International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

FACTORS INFLUENCING AND BUYING BEHAVIOUR OF THE CUSTOMERS TOWARDS E-BIKES

[1]K. S. Karthika, [2]Dr.R. Nagarajan

[1]Ph.D Research Scholar & [2]Assistant Professor & Research Supervisor PG & Research Department of Commerce, Gobi Arts & Science College (Autonomous), Gobichettipalayam, Erode, Tamil Nadu, India.

1 INTRODUCTION :

The global shift towards sustainable transportation solutions has prominently featured the rise of electric bicycles, or e-bikes, as a viable and eco-friendly alternative. E-bikes blend traditional biking with electric propulsion, offering consumers a practical means of reducing carbon emissions and navigating urban environments efficiently. This trend has been fueled by heightened environmental awareness, prompting individuals to seek greener modes of transport that minimize ecological impact while supporting personal health benefits through physical activity[1].

Technological advancements in battery and motor technology have significantly enhanced the appeal of e-bikes. Modern lithium-ion batteries provide extended range and quick recharge times, addressing previous concerns about battery life and range anxiety. This technological evolution has made e-bikes more attractive to commuters looking to bypass traffic congestion and shorten commute times, as well as to older adults and individuals with mobility challenges seeking accessible and empowering transportation options[2].

The market for e-bikes has experienced robust growth, particularly in regions with supportive infrastructure and policies promoting cycling. European and Asian markets, in particular, have seen substantial adoption rates, driven by investments in bike-friendly infrastructure and initiatives such as bike-sharing programs. Consumer behavior towards e-bikes is shaped by a variety of factors including price competitiveness, perceived value, brand reputation, and the functional attributes of the bikes themselves, such as motor power, durability, and design aesthetics[3].

An attempt is made in this chapter to understand the factors influencing and buying behaviour of the customers towards e-bikes in Erode District of Tamil Nadu. For this purpose, statistical tools such as percentage analysis, Garret's Ranking Analysis, Factor Analysis, Correlation, ANOVA and Structural equation modeling have been used.

2. DURATION OF USING E-BIKES :

The following table illustrates the duration of e-bikes used by the customers.

TABLE 2.1

DISTRIBUTION OF CUSTOMERS BASED ON THE DURATION OF USING E-BIKES

Duration	No. of Respondents	Percentage
Less than a year	245	37.5
1 to 3 years	295	45.2
Above three years	113	17.3
Total	**653**	**100.0**

Source: Primary Data

The table 2.1 depicts that 45.2 per cent of the customers have been using the e-bikes for a period of 1 to 3 years, 37.5 per cent of the customers have been using the e-bikes for less than a year and 17.3 per cent of the customers have been using the e-bikes for a period of above 3 years.

---

[1] Pucher, J. and Buehler, R. (2008). "Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany", *Transport Reviews, Vol.28*(4), pp.495-528.

[2] Dill, J., & Rose, G. (2012). Electric bikes and transportation policy: Insights from early adopters. Transportation Research Record: Journal of the Transportation Research Board, *2314*, 28-34.

[3] Shaheen, S. A., & Zhang, H. (2010). Bikesharing in Europe, the Americas, and Asia: Past, present, and future. *Transportation Research Record: Journal of the Transportation Research Board, 2143*, 159-167.

3. SOURCE OF FINANCE FOR BUYING E-BIKES :

The following table indicates the source of finance of the customers for buying e-bikes.

TABLE 3.1

DISTRIBUTION OF CUSTOMERS BASED ON THE SOURCE OF FINANCE FOR BUYING E-BIKES

Source of finance	No. of Respondents	Percentage
Own fund	480	73.5
Borrowed fund	173	26.5
Total	**653**	**100.0**

Source: Primary Data

The table 4.2 portrays that out of 653 respondents, majority (73.5 per cent) used own source of finance for buying their e-bikes and 26.5 per cent of the respondents used borrowed funds for buying their e-bike purchase.

4. TEST DRIVE MADE BY THE CUSTOMERS BEFORE BUYING E-BIKES :

The following table displays test drive made the customers before buying e-bikes.

TABLE 4.1

DISTRIBUTION OF CUSTOMERS BASED ON TEST DRIVE MADE BY THE CUSTOMERS BEFORE BUYING E-BIKES

Test Drive Made	No. of Respondents	Percentage
Yes	410	62.8
No	243	37.2
Total	**653**	**100.0**

Source: Primary Data

The table 4.1 represents that 62.78 per cent of the customers made a test ride before purchasing their e-bike whereas 37.2 per cent of the customers did not take a test ride before purchasing their e-bikes.

5. CONSULTATION MADE BY THE CUSTOMERS BEFORE BUYING E-BIKES :

The following table presents the consultation made by the customers before buying e-bikes.

TABLE 5.1

DISTRIBUTION OF CUSTOMERS BASED ON CONSULTATION MADE BY THE CUSTOMERS BEFORE BUYING E-BIKES

Consultation with	No. of Respondents	Percentage
Parents	137	21.0
Spouse	169	25.9
Consultants	192	29.4
Friends	97	14.8
Showroom / Dealer	58	8.9
Total	**653**	**100.0**

Source: Primary Data

The table 5.1 denotes that 29.4 per cent of the customers consult with consultants, 25.9 per cent of the customers consult with spouse, 21 per cent of the customers consult with parents, 14.8 per cent consult with friends and 8.9 per cent consult with showroom/dealer before buying their e-bikes.

6. FACTORS MOTIVATING THE CUSTOMERS TO BUY E-BIKES :

Consumers are motivated to purchase e-bikes due to a combination of environmental, economic, health, and lifestyle factors. One of the primary drivers is the growing awareness of environmental sustainability. E-bikes offer a cleaner mode of transportation by reducing carbon emissions and air

pollution, making them an attractive choice for eco-conscious individuals who want to minimize their environmental footprint[4]. Economic benefits also play a significant role, as e-bikes are more cost-effective than traditional vehicles. They require less money for fuel and maintenance, which appeals to budget-conscious consumers[5]. The convenience of e-bikes, which allow users to avoid traffic congestion and easily find parking, enhances their appeal, especially for urban dwellers facing daily commuting challenges. Technological advancements, such as improved battery life, lighter materials, and smart features like GPS integration, have made e-bikes more reliable and user-friendly, catering to tech-savvy consumers seeking modern, efficient transportation[6].

There are fifteen factors motivating customers to buy e-bikes have been identified and considered for the analysis are low interest rates, Price, Style, Technology, Battery life, Warranty, Maintenance Free, Loan facility, Brand image, Safety, Anti-theft security, Less legal formalities, User friendly, After sales service, Re-sale value and Durability.

The factors motivating the customers to buy e-bikes are analysed with Garret Ranking Techniques.

Garrett's Ranking Technique

Per cent position = $\dfrac{100\,(R_{ij} – 0.5)}{N_j}$

Where

R_{ij} = Rank given for the ith problem by the jth individual

N_j = Number of problems are ranked

By referring the Garrett ranking table, the per cent position is converted into scores. Then for each factor, the scores of each customer are added and then mean value is calculated. The factors having highest mean value is considered to be the most important factor.

Scale values as per Garrett ranking technique for first to fifteen ranks are: 85, 75, 69, 64, 60, 57, 53, 50, 47, 43, 40, 36, 31, 25 and 14 respectively.

The percentage position of each rank is made into score by referring factors and summed up for assigning rank.

The Table 1.5 shows the result of Garrett Ranking Analysis on the factors motivating the customers to buy e-bikes.

