Attitude and Intention to Adopt Eco-cars in Uganda: The Moderating Effect of Culture Orientation

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Abstract
Eco-cars have been promoted as a viable solution to global environmental concerns and energy crises. This motivated the study to focus on establishing the effect of the motorists' attitudes and culture orientations on their intention to adopt Eco-cars. A total of 384 motorists from Kampala City were taken using a two-stage sampling design including stratification between public and private motorists and convenience sampling within the strata. Primary data was collected using a structured questionnaire that was both self and interviewer administered. Data were analysed using correlation and regression analyses. The study revealed that motorists with a positive attitude especially regarding environmental conservation, and the possibility of easy access to facilitating conditions, like charging stations and their performance, were more ready to adopt Eco-cars. The motorists possessing a collectivist culture were more likely to adopt Eco-cars. Furthermore, the influence on adopting Eco-cars because of the motorist's attitudes was found to be stronger among those with a collectivistic culture. In essence, motorists who felt accountable for their country's agenda of environmental conservation and believed that their actions mattered regarding the concerns of the majority, were most likely to adopt Eco-cars. As such, both public and private players in the motor industry need to send out messages focusing on the communal benefits of driving an eco-car.

Keywords: Electronic-waste, challenges, opportunities, recovery technologies.

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Introduction

With the concern for environmental conservation in the face of global warming and other climate change effects, and the increasing health consciousness in the aftermath of COVID-19 dominating the current global debate, governments and businesses alike are responding with environmental conservation strategies. The automobile industry, for instance, is geared towards the production of electric cars alongside internal combustion cars whose engines are powered by fossil fuels (Ju et al., 2021). Achtnicht (2012) as well as Gallagher and Muehlegger (2011) also note that car manufacturers are now producing cars that use less fuel and emit less emissions per mile to react to the call for environmental conservation. According to the International Energy Agency (IEA), road transportation contributes significantly more to climate change than other modes of transportation to the extent that only 1% of the cars on the roads are eco-friendly, and the rest are fossil fuel powered. Lai et al. (2015) also posited that transportation is the world's second-largest source of carbon emissions, after electricity generation. This has led to emissions of CO2, NOx, CO, and CH, resulting in pollution and greenhouse gas emissions (GHG), which are both environmental and health concerns (Lamit et al., 2012; Muslim et al., 2018; Yan & Crookes, 2010).

In Uganda the transportation sector is one of the fastest growing in the country, contributing directly to Gross Domestic Product annual revenues ranging between US $0.5 and $0.9 billion and an average annual growth rate of 3.1 percent from 2008 to 2016 (National Planning Authority, 2020). By encouraging rapid urbanization and increased motorization, the sector has aided the country's economic growth. However, 80% of vehicles on Ugandan roads are second-hand and run on fossil fuels which endangers the environment due to increased air pollution (Wanyama, 2021). Barnes et al. (2014) indicated that in Uganda, air pollution is also exacerbated by widespread traffic congestion (idling or slow-moving vehicles) occasioned by the high rate of motorization and urbanization. In response to this environmental challenge and the anticipated benefits of e-mobility, in 2014, the Government of Uganda in partnership with academics from Makerere University, established Kiira Motors, an enterprise that was specifically established to champion value addition in the nascent motor vehicle industry through technology transfer and contract manufacturing of electric cars (Sserwanga, 2023).

The leadership of Kampala, Uganda's capital city also embarked on projects intended to incorporate e-mobility in the transport system of the city, by constructing non-motorized roads and piloting the e-bus and e-motorcycle projects. Similarly, some private players are involved in the importation of e-motor cycles and lithium-ion batteries for use in transport and agriculture and retrofitting motor petrol powered cycles to electric (CISL, 2022). Despite the initiatives by both government and private players as well as the socio-economic and environmental benefits of electric vehicles, the adoption of EVs is proceeding slowly (Stockkamp et al., 2021).

