td>Res Score</td>
</tr>
<tr>
<td>Brand</td>
<td>2 7 5 68 10 8 4 1</td>
</tr>
<tr>
<td>Look and style</td>
<td>3 3 4 8 6 60 10 11</td>
</tr>
<tr>
<td>Number of Service Stations</td>
<td>2 4 6 5 7 5 21 55</td>
</tr>
<tr>
<td>Fuel Efficiency</td>
<td>8400 544 300 216 47 82 66 63</td>
</tr>
<tr>
<td>Safety</td>
<td>8 2 3 6 65 6 2 13</td>
</tr>
<tr>
<td>Performance</td>
<td>5 75 10 4 4 3 2 2</td>
</tr>
<tr>
<td>Price</td>
<td>4 1 70 6 9 6 4 5</td>
</tr>
<tr>
<td>Resale Value</td>
<td>1 5 2 4 3 15 60 15</td>
</tr>
<tr>
<td>Respondents</td>
<td>105 105 105 105 105 105 105 105</td>
</tr>
</tbody>
</table>

It is seen from the above Table that according to the Garrett ranking test, the factors which induces the respondents to customer satisfaction towards TVS Bikes are in this order namely, Fuel efficiency of the bikes, Performance, Price, Brand, Safety, Look and Style, High Resale Value, and number of Service stations [23-27].

The Below Diagram Shows Customers Preferences towards TVS Bike
The Above Diagram clearly showcasing the TVS Bike Users Give more important for fuel efficiency than bike performance, price is third important point only so in Indian customer price is not a big issue, Resale Value is very least important.

VIII. SUGGESTIONS

To increase the TVS service stations in Salem District, Also the TVS company provide some well-trained mechanics for servicing bikes. To increase the safety features in new model bikes. TVS bike resale value is less to suggest the TVS bike dealers increase the Exchange value of the TVS Bikes to increase the retain of the prevailing customer and might they attract the new customers.

IX. CONCLUSION

The results of this study clearly exemplify the fact that an in-depth market research study has been conducted, regarding the market share of the bikes. TVS Secure second position, with respect to fast moving models TVS star city Plus, TVS Jupiter Classic, Apache RTR series, scooty, XL Super, Thus the overall performance of TVS bikes seems to be good in the entire bike industry in salem city. Further in order to remain the same position company has to be maintaining the bike quality, frequently launching new models, safety features, increasing service centre, concentrate more on after sales and Services.

REFERENCES


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