TABLE 6.1

FACTORS MOTIVATING THE CUSTOMERS TO BUY E-BIKES: GARRET'S RANKING ANALYSIS

Factors	Ranks	I	II	III	IV	V	VI	VII	VIII	IX	X	I	II	III	IV	V	Total score	Mean score	Rank
	Scale Value (x)	85	75	69	64	60	57	53	50	47	43	40	36	31	25	14			
Price	F	84	77	73	62	42	51	59	50	31	34	24	13	21	15	17	653	59.09	I
	Fx	7140	5775	5037	3968	2520	2907	3127	2500	1457	1462	960	468	651	375	238	38585		
Style	F	73	53	63	60	54	60	45	55	19	38	15	31	39	27	21	653	56.02	III
	Fx	6205	3975	4347	3840	3240	3420	2385	2750	893	1634	600	1116	1209	675	294	36583		
Technology	F	70	65	51	42	68	68	34	28	55	46	32	27	23	26	18	653	56.08	II
	Fx	5950	4875	3519	2688	4080	3876	1802	1400	2585	1978	1280	972	713	650	252	36620		
Battery life	F	42	47	44	73	62	77	67	48	47	27	38	18	19	21	23	653	54.88	IV
	Fx	35	35	30	46	37	43	35	24	22	11	15	64	58	52	32	3583		

---

[4] Fishman, E. and Cherry, C. (2016), "E-bikes in the Mainstream: Reviewing a Decade of Research", Transport Review*s*, Vol.36 (1), pp.72-91.

[5] Langford, B. C., Cherry, C. R., Yoon, T., Worley, S., and Smith, D. R. (2017), "North America's First E-bike Share: A Year of Experience", Transportation Research Part D: Transport and Environment, Vol. 47, pp.215-224.

[6] Weiss, M., Dekker, P., Moro, A., Scholz, H., and Patel, M. K. (2015), "On the Electrification of Road Transport—Learning Rates and Price Forecasts for Hybrid-electric and Battery-electric Vehicles", Energy Policy, Vol.48, pp.374-393.

																		Total	Mean	Rank
		70	25	36	72	20	89	51	00	09	61	20	8	9	5	2	7			
Warranty	F	57	34	33	45	48	66	68	77	53	49	39	32	21	16	15	653	53.93	V
	Fx	4845	2550	2277	2880	2880	3762	3604	3850	2491	2107	1560	1152	651	400	210	35219		
Maintenance Free	F	40	44	25	56	47	42	76	68	67	50	33	30	28	24	23	653	52.28	VIII
	Fx	3400	3300	1725	3584	2820	2394	4028	3400	3149	2150	1320	1080	868	600	322	34140		
Loan facility	F	47	48	41	49	34	32	59	42	69	73	65	42	21	18	13	653	52.72	VII
	Fx	3995	3600	2829	3136	2040	1824	3127	2100	3243	3139	2600	1512	651	450	182	34428		
Brand image	F	42	52	43	27	52	37	78	70	54	65	49	31	18	20	15	653	53.15	VI
	Fx	3570	3900	2967	1728	3120	2109	4134	3500	2538	2795	1960	1116	558	500	210	34705		
Safety	F	27	44	31	28	33	34	45	21	51	55	76	76	55	43	34	653	46.97	IX
	Fx	2295	3300	2139	1792	1980	1938	2385	1050	2397	2365	3040	2736	1705	1075	476	30673		
Anti-theft security	F	25	40	42	41	35	32	23	24	42	45	51	65	76	41	71	653	45.41	XI
	Fx	2125	3000	2898	2624	2100	1824	1219	1200	1974	1935	2040	2340	2356	1025	994	29654		
Less legal formalities	F	33	36	41	28	36	31	19	19	28	33	56	75	67	83	68	653	44.09	XIII
	Fx	2805	2700	2829	1792	2160	1767	1007	950	1316	1419	2240	2700	2077	2075	952	28789		
User friendly	F	31	41	43	41	29	35	16	19	60	25	27	35	91	74	86	653	44.32	XII
	Fx	2635	3075	2967	2624	1740	1995	848	950	2820	1075	1080	1260	2821	1850	1204	28944		
After sales service	F	53	27	48	30	30	25	23	55	24	44	45	62	60	67	60	653	46.53	X
	Fx	4505	2025	3312	1920	1800	1425	1219	2750	1128	1892	1800	2232	1860	1675	840	30383		
Re-sale value	F	20	29	44	38	47	32	22	51	32	33	26	55	57	88	79	653	43.98	XIV
	Fx	1700	2175	3036	2432	2820	1824	1166	2550	1504	1419	1040	1980	1767	2200	1106	28719		
Durability	F	9	16	31	33	36	31	19	26	21	36	77	61	57	90	110	653	39.54	XV
	Fx	765	1200	2139	2112	2160	1767	1007	1300	987	1548	3080	2196	1767	2250	1540	25818		
TOTAL	N	653	653	653	653	653	653	653	653	653	653	653	653	653	653	653			

Source: Primary Data

Note: Scale value, f= No. of Respondents, fx=Score value

The table 6.1 confirms that Price is the most important factor which motivated the customers to buy the e-bikes with the mean Garret's score of 59.09 followed by Technology (56.08), Style (56.02), Battery life (54.88), Warranty (53.93), Brand image (53.15), Loan facility (52.72), Maintenance Free (52.28), Safety (46.97), After sales service (46.53), Anti-theft security (45.41), User friendly (44.32), Less legal formalities (44.09), Re-sale value (43.98) and Durability (39.54).

It is concluded that price is the most importance factor which motivate the customer to buy the e-bikes.

7 CUSTOMERS PREFERENCE TOWARDS PARTICULAR BRAND OF E-BIKES :

The following table 6 displays the customers' preference towards particular brand of e-bikes.

TABLE 7

DISTRIBUTION OF CUSTOMERS BASED ON THEIR PREFERENCE TOWARDS PARTICULAR BRAND OF E-BIKES.

S. No.	Brand	No. Respondents	Percentage
1	Flio	151	23.1
2	Ola	118	18.1
3	Okinawa	83	12.7
4	Hero Electric	43	6.6
5	Gaura	61	9.3
6	Komaki	56	8.6
7	Ampere	69	10.6
8	Ather	37	5.6
9	TVS	20	3.1
10	Avon E Scoot	15	2.3
Total		**653**	**100%**

Source: Primary Data

The table .6 explains that out of 653 sample customers, 23.1 per cent of the sample customers preferred Flio brand of e-bike, 18.1 per cent of the sample customers preferred Ola brand of e-bike, 12.7 per cent of the sample customers preferred Okinawa brand of e-bike, 10.6 per cent of the sample customers preferred Ampere brand of e-bike, 9.3 per cent of the sample customers preferred Gaura brand of e-bike, 8.6 per cent of the sample customers preferred Komaki brand of e-bike, 6.6 per cent of the sample customers preferred Hero Electric brand of e-bike, 5.6 per cent of the sample customers preferred Ather brand of e-bike, 3.1 per cent of the sample customers preferred TVS brand of e-bike and 2.3 per cent of the sample customers preferred Avon E Scoot brand of e-bike.

Hence, it is concluded that most of the sample customers prefer Flio as their most important brand.

8 BUYING BEHAVIOUR OF CUSTOMERS TOWARDS E-BIKES :

In recent years, e-bikes have gained significant popularity as a sustainable and convenient mode of transportation, reflecting a growing shift in customer buying behaviour. This surge in interest is driven by various factors, including environmental concerns, rising fuel costs, urban congestion, and the increasing need for efficient, eco-friendly commuting options. E-bikes offer the advantage of reduced carbon emissions, lower operational costs, and health benefits, appealing to environmentally conscious consumers and those seeking practical mobility solutions. Theory of planned behaviour is used for the purpose of analyzing the buying behaviour of customers towards e-bikes.

APPLYING THE THEORY OF PLANNED BEHAVIOR TO BUYING BEHAVIOR OF E-BIKES

The Theory of Planned Behavior (TPB) provides a robust framework for understanding consumer decision-making processes, especially in the context of purchasing behaviors. When applied to the buying behavior of e-bikes, TPB helps explain how different psychological and social factors influence consumers' intentions and actual buying behavior. The model incorporates five key components: attitude, subjective norms, perceived use, intention, and buying behavior.

1. Attitude Toward E-Bikes

Attitude represents the individual's overall evaluation of purchasing an e-bike. This attitude is formed based on beliefs about the benefits and drawbacks of e-bikes. If a consumer believes that e-bikes are environmentally friendly, cost-effective for commuting, and contribute to personal fitness, they will

develop a positive attitude towards buying one. Conversely, concerns about battery life, charging infrastructure, or the initial cost may lead to a negative attitude. A positive attitude towards e-bikes increases the likelihood that a consumer will intend to purchase one, as they view the behavior as beneficial and worthwhile.

2. Subjective Norms

Subjective norms refer to the perceived social pressures or expectations from others that influence the decision to purchase an e-bike. These norms are shaped by the opinions and behaviors of people significant to the consumer, such as family, friends, colleagues, or broader social groups. If a consumer perceives that their peers, community, or society favors the use of e-bikes as a sustainable mode of transportation, they are more likely to feel encouraged to buy one. On the other hand, if they sense disapproval or indifference from their social circle, their intention to purchase may diminish. Social influence is a critical factor in shaping buying decisions, especially for products like e-bikes that are associated with social and environmental responsibility.

3. Perceived Use

Perceived use in the context of TPB refers to the individual's perception of the practical utility and ease of using e-bikes. It includes factors like ease of riding, the convenience of charging, maintenance requirements, and the suitability of e-bikes for daily commuting needs. If consumers believe that e-bikes are easy to use, maintain, and fit seamlessly into their lifestyle, their intention to purchase one increases. This perceived ease of use addresses both the functional aspects of the product and the individual's confidence in effectively integrating it into their routine. Higher perceived use reduces the barriers to adoption, making e-bikes a more attractive option for consumers.

**4. Intention to Purchase E-Bikes**

Intention is a key predictor of actual behavior and is shaped by the combination of attitude, subjective norms, and perceived use. It represents the consumer's readiness or plan to purchase an e-bike. When consumers have a positive attitude towards e-bikes, perceive social support for their decision, and believe in the practical utility of e-bikes, their intention to buy will be stronger. A strong intention often translates into concrete actions, making it a critical focus for marketers and policymakers who aim to promote e-bike adoption. Intention serves as the motivational factor that drives consumers from considering a purchase to making a decision.

5. Buying Behavior

Buying behavior is the actual action of purchasing an e-bike, driven by the intention to buy. While intention is a strong predictor of behavior, actual buying behavior can be influenced by external factors such as financial constraints, availability of e-bike models, market conditions, or unexpected changes in personal circumstances. TPB suggests that the stronger the intention, the higher the likelihood of purchasing behavior, provided there are no significant barriers. For instance, consumers who have a strong intention to buy an e-bike may still be deterred if they face high prices, limited availability, or lack of charging infrastructure. Understanding the gap between intention and actual buying behavior is crucial for addressing potential obstacles and facilitating easier adoption.

In order to identify the relationship attitude, subjective norms, perceived use, intention and buying behaviour, the following structural model with hypotheses have been framed.

FIGURE 1

RESEARCH MODEL
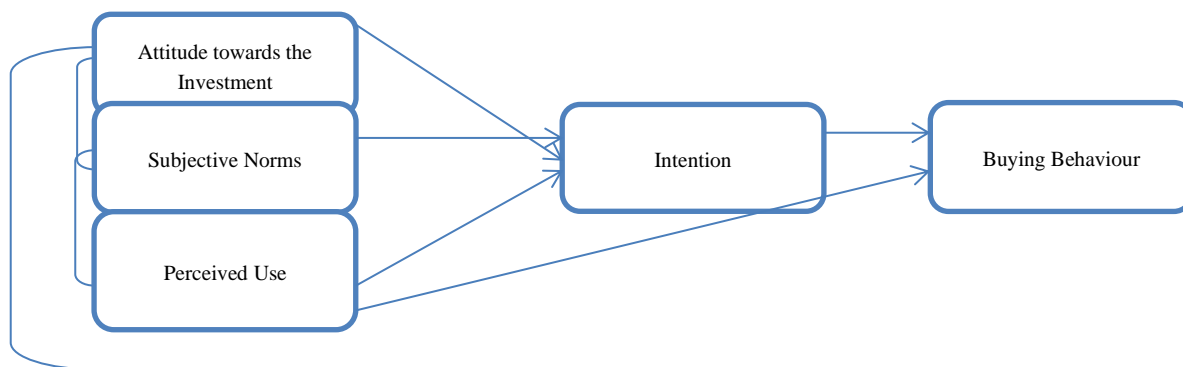
The Path analysis has been employed to test four hypotheses ($H_1 – H_4$) proposed for direct relationship of respondents' intention to buying behaviour and next three hypotheses ($H_5 – H_7$) proposed for inter relationship of the antecedents influencing the buying behaviour. This analytical technique allows for the evaluation of the overall fit of the proposed model and the estimation of all the corresponding coefficients simultaneously (Hair et al., 1995; Chan & Lau, 2014).

Based on the research model above, the proposed hypotheses are as follows:

- H_0: There is no variable influencing the buying behaviour of customers towards e-bikes.
- H_1: A significant relationship exists between attitude and intention on buying behaviour towards e-bikes.
- H_2: A significant relationship exists between subjective norms and intention on buying behaviour towards e-bikes.
- H_3: A significant relationship exists between perceived use and intention on buying behaviour towards e-bikes.
- H_4: A significant relationship exists between perceived use and buying behaviour towards e-bikes.
- H_5: A significant relationship exists between intention and buying behaviour towards e-bikes.

In order to identify the inter-relationship between the buying behaviour towards e-bikes in all the segments, the following hypotheses have been framed and tested:

- H_6: A significant inter-relationship exists between the attitude and the subjective norms on the impact of attitude towards buying behaviour of e-bikes.
- H_7: A significant inter-relationship exists between the subjective norms and the behavioural Control on the impact of attitude towards buying behaviour of e-bikes.
- H_8: A significant inter-relationship exists between the behavioural Control and the attitude on the impact of investment behaviour towards buying behaviour of e-bikes.

8.1 BUYING BEHAVIOUR OF CUSTOMERS TOWARDS E-BIKES: FACTOR ANALYSIS

In this section an attempt is made to assess buying behaviour of customers towards e-bikes in Erode district of Tamil Nadu. Positive attitudes towards the e-bike brands, due to their perceived security and reliability, play a crucial role in driving buying decisions. Subjective norms, including social influences and brand perceptions, further impact individuals' choices are influenced by reinforcing the attractiveness of these vehicles. Perceived use, such as ease of access and understanding of the brands, also significantly affects buying intentions. Factor analysis reveals five main components—attitudes, subjective norms, perceived use, intention, and buying behaviour—that together explain a substantial portion of the variance in buying decisions. There are 25 statements have been used in this regard. Understanding these factors provides valuable insights into how individuals choose and commit to buy e-bikes. The following table indicates about the KMO and Bartlett's Test of sampling adequacy.