Several studies have attributed the slow adoption of Eco-cars to negative attitudes (Anfinsen et al., 2019; Hussain & Huang, 2022; Sanitthangkul et al., 2012; Wang et al., 2017), raising concerns about the performance of the eco-car, the facilitating conditions like; availability of accessories, charging stations, and safety. Similarly, various studies have investigated the

attitude-behavior gap (Fabien et al., 2012; Jaini et al., 2020; Johnstone & Tan, 2015; Lai & Cheng, 2016; Mostafa, 2007) originating from the existence of inadequate demand for green products, whose market is estimated to be between 7–8 percent of the global market. However, few studies have probed further to establish if attitude–behavior relationships vary depending on the culture orientation of consumers. Further, studies on the role of customer attitudes on their purchase intentions of green products, have been conducted in developed countries, (Delang & Cheng, 2012; Singh et al., 2020), hence the need to establish the state in the context of developing countries like Uganda.

Zhuang et al. (2021) categorized the factors affecting consumers' green purchase intention into 3 groups namely, individual, social, and cognitive factors. This study focuses on establishing if the intentions of individuals (motorists in Uganda) to adopt Eco-cars are influenced by individual-level attributes, that is; attitude, and how that effect, varies depending on whether the motorist tends towards the individualistic or collectivist culture. In Uganda, investigations of behavioral intention to adopt green products have gained traction, however, no scholarly studies have focused on Eco-cars owing to the debate that the culture orientation of the majority of the people in a particular country is influential regarding their planned behavior (Cherry, 2023; Kacen & Lee, 2002; Riemer et al., 2014; Triandis et al., 1995), this study found it pertinent to examine the moderating role of culture orientations on the relationship between the attitude of motorists and their intentions to adopt Eco-cars.

Literature Review

Theoretical Framework

This study is guided by the theory of planned behavior (TPB) (Ajzen, 1991). The theory posits that the decision of individuals to engage in a specific behaviour is preceded by their intention to engage in that behaviour. Ajzen and Schmidt (2020) stated that a person's intention toward a behaviour is predicted by three main factors: attitude toward the behaviour, subjective norms, and behavioural control. This study concentrates on the attitudinal construct of the TPB to establish if the cognitive and affective attitudes of motorists influence their intention to adopt Eco-cars. Attitudes toward environmental products were operationalized using the cognitive and affective attitudinal dimensions. The cognitive aspects include; safety, facilitating conditions, performance relative to internal combustion engines, and cost (Haustein & Jensen, 2018). The affective dimension was particularly operationalized using self-perception of the importance of motorists and their uniqueness, environment protection considerations, and social trends (Dunlap, 2008; Garcia Cadena, 2010; Hawcroft & Milfont, 2010). The indicators of these dimensions were tagged to a five-point Likert scale of "strongly disagree, disagree, not sure agree, and strongly agree".

The culture orientation variable was introduced to the framework based on the Cultural Dimensions Theory of Hofstede (1980), in which he proposed six dimensions that define culture. These include the Power Distance Index, Collectivism vs. Individualism, Uncertainty Avoidance Index, Femininity vs. Masculinity, Short-Term vs. Long-Term Orientation, and Restraint vs. Indulgence. In this study, focus was put on the category of Collectivism vs. Individualism. The individualism vs. collectivism dimension captures the extent to which

societies are integrated into groups and their perceived obligations and dependence on groups. Individualism stresses the significance of attaining personal goals, as such independence, self-autonomy, and self-expression underscore individualistic persons or society (Murwantono, 2022). Collectivism on the other hand focuses on the attainment of the goals of the group, even at the expense of individual goals, therefore values such as harmony, cooperation, and loyalty are central to persons or societies with a collectivist orientation (Takano & Osaka, 2018).

The study presents pro-environment items as scales for culture orientation. For instance, "it is important to me to push the agenda of my country to save the environment by adopting Eco-cars". The scales were hinged on a five-point Likert scale of; "strongly disagree, disagree, not sure agree, and strongly agree, however, the scale is regarded as a continuum where disagreement identifies one as individualistic and agreement as collectivistic. This study, therefore, sