Nepal Journal of Multidisciplinary Research (NJMR)
Vol. 4, No. 2, June 2021. Pages: 59-66
ISSN: 2645-8470 (Print), ISSN: 2705-4691 (Online)
DOI: https://doi.org/10.3126/njmr.v4i2.39021

Brand Choice Factors on Purchase Decision of Electric Vehicle: In Reference of Nepalese Customers

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Received: June 07, 2021; Revised & Accepted: July 23, 2021; Published: July 31, 2021

Abstract
There are various factors which effect on the purchase decision of consumers. Brand choice factor is one of the important to determine the purchase decision. The demand of electric vehicle is increasing because of its contribution in health and environment. Nepalese consumers are also more being attracted towards the use of electric vehicle so in this context, the study conducted with the objective to identify the brand choice factor on purchase decision of electric vehicle. The study was conducted among the 55-electric vehicle of Kathmandu valley. The structured survey questionnaire was administered for the data collection. It was based on quantitative design. Simple random sampling design was adopted to select the respondents. There was no significant difference between male and female, as well as caste groups, whereas there was significant difference between the educational levels on their brand choice factors at the .05 significant levels. The future researcher can study on the role of other factors to determine the purchase decision of electric vehicle consumers.

Keywords: Brand choice factors, Electric vehicle, Purchase Decision

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Introduction

Kathmandu city is fully crowded with various types of vehicles. With the increasing numbers of vehicles, the air pollution is also increasing. Basically, the diesel and petrol vehicle have been creating the air pollution. Polluted air is harmful for Human health and environment. The pollution created by transport sector directly contributes in greenhouse gas emissions so there is need to think about the alternative of diesel and petrol vehicles. Recently, the demand of electric vehicles (EV) is increasing in Nepal because people are aware on the need of clean environment, and health consciousness.

As an emerging technology introduced after the industrial revolution, EVs have already existing for over 100 years. The first practical electrical car was created by Thomas Parker in 1884. Another famous example of early electric cars was Ferdinand Porsche's electric car, which was manufactured in Germany in 1899 (Chan, 2012). From the beginning of the 21st century, research on EVs has been accelerated due to environmental pollution and energy-related issues. With the engagement of government and industry, infrastructure and EVs technology have been improved. Global sales of EVs reached one-million in 2016, and the sales of global light-duty EVs and plug-in hybrid electric vehicles exceeded five million in 2018. Famous auto-makers such as Volkswagen, Mercedes, and Ford have addressed their ambitions of promoting EVs (Sun, Li, Wang, & Li, 2020). Electrified vehicles exist in different formats, based on the degree of electrification of the drive train and the capacity of the battery (Van Mierlo, Maggetto, & Lataire, 2006). The EV technologies have been developed very quickly in recent years. In addition to low emissions, more benefits are desired from EVs. With advanced technologies being applied to transportation and real-time communication, such as vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I), vehicle-to-pedestrian (V2P), and vehicle-to-grid (V2G), enhanced traffic safety and efficiency can be realized. Communication between vehicles and any smart device at the roadside is known as vehicle-to-everything (V2X) (Li, Wu, He, Yu, & Wang, 2018; Zhu, Wu, & Zheng, 2019).

Purchasing behavior additionally relies upon given item or brand. In the event that they have most understanding on item or brand, they don't do a lot of examination and elective assessment. Those experienced consumers have increasingly interior source to have inner pursuit, less energy to do external search, can think about elective technique to buy EV and others (Carroll, 2013). The individuals who have brand demeanor are the person who adds to mark unwaveringness (Dick, 1994). To arrive at the augmented advantage, buyers make a thought and sane assessment of vehicle brands, models and their qualities (Dagsvik, Wennemo, Wetterwald, & Aaberge, 2002; Brownstone, Bunch, & Train, 2000).

Nepal Government has also promoting the electric vehicle by providing the subsidy in tax and increasing the amount of finance service of Bank. With an increasing number of vehicles with poor maintenance, Kathmandu valley has turned into the most polluted city in the country. A previous study had stated that sustainable mobility has received increasing attention in recent years. The transport sector contributes to almost a quarter of Europe's greenhouse gas emissions. The development of electric vehicles (EVs) may help the shift toward sustainable

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mobility, reducing oil vulnerability and greenhouse gas emissions in road transport (Bigerna & Micheli, 2018). So, the importance of EV is increasing day by day due to negative impact of climate change. People are now more conscious on their health and environment. In this connection, the study of EV became essential to know the consumer's brand choice factor on purchase decision of EV in Nepal.