TABLE 7

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.892
Bartlett's Test of Sphericity	Approx. Chi-Square	3267.456
	Df	300
	Sig.	.000

The table 7 depicts that Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is 0.892, which indicates that the sample is highly suitable for factor analysis. This high value suggests that the data are appropriate for extracting factors and that the correlations between variables are sufficiently strong. Bartlett's Test of Sphericity supports this, with a chi-square value of 3267.456 and a significance level of 0.000. The significant result confirms that the correlation matrix is not an identity matrix, further validating the appropriateness of factor analysis for the data set.

TABLE 8

ROTATED COMPONENT MATRIX

	Component					Communalities
	1	**2**	**3**	**4**	**5**	
ATT1	0.853					.894
ATT2	0.837					.860
ATT3	0.825					.815
ATT5	0.803					.796
ATT4	0.792					.796
SN2		0.879				.734
SN3		0.864				.713
SN4		0.841				.715
SN5		0.823				.712
SN1		0.805				.711
PU3			0.869			.725
PU4			0.854			.711
PU2			0.832			.710
PU5			0.817			.688
PU1			0.798			.670
IN5				0.846		.673
IN3				0.827		.649
IN4				0.804		.634
IN2				0.782		.629
IN1				0.769		.616
BB5					0.835	.645
BB3					0.814	.626
BB4					0.801	.614

BB2					0.778	.591
BB1					0.765	.587
Eigen Value	**7.843**	**3.528**	**2.926**	**2.067**	**1.563**	
% of Variance	**34.15**	**15.28**	**12.64**	**8.98**	**6.78**	
Cumulative %	**34.15**	**49.43**	**62.07**	**71.05**	**77.83**	

Source: Computed value

The table 8 describes that factor analysis yielded five factors accounting for 77.83 per cent of total variance. Factor 1 consists of five statements and it explains 34.15 per cent of the total variance named as attitude on e-bikes. Factor 2 consists of five statements and it explains 15.28 per cent of the total variance and named as subjective norms. Factor 3 is having five statements and it explains 12.64 per cent of the total variance and named as perceived use of E-bikes. Factor 4 consists of five statements and it explains 8.98 per cent of the total variance. Factor 4 is named as intention on e-bikes. Factor 5 also consists of five statements and it explains 11.536 per cent of the total variance. Factor 5 is named as buying behaviour of e-bikes.

8.2 BUYING BEHAVIOUR OF CUSTOMERS TOWARDS E-BIKES: CORRELATION ANALYSIS

The Pearson Correlation is applied to test the relationship among the four independent variables and one dependent variable. The qualified variables are used to calculate the score for new variables, according to the components from the result above. The scores of these variables are calculated by averaging scores of all items included in each component. Thus, the five variables are formed, which are attitude on e-bikes, subjective norms on e-bikes, perceived use of e-bikes, intention on e-bikes and buying behaviour on e-bikes. Among them, attitude, subjective norms, perceived use, intention on e-bikes are independent variables and buying behaviour of e-bikes is dependent variable. The result of Pearson Correlation analysis is presented in the following Table 4.9.

TABLE 9
CORRELATION ANALYSIS

Factors	Attitude	Subjective Norm	Perceived Behavioural Control	Intention	Investment Behaviour
Attitude	1				
Subjective Norm	.812**	1			
Perceived Behavioural Control	.755**	.763**	1		
Intention	.744**	.738**	.746**	1	
Investment Behaviour	.803**	.728**	.725**	.713**	1
. Correlation is significant at the 0.01 level (2-tailed).					

The Table 9 represents the correlation coefficients result among five variables. The dependent variable investment behaviour shows relationships with four independent variables which are significant at 1 per cent level. The high value of those correlation coefficients and their significant at the 0.01 levels indicates that there is a strong positive correlation between the dependent variable and each of the four independent variables.

Hence, it is concluded that there is a strong and positive relationships between these independent and dependent variables pair-wise.

4.8.3 BUYING BEHAVIOUR OF CUSTOMERS TOWARDS E-BIKES: RELIABILITY AND VALIDITY STATISTICS

The reliability and validity statistics to check the data is valid for the model fit is given in the following table.

TABLE 10
RELIABILITY AND VALIDITY STATISTICS

Constructs	Factors	Factor Loadings	Cronbach's Alpha	Convergent Validity (AVE)	Discriminant Validity	Composite Reliability (CR)
Attitude	ATT1	0.853	0.884	0.676	0.822	0.913
	ATT2	0.837				
	ATT3	0.825				
	ATT5	0.803				
	ATT4	0.792				
Subjective Norms	SN2	0.879	0.901	0.710	0.843	0.925
	SN3	0.864				
	SN4	0.841				
	SN5	0.823				

	SN1	0.805				
Percei ved Use	PU3	0.869	0.876	0.696	0.834	0.920
	PU4	0.854				
	PU2	0.832				
	PU5	0.817				
	PU1	0.798				
Intention	IN5	0.846	0.869	0.650	0.806	0.903
	IN3	0.827				
	IN4	0.804				
	IN2	0.782				
	IN1	0.769				
Buying Behaviour	BB5	0.835	0.882	0.643	0.802	0.900
	BB3	0.814				
	BB4	0.801				
	BB2	0.778				
	BB1	0.765				

Source: Computed value

The table 10 indicates the Validity and Reliability Internal consistency is an analysis to assess the validity of items and the reliability of measurements are used. This analysis uses Cronbach Alpha and Composite reliability to identify whether the items are valid and measurements are reliable. In addition, the convergence validity is assessed by using Average Variance Extracted (AVE), it aims to assess the discriminant validity based on the following "rule of thumb": the positive square root of the AVE for each of the latent variables should be higher than the highest correlation with any other latent variable The criteria for good construct reliability can be seen from the value of composite reliability > 0.60 and AVE > 0.50 **(W.Black&B.J.Babin, 2019).**

The value of Cronbach's Alpha for all the four variables are above 0.85 and fit to further process of the research. The discriminant validity also confirms the value of above 0.8 for all the five factors. The composite reliability value of 0.913, 0.925, 0.920, 0.903 and 0.900 are respectively for attitude, subjective norms, perceived use, intention and buying behaviour.

The Average Variance Explained for attitude, subjective norms, perceived use, intention and investment behaviour are 0.676, 0.710, 0.696, 0.650 and 0.643 respectively.

8.4 IMPACT INVESTMENT BEHAVIOUR TOWARDS E-BIKES: PATH ANALYSIS

The following figure 4.2 represents the Theory of Planned Behaviour model applied to find out the Impact of consumer buying behaviour towards e-bikes using path analysis.

FIGURE 2

THEORY OF PLANNED BEHAVIOUR MODEL: PATH ANALYSIS
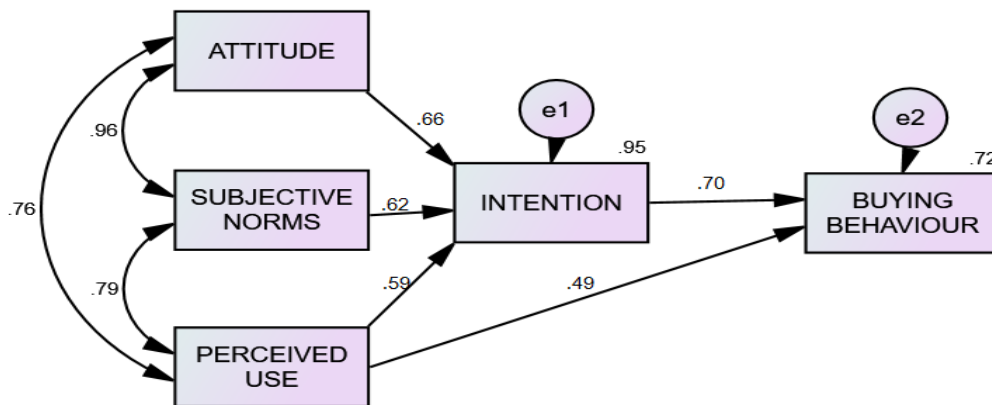
8.5 RELATIONSHIP BETWEEN THE DIRECT AND INDIRECT VARIABLES

The following Table 4.11depicts the relationship between the direct and indirect variables affecting buying behaviour towards e-bikes.

TABLE11

RELATIONSHIP BETWEEN DIRECT AND INDIRECT VARIABLES

			Estimate	S.E.	C.R.	P	Hypothesis
Intention	<---	Attitude	.679	.049	14.102	***	Supported
Intention	<---	Subjective norms	.621	.046	13.871	***	supported
Intention	<---	Perceived Use	.576	.036	16.062	***	Supported
Buying Behaviour	<---	Perceived Use	.457	.046	12.768	***	Supported
Buying Behaviour	<---	Intention	.702	.044	17.282	***	Supported

Source: AMOS output

It is observed from the Table 4.11 that the relationship between Attitude to intention (H_1) Subjective norms to Intention (H_2) Perceived Use to Intention (H_3), Perceived Use to Investment Behaviour Intention (H_4), and Intention to Buying Behaviour (H_5) are significant at 1 per cent level.

Hence, it is concluded that all the framed hypotheses to test the relationship between direct and indirect variables are accepted and the null hypothesis is rejected.

8.6 INTER-RELATIONSHIP BETWEEN DIRECT AND INDIRECT VARIABLES

The following table 4.12 shows the inter-relationship between the direct and indirect variables affecting the buying behaviour of customers towards e-bikes.

TABLE 12

INTER-RELATIONSHIP BETWEEN DIRECT AND INDIRECT VARIABLES

			Estimate	S.E.	C.R.	P	Hypothesis
Subjective norms	<-->	Attitude	.956	.045	21.802	***	Supported
Perceived Use	<-->	Subjective norms	.788	.043	17.771	***	Supported
Perceived Use	<-->	Attitude	.759	.044	17.103	***	Supported

Source: AMOS output

It is observed from the Table 12 that the inter-relationship between attitude and subjective norm (H_6) Subjective norm to Perceived Use (H_7) and Perceived Use and Buying Behaviour (H8) are significant at 1 per cent level.

8.9 THEORY OF PLANNED BEHAVIOUR MODEL – PATH ANALYSIS RESULT

The following table 13 reveals about the goodness of the fit index for measurement model (TPB) by using path analysis.

TABLE 13

GOODNESS OF THE FIT INDEX FOR MEASUREMENT MODEL

Parameters	Model values	Suggested values
CMIN/DF	1.910	≤ 5
RMSEA	0.040	≤ 0.05
GFI	0.950	0.9
AGFI	0.936	0.9
CFI	0.965	0.9

Source: Amos Output

The above table 13 indicates the results of path analysis. Chi square test is a reasonable measure of fit (Baron and Kenny, 1986)[7]. In this study, the analysis obtained the results for the theoretical model revealed a Chi- Square of 3.820 (degrees of freedom 2; P>0.05). CMIN/DF, Results of relative Chi-square is 1.910 (ranging between1 to 5), which is best fit (Schumacher and Lomax, 2004).

Comparative fit indices (CFI) are 0.965, indicating a best fit. It measure as it compares the fit of a target model to the fit of an independent model (a model in which variables are to be uncorrelated). Precisely it represents the extent to which the model of interest is better than that of the independent model.

Whereas Root mean square error of approximation (RAMSEA) is 0.040 which is best fit since it is less than 0.05. It estimates the way to measure model fit. The RMSEA for this model applied to the intention of buying environmental friendly products accepted to show a best score L0 90 and HI 90 are the lower and upper ends of a 90 per cent confidence interval on this estimate PCLOSE is the P value testing the null that RMSEA is not greater than .05.

The Goodness of Fit Index (GFI) should exceed 0.9 for a good model. The adjusted GFI (AGFI) is an alternate GFI index in which the value of the index is adjusted for the number of parameters in the model. In this study, AGFI is 0.936 whereas GFI is 0.950, both of them are greater than reasonable fit of 0.90 (Byrne, 1994)[8].

9 PERSONAL AND SOCIO-ECONOMIC VARIABLES INFLUENCING THE BUYING BEHAVIOUR OF CUSTOMERS TOWARDS E-BIKES :

E-bikes are particularly appealing to consumers seeking a balance between convenience and environmental responsibility. They provide an opportunity to reduce carbon emissions while avoiding the congestion and parking challenges associated with conventional automobiles. Additionally, advancements in e-bike technology have made them more accessible and attractive, with features such as improved battery life, enhanced motor performance, and greater ease of use.

The buying behavior of e-bikes is intricately linked to various socio-economic factors that shape consumer preferences and decision-making processes. Understanding these factors is essential for comprehensively assessing why certain individuals choose to invest in e-bikes over other modes of transportation.

Age plays a crucial role, as younger consumers may be more inclined towards adopting new technologies like e-bikes due to their tech-savvy nature and environmental consciousness. Conversely, older individuals might consider e-bikes for their ease of use and practicality. Gender also influences buying behavior, with different preferences often emerging between male and female consumers. For instance, men and women might prioritize different features or benefits of e-bikes, affecting their purchase decisions.

Marital Status and Family Size are significant, as family dynamics can impact the decision to buy an e-bike. For instance, individuals in larger families or those with dependents may weigh the practicality and cost-effectiveness of e-bikes more heavily. Education and Occupation are linked to awareness and income levels. Educated individuals with professions that involve commuting might be more aware of the benefits of e-bikes and more likely to invest in them.

Monthly Income is a direct indicator of financial capability, influencing whether consumers can afford the initial investment in an e-bike. Higher income levels generally correlate with a greater ability to purchase higher-priced e-bikes. Nature of the Family can affect transportation needs and preferences. Nuclear families may prioritize personal convenience, while extended families might consider the overall utility and cost-effectiveness of e-bikes.

Number of Earning Members impacts financial stability and purchasing power, affecting the ability to invest in non-essential items like e-bikes. Finally, the Area of Residence significantly influences buying behavior. Urban residents may be more inclined to purchase e-bikes due to traffic congestion and infrastructure, while rural residents might face different considerations.

In the light of the above there are five factors have been considered for the further analysis. In this regard, the demographic factors have been defined and described in the following section in order to help in understanding the *buying behaviour of e-bike*. Sample customers have been asked to answer five questions. When a sample customer is strongly agreed with a factor, a score of 5 has been allotted, like wise 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree. Likert's five point scale has been used in this regard.

The identified demographic variables, which might influence the *buying behaviour of the customers towards e-bikes are* Age, Gender, Marital status, Education, Occupation, Monthly income, Nature of the Family, Size of the family, Number of earning members in the family and Area of residence. Significance of the relationship of all the above variables with the buying behaviour of customers, Analysis of variance and Z-test are applied in this regard.