Materials & Methods

The study was based on the quantitative design. It was a cross-sectional study which has described the response of brand choice factors as well as it has also explored the mean difference between the gender, caste and education in their response on brand choice factor at the time of purchase decision of electric vehicles. There were 55 respondents from consumers of electric vehicles. Simple random sampling technique was used to select the respondents. The structured survey questionnaire was used to collect the data. The statistical analysis like frequency distribution, mean, independent sample t-test was used to analyze the data. The report was presented in the tabular form.

Result & Discussion

There are various factors which influence the purchase decision of customers like economic factors, socio-cultural factors, psychological factors, demographic factors, environmental factors and technological factors. Among these factors, the study has analyzed the response of respondents to know their brand choice factors considered at the time of purchase decision of electric vehicle. The data presented in Table 1 shows the 15 brand choice factors discussed with the customers. Almost all factors were equally important for the customers at the time decision making because the mean value of each factor was more than 3 which were closed to the important and very important response.

Table 1: Brand Choice Factors

	Brand choice factors	Not important	Less Important	Fairly Important	Important	Very Important	Mean
		%					
1.	Marketing influence	3.6		38.2	52.7	5.5	3.5636
2.	Brand reputation		1.8	20.0	60.0	18.2	3.9455
3.	Updated technology			16.4	38.2	45.5	4.2909
4.	After sales service		1.8	12.7	41.8	43.6	4.2727
5.	Guarantee/warranty			14.5	30.9	54.5	4.4000
6.	Recommendation from friends and relatives	1.8	1.8	49.1	34.5	12.7	3.5455
7.	Previous experience	5.5	3.6	27.3	54.5	9.1	3.5818
8.	Discounts, offer, gifts	5.5	3.6	21.8	49.1	20.0	3.7455
9.	Resale value	3.6	1.8	45.5	34.5	14.5	3.5455
10.	Pick up		1.8	40.0	38.2	20.0	3.7636

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11.	Price			32.7	40.0	27.3	3.9455
12.	Location of workshop	1.8	3.6	40.0	38.2	16.4	3.6364
13.	Speed/Power	1.8		38.2	38.2	21.8	3.7818
14.	Status and location of Service centre	1.8	3.6	32.7	45.5	16.4	3.7091
15.	Maileg		1.8	9.1	40.0	49.1	4.3636

Comparatively, customers are attracted more towards the electric vehicles because of its new updated technology (Mean 4.2909), after sales service (Mean 4.2727), Guarantee/warranty (Mean 4.4000), and milage (Mean 4.3636).

1. Gender differences on Brand choice factors

The study had compared the brand choice of male and females because gender can impact on their choice. The statistical analysis presented in the Table 2 shows that the mean value of both males and females are almost similar (Male 58.1000 & Female 58.0667). It indicates that there was similarity in the brand choice factors between the male and female of consumers of electric vehicle.

Table 2: Gender differences on Brand choice factors

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Brand choice factor	Male	40	58.1000	8.57187	1.35533
	Female	15	58.0667	8.21555	2.12125

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Brand choice factor	Equal variances assumed	.033	.857	.013	53	.990	.03333	2.56721	-5.11583	5.18250
	Equal variances not assumed			.013	26.197	.990	.03333	2.51726	-5.13908	5.20575

Source: Field Survey 2020

The study had tested the independent t-test to check the significant differences between the male and females in their brand choice at the time of purchasing the electric vehicle. The

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Levene's Test for Equality of Variances shows that there were no significant differences (p = .857) which indicates, 'Equal variances assumed'. The p value of equal variances assumed is .990 which is greater than .05 significant levels so it results that there was no significant difference between the males and females in their brand choice factors.

2. Educational differences on Brand choice factors

Similarly, the study had measured the brand choice factors based on the education level of respondents. The level of education was divided into two levels: up to +2 level and above +2 level. The mean value presented in Table 3 shows that comparatively mean value of above +2 level education had higher mean value (Mean 59.6136) than the up to +2 level education (Mean 52.0000). It results that brand choice of more educated consumer was higher than the less educated consumer.

Table 3: Educational differences on Brand choice factors

Group Statistics

	Education levels	N	Mean	Std. Deviation	Std. Error Mean
Brand choice factor	Up to +2 level education	11	52.0000	7.48331	2.25630
	Above +2 level education	44	59.6136	7.98317	1.20351

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Brand choice factor	Equal variances assumed	1.007	.320	-2.862	53	.006	-7.61364	2.66015	-12.94922	-2.27805
	Equal variances not assumed			-2.977	16.195	.009	-7.61364	2.55721	-13.02939	-2.19788

Source: Field Survey 2020

The statistical analysis of independent t-test presented in above Table 3 shows the significant difference between the consumers based on their education levels. Levene's Test for Equality of Variances is insignificant because p value is .320 which indicates that there is Equal variances assumed. The significant value of p of Equal variances assumed is .006 which is less than .05 significant levels. The result shows that there was significant difference between the educational levels of consumers on their brand choice factors.

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3. Caste differences on Brand choice factors

In Nepalese society, caste system has significant roles to determines the personality of person. We found cultural differences based on their caste system. So, here the study also measured the differences between the caste groups on their brand choice factor during the purchasing of electric vehicles. The study had divided the caste groups into two groups: 1. Brahamin & Chhetri, and 2. Other ethnic groups (Janjati, Dalit, Muslim, Madhesi). The data presented in Table 4 shows that the mean value of Brahamin & Chhetri = 55.9600, and Other ethnic groups = 59.7241. It indicates that the mean value of other ethnic group was higher than the Brahamin & Chhetri caste.

Table 4: Caste differences on Brand choice factors

Group Statistics

	Caste group	N	Mean	Std. Deviation	Std. Error Mean
Brand choice factor	Brahamin & Chhetri	25	55.9600	6.73597	1.34719
	Other ethnic groups	29	59.7241	9.44116	1.75318

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Brand choice factor	Equal variances assumed	2.541	.117	-1.661	52	.103	-3.76414	2.26598	-8.31116	.78288
	Equal variances not assumed			-1.702	50.349	.095	-3.76414	2.21101	-8.20432	.67605

Source: Field Survey 2020

The statistical analysis of independent sample t-test shows the significant difference between the caste groups. Here, Levene's Test for Equality of Variances is insignificant because p value is .117 which indicates there is Equal variances assumed. The p value of Equal variances assumed is .103 which is greater than .05 significant levels. The results shows that there was no significant difference between the level of education of respondents in their brand choice factors.

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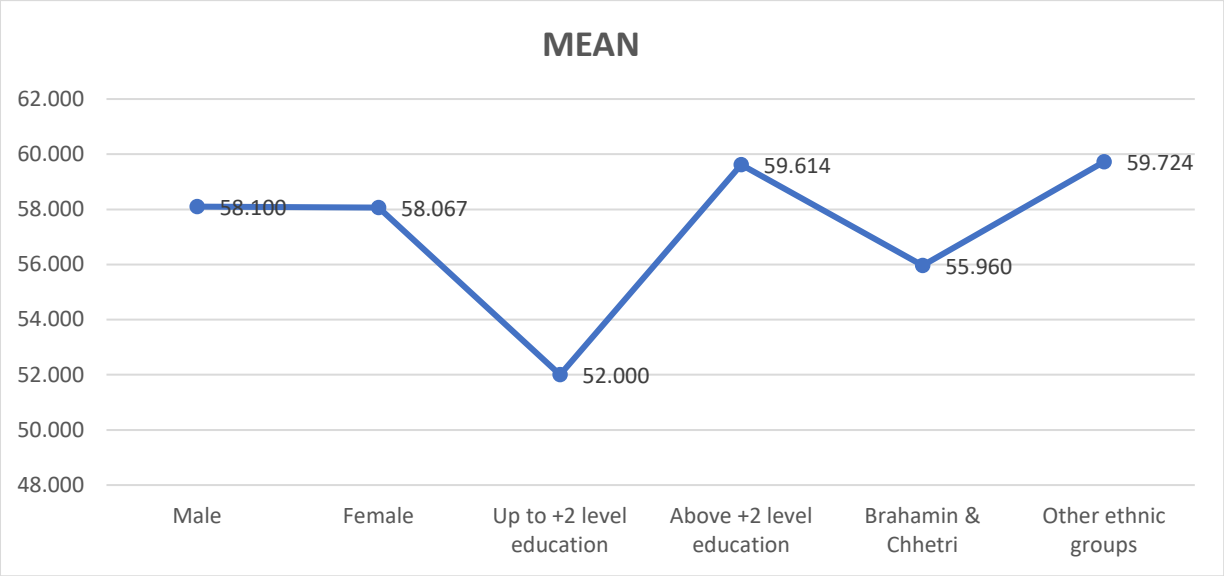
Conclusion & Recommendation

The study had concluded the findings of this study with the pictorial explanation of mean value of demographic variables. The study had compared the mean value of gender, education, and caste group on their brand choice factors. The data presented in Figure 1 shows that comparatively mean value of other ethnic groups was higher whereas mean value of up to +2 level education was lower than other demographic groups. The mean value of male and female



was similar.

Figure 1: Mean of demographic variables

There was no significant difference between male and female, as well as caste groups, whereas there was significant difference between the educational levels on their brand choice factors. The future researcher can study on the role of other factors to determine the purchase decision of electric vehicle consumers.

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