9.1 Age and Buying Behaviour

The buying behaviour of the e-bike customers' based on their age is presented in the following table 4.14.

---

[7] Baron, R.M. and Kenny, D.A. (1986) The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. Journal of Personality and Social Psychology, 51(6), pp. 1173-1182.

[8] Byrne, B. M. (1994), "Testing for the Factorial Validity, Replication, and Invariance of a Measurement Instrument: A Paradigmatic Application Based on the Maslach Burnout Inventory", Multivariate Behavioural Research, Vol.29, pp.289–311

TABLE 14

DISTRIBUTION OF CUSTOMERS BASED ON THEIR AGE AND

THE BUYING BEHAVIOUR

Age	No. of Respondents	Percentage	Mean Score	Std. Deviation
Up to 30 years	312	47.8	17.439	2.176
31 to 50 years	222	34.0	17.797	2.159
Above 50 years	119	18.2	16.924	1.984
Total	653	100.0	17.467	2.155

Source: Calculated value

It is observed from the table 4.14 that the mean score of the customers in the category of 31 to 50 years of age group is higher (17.797) with the standard deviation of 2.159 than up to 30 years of age group (17.439), above 50 years of age group (16.924) and the overall mean score (17.467). To test the differences in the mean score among the age group of e-bike customers, F-Test is applied.

H0: There is no significant relationship between age of the e-bike customers and their buying behaviour.

TABLE 15

AGE AND BUYING BEHAVIOUR: F-TEST

Sources of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	59.501	2	29.751	6.518	.002
Within Groups	2967.041	650	4.565		
Total	3026.542	652			

Source: Calculated value

The table 4.15 confirms that the calculated value of F (6.518) is higher than the significant level ($p<0.01$) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the age of the e-bike customers and their buying behaviour towards the e-bikes.

9.2 Gender and Buying Behaviour

The buying behaviour of the e-bike customers' based on their gender is presented in the following table 16.

TABLE 4.16

DISTRIBUTION OF CUSTOMERS BASED ON THEIR GENDER AND THE

BUYING BEHAVIOUR

Gender	No. of Respondents	Percentage	Mean Score	Std. Deviation
Male	434	66.5	17.631	1.999
Female	219	33.5	17.142	2.405
Total	653	100.0	17.467	2.155

Source: Calculated value

The table 4.16 advocates that the mean score of the e-bike customers in the category of male is higher (17.631) with the standard deviation of 1.999 than the category of female (17.142) and the overall mean score (17.467). To test the differences in the mean score between the gender groups of e-bike customers, Z-Test is applied.

H0: There is no significant relationship between gender of the e-bike customers and their buying behaviour.

TABLE 17

GENDER AND BUYING BEHAVIOUR: Z-TEST

Gender	N	Mean difference	Std. Error Difference	Z-Value	Sig.
Male	434				
Female	219	.489	.17769	2.756	.005
Total	653				

Source: Calculated value

The table 4.17 supports that the ascertained value of Z (2.756) is higher than the significant level (p<0.01) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the gender of the e-bike customers and their buying behaviour towards e-bikes.

9.3 Martial status and Buying Behaviour

The buying behaviour of the e-bike customers' based on their marital status is presented in the following table 4.18.

TABLE 18

DISTRIBUTION OF CUSTOMERS BASED ON THEIR MARITAL STATUS AND THE BUYING BEHAVIOUR

Marital Status	No. of Respondents	Percentage	Mean Score	Std. Deviation
Married	355	54.4	17.716	2.034
Unmarried	298	45.6	17.171	2.258
Total	653	100.0	17.467	2.155

Source: Calculated value

The table 19 illustrates that the mean score of the e-bike customers in the category of married is higher (17.716) with the standard deviation of 2.034 than the category of unmarried (17.171) and the overall mean score (17.467). To test the differences in the mean score between the gender groups of e-bike customers, Z-Test is applied.

H0: There is no significant relationship between marital status of the e-bike customers and their buying behaviour.

TABLE 19

MARITAL STATUS AND BUYING BEHAVIOUR: F-TEST

Marital status	N	Mean difference	Std. Error Difference	Z-Value	Sig.
Married	355				
Unmarried	298	.54435	.16805	3.239	0.001
Total	653				

Source: Calculated value

The table 19 demonstrates that the ascertained value of Z (3.239) is higher than the significant level (p<0.01) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the marital status of the e-bike customers and their buying behaviour towards e-bikes.

9.4 Educational status and Buying Behaviour

The buying behaviour of the e-bike customers' based on their educational status is presented in the following table 4.20.

TABLE 20

DISTRIBUTION OF CUSTOMERS BASED ON THEIR EDUCATIONAL STATUS AND THE BUYING BEHAVIOUR

Educational Status	No. of Respondents	Percentage	Mean Score	Std. Deviation
Up to school level	174	26.6	17.971	2.055
Graduate	132	20.2	17.462	2.127
Post Graduate	238	36.4	17.403	1.999
Others	109	16.7	16.807	2.478
Total	653	100.0	17.467	2.155

Source: Calculated value

The table.20 states that the mean score of the e-bike customers in the category of up to school level educational status is higher (17.971) with the standard deviation of 2.055 than Graduates (17.462), Post Graduates (17.403) and others category (16.807) and the overall mean score (17.467). To test the differences in the mean score among the educational status of e-bike customers, F-Test is applied.

H0: There is no significant relationship between educational status of the e-bike customers and their buying behaviour.

TABLE 21

EDUCATIONAL STATUS AND BUYING BEHAVIOUR: F-TEST

Sources of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	92.644	3	30.881	6.831	.000
Within Groups	2933.898	649	4.521		
Total	3026.542	652			

Source: Calculated value

The table 4.21 validates that the calculated value of F (6.831) is higher than the significant level (p<0.01) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the educational status of the e-bike customers and their buying behaviour towards e-bikes.

9.5 Occupation and Buying Behaviour

The buying behaviour of the e-bike customers' based on their occupation is presented in the following table 4.22.

TABLE 22

DISTRIBUTION OF CUSTOMERS BASED ON THEIR OCCUPATION AND THE BUYING BEHAVIOUR

Occupation	No. of Respondents	Percentage	Mean Score	Std. Deviation
Self Employed	225	34.5	17.551	2.009
Govt. employee	139	21.3	16.907	2.410
Private Employee	179	27.4	17.553	1.986
Others	110	16.8	17.864	2.256
Total	653	100.0	17.467	2.155

Source: Calculated value

It is apparent from the table 4.22 that the mean score of the e-bike customers in the occupation category of others is higher (17.864) with the standard deviation of 2.256 than private employee (17.553), self-employed (17.551), government employee (16.907) and the overall mean score (17.467). To test the differences in the mean score among the occupation of e-bike customers, F-Test is applied.

H0: There is no significant relationship between occupation of the e-bike customers and their buying behaviour.

TABLE 23

OCCUPATION AND BUYING BEHAVIOUR: F-TEST

Sources of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	63.895	3	21.298	4.666	.003
Within Groups	2962.647	649	4.565		
Total	3026.542	652			

Source: Calculated value

The table 23 proves that the calculated value of F (4.666) is higher than the significant level (p<0.01) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the occupation of the e-bike customers and their buying behaviour towards e-bikes.

9.6 Monthly income and Buying Behaviour

The buying behaviour of the e-bike customers' based on their monthly income is presented in the following table 4.24.

TABLE 24

DISTRIBUTION OF CUSTOMERS BASED ON THEIR MONTHLY INCOME AND THE BUYING BEHAVIOUR

Monthly Income	No. of Respondents	Percentage	Mean Score	Std. Deviation
Up to Rs.25,000	135	20.7	17.770	1.892
Rs.25,001 to Rs.50,000	406	62.2	17.470	2.268
Above Rs.50,000	112	17.2	17.089	1.980
Total	653	100.0	17.467	2.155

Source: Calculated value

The table 24 depicts that the mean score of the e-bike customers in the category of up to Rs.25,000 as their monthly income is higher (17.770) with the standard deviation of 1.892 than Rs.25,001 to Rs.50,000 monthly income group (17.470) above Rs.50,000 monthly income group (17.089) and the overall mean score (17.467). To test the differences in the mean score among the monthly income of the e-bike customers, F-Test is applied.

H0: There is no significant relationship between monthly income of the e-bike customers and their buying behaviour.

TABLE 25

MONTHLY INCOME AND BUYING BEHAVIOUR: F-TEST

Sources of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	28.408	2	14.204	3.079	.047
Within Groups	2998.134	650	4.613		
Total	3026.542	652			

Source: Calculated value

The table 25 confirms that the calculated value of F (3.079) is higher than the significant level (p<0.01) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the monthly income of the e-bike customers and their buying behaviour towards e-bikes.

9.7 Nature of family and Buying Behaviour

The buying behaviour of the e-bike customers' based on their nature of family is presented in the following table 26.

TABLE 26

DISTRIBUTION OF CUSTOMERS BASED ON THEIR NATURE OF THE FAMILY AND THE BUYING BEHAVIOUR

Nature of the Family	No. of Respondents	Percentage	Mean Score	Std. Deviation
Joint Family	226	34.6	17.199	2.087
Nuclear Family	427	65.4	17.609	2.178
Total	653	100.0	17.467	2.155

Source: Calculated value

The table 26 displays that the mean score of the e-bike customers in the category of Nuclear family is higher (17.609) with the standard deviation of 2.178 than the category of Joint family (17.199) and the overall mean score (17.467). To test the differences in the mean score between the nature of family of e-bike customers, Z-Test is applied.

H0: There is no significant relationship between nature of family of the e-bike customers and their buying behaviour.

TABLE 27

NATURE OF THE FAMILY AND BUYING BEHAVIOUR: F-TEST

Nature of Family	N	Mean difference	Std. Error Difference	Z-Value	Sig.
Joint Family	226	.410	.17664	2.320	0.021
Nuclear Family	427				
Total	653				

Source: Calculated value

The table 27 substantiates that the calculated value of Z (2.320) is higher than the significant level (p<0.05) at 5 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the nature of family of the e-bike customers and their buying behaviour towards e-bikes.

9.8 Monthly income and Buying Behaviour

The buying behaviour of the e-bike customers' based on their monthly income is presented in the following table 4.28.

TABLE 28

DISTRIBUTION OF CUSTOMERS BASED ON THEIR SIZE OF THE FAMILY AND THE BUYING BEHAVIOUR

Size of the Family	No. of Respondents	Percentage	Mean Score	Std. Deviation
Up to 3 members	158	24.2	17.949	2.162
4-6 members	393	60.2	17.356	2.104
Above 6 members	102	15.6	17.147	2.236
Total	653	100.0	17.467	2.155

Source: Calculated value

The table 28 illustrates that the mean score of the e-bike customers in the category of up to 3 members in the family is higher (17.949) with the standard deviation of 2.162 than 4-6 members in the family (17.356), above 6 members in the family (45.852) and the overall mean score (17.467). To test the differences in the mean score among the size of the family of e-bike customers, F-Test is applied.

H0: There is no significant relationship between size of the family of the e-bike customers and their buying behaviour.

TABLE 29

SIZE OF THE FAMILY AND BUYING BEHAVIOUR: F-TEST

Sources of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	52.026	2	26.013	5.684	.004
Within Groups	2974.516	650	4.576		
Total	3026.542	652			

Source: Calculated value

The table 4.29 validates that the calculated value of F (5.684) is higher than the significant level (p<0.01) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the monthly income of the e-bike customers and their buying behaviour towards e-bikes.

9.9 Earning Members in the family and Buying Behaviour

The buying behaviour of the e-bike customers' based on their earning members in the family is presented in the following table 4.30.

TABLE 30

DISTRIBUTION OF CUSTOMERS BASED ON THEIR NUMBER OF EARNING MEMBERS IN THE FAMILY AND THE BUYING BEHAVIOUR

No. of Earning Members in the family	No. of Respondents	Percentage	Mean Score	Std. Deviation
One	350	53.6	17.703	1.994
Two	201	30.8	17.259	2.394
Three and Above	102	15.6	17.069	2.107
Total	653	100.0	17.467	2.155

Source: Calculated value

The table 30 presents that the mean score of the e-bike customers in the category of only one earning members in the family is higher (17.709) with the standard deviation of 1.994 than two earning members in the family (17.259), three and above earning members in the family (17.069) and the overall mean score (17.467). To test the differences in the mean score among the earning members in the family of the e-bike customers, F-Test is applied.

H0: There is no significant relationship between number of earning members in the family of the e-bike customers and their buying behaviour.

TABLE 31

NUMBER OF EARNING MEMBERS IN THE FAMILY AND

BUYING BEHAVIOUR: F-TEST

Sources of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	44.378	2	22.189	4.836	.008
Within Groups	2982.164	650	4.588		
Total	3026.542	652			

Source: Calculated value

The table 31 clears that the calculated value of F (4.836) is higher than the significant level (p<0.01) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the number of earning members in the family of the e-bike customers and their buying behaviour towards e-bikes.

9.10 Area of Residence and Buying Behaviour

The buying behaviour of the e-bike customers' based on their area of residence is presented in the following table 32.

TABLE 32

DISTRIBUTION OF CUSTOMERS BASED ON THEIR AREA OF RESIDENCE AND THE BUYING BEHAVIOUR

Area of Residence	No. of Respondents	Percentage	Mean Score	Std. Deviation
Rural	375	57.4	17.336	2.167
Semi-urban	172	26.3	17.895	2.021
Urban	106	16.2	17.236	2.245
Total	653	100.0	17.467	2.155

Source: Calculated value

The table 32 depicts that the mean buying behaviour of the e-bike customers in the category of semi-urban area is higher (17.895) with the standard deviation of 2.021 than rural area (17.336), urban area (17.236) and the overall mean score (17.467). To test the differences in the mean score among the area of residence of e-bike customers, F-Test is applied.

H0: There is no significant relationship between area of residence of the e-bike customers and their buying behaviour.

TABLE 33

AREA OF RESIDENCE AND BUYING BEHAVIOUR: F-TEST

Sources of Variation	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	43.658	2	21.829	4.757	.009
Within Groups	2982.884	650	4.589		
Total	3026.542	652			

Source: Calculated value

The table 33 confirms that the calculated value of F (4.757) is higher than the significant level (p<0.01) at 1 per cent. The framed null hypothesis is rejected. Therefore, it is confirmed that there is a significant relationship between the area of residence of the e-bike customers and their buying behaviour towards e-bikes.

10 SUMMARY :

This chapter has been devoted to analyse the factors influencing and buying behaviour of the customers towards e-bikes in Erode District of Tamil Nadu. For this purpose, statistical tools such as percentage analysis, Garret's Ranking Analysis, Factor Analysis, Correlation, ANOVA and Structural equation modeling have been used. It is observed that 45.2 per cent of the customers have been using the e-bikes for a period of 1 to 3 years. Majority (73.5 per cent) of the customers used their own source of finance for buying their e-bikes. 62.78 per cent of the customers made a test ride before purchasing their e-bike. 29.4 per cent of the customers consult with consultants before buying the e-bikes. 23.1 per cent of the sample customers preferred Flio brand of e-bike as their most important brand.

The Garret's Ranking analysis confirms that Price is the most important factor which motivated the customers to buy the e-bikes with the mean Garret's score of 59.09 followed by Technology (56.08), Style (56.02), Battery life (54.88), Warranty (53.93), Brand image (53.15), Loan facility (52.72), Maintenance Free (52.28), Safety (46.97), After sales service (46.53), Anti-theft security (45.41), User friendly (44.32), Less legal formalities (44.09), Re-sale value (43.98) and Durability (39.54).

In the case of analyzing the buying behaviour of customers towards e-bikes, factor analysis has been employed. Factor analysis yielded five factors accounting for 77.83 per cent of total variance. Factor 1 consists of five statements and it explains 34.15 per cent of the total variance named as attitude on e-bikes. Factor 2 consists of five statements and it explains 15.28 per cent of the total variance and named as subjective norms. Factor 3 is having five statements and it explains 12.64 per cent of the total variance and named as perceived use of E-bikes. Factor 4 consists of five statements and it explains 8.98 per cent of the total variance. Factor 4 is named as intention on e-bikes. Factor 5 also consists of five statements and it explains 11.536 per cent of the total variance. Factor 5 is named as buying behaviour of e-bikes.

The correlation analysis reveals that there is a strong and positive relationships between these independent and dependent variables pair-wise. The value of Cronbach's Alpha for all the four variables are above 0.85 and fit to further process of the research. The discriminant validity also confirms the value of above 0.8 for all the five factors. The composite reliability value of 0.913, 0.925, 0.920, 0.903 and 0.900 are respectively for attitude, subjective norms, perceived use, intention and buying behaviour. The Average Variance Explained for attitude, subjective norms, perceived use, intention and investment behaviour are 0.676, 0.710, 0.696, 0.650 and 0.643 respectively.

The relationship between Attitude to intention (H_1), Subjective norms to Intention (H_2), Perceived Use to Intention (H_3), Perceived Use to Investment Behaviour Intention (H_4), and Intention to Buying Behaviour (H_5) are significant at 1 per cent level.

The inter-relationship between attitude and subjective norm (H_6), Subjective norm to Perceived Use (H_7) and Perceived Use and Buying Behaviour (H8) are significant at 1 per cent level.

The analysis obtained the results for the theoretical model revealed a Chi- Square of 3.820 (degrees of freedom 2; P>0.05). CMIN/DF, Results of relative Chi-square is 1.910 (ranging between1 to 5), which is best fit.

In order to analyze the socio-economic characteristics of the customers and their buying behaviour towards e-bikes, there are five factors have been considered for the further analysis. In this regard, the demographic factors have been defined and described in the following section in order to help in understanding the *buying behaviour of e-bike*. Sample customers have been asked to answer five questions. When a sample customer is strongly agreed with a factor, a score of 5 has been allotted, like wise 4 for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree. Likert's five point scale has been used in this regard.

The identified demographic variables, which might influence the *buying behaviour of the customers towards e-bikes are* Age, Gender, Marital status, Education, Occupation, Monthly income, Nature of the Family, Size of the family, Number of earning members in the family and Area of residence.

In the case of relationship between the socio-economic characteristics of the e-bike customers and their buying behaviour, Analysis of Variance and Z-Test have been applied. F-Test reveals that there is significant relationship between socio-economic factors of customers (Age, Education, Occupation, Size of the family, Number of earning members in the family and Area of residence) and their buying behaviour towards e-bikes at 1 per cent level. F-Test also reveals that there is a significant relationship between monthly income of the customers and their buying behaviour at 5 per cent level.

Z-Test reveals that there is significant relationship between socio-economic factors of customers (Gender and Marital Status) and their buying behaviour towards e-bikes at 1 per cent level. It also reveals that there is a significant relationship between the nature of family of the customers and their buying behaviour at 5 per cent level.

REFERENCES :

1. Alamelu, R., Anushan, C., & Selvabaskar, S. (2015). Preferrence of E-bike by Women in India- A Niche Market for Auto Manufacturers. *Business: Theory and Practice, 16*(1), 25–30. doi:10.3846/ btp.2015.431

2. Chedid, R., Kobrosly, M., & Ghajar, R. (2007, April). A supply model for crude oil and natural gas in the Middle East. *Energy Policy, 35*(4), 2096-2109. doi:10.1016/j.enpol.2006.06.011

3. Fishman, E., & Cherry, C. (2016, January). E-bikes in the Mainstream: Reviewing a Decade of Research. *Transport Reviews, 36*(1), 72-91. doi:10.1080/01441647.2015.1069907

4. Fu, T. (2008, June). A multi-criteria parametric evaluation of the refuelling strategies for scooters. *Journal of Engineering Design, 19*(3), 227-247. doi:10.1080/09544820701327830

5. Ghasri, M., Ardeshiri, A., & Rashidi, T. (2019, Dec). Perception towards electric vehicles and the impact on consumers' preference. *Transportation Research: Part D., 77*, 271-291. doi:10.1016/j. trd.2019.11.003

6. Howarth, J. (2019, December 2). Retrieved from https://octopus.energy/blog/when-will-fossil- fuels-run-out/#:~:text=If%20we%20keep%20burning%20fossil,will%20be%20depleted%20 by%202060.

7. Huang, F.H. (2019, October). Understanding Users' Experiences of Riding a Two-Wheeler Vehicle and their Intentions of Purchasing Electric Two-Wheelers. *Promet-Traffic&Transportation, 31*(5), 503-512. doi:10.7307/ptt.v31i5.3014

8. Kumar, M., & Prakash, S. (2020, January 16). *Bumps and humps in electric two-wheeler adoption*. Retrieved from Deccan Herald: https://www.deccanherald.com/opinion/panorama/bumps- and-humps-in-electric-two-wheeler-adoption-795308.html

9. Kumar, M., Mohanraj, Nagapandi, M., Nandhagopal, K., Nivash, & Deesh, G. (2018). Measurement of Black Smoke in Transport Vehicle for Corrective Action. *International journal of engineering research and technology, 5*.

10. Mendoza, J., Josa, A., Rieradevall, J., & Gabarrell, X. (2016, February 1). Environmental Impact of Public Charging Facilities for Electric Two-Wheelers. *Journal of Industrial Ecology, 20*(1), 54-66. doi:10.1111/jiec.12270

11. NITI Aayog & World Energy Council. (2018). *Zero Emission Vehicles (ZEVs): Towards a Policy Framework*. Niti Ayog. Retrieved from http://niti.gov.in/writereaddata/files/document_ publication/EV_report.pdf

12. Priya, S. (2020, November 13). *Where is Indian two-wheeler market heading?* Retrieved from Economic Times-Auto: https://auto.economictimes.indiatimes.com/news/two-wheelers/ motorcycles/where-is-indian-two-wheeler-market-heading/79207062#:~:text=In%20 October%202020%20total%20domestic,2019%2C%20reflecting%20the%20robust%20 demand.

13. Ranjan, P., Bhatnagar, Y., & Sehdev, R. (2013, June). Assessment of Consumer Buying Behaviour Towards Electric Scooters in Punjab. *CLEAR International Journal of Research in Commerce & Management., 4*(6). Retrieved December 28, 2020, from http://search.ebscohost. com/login.aspx?direct=true&db=bsu&AN=119727948&site=ehost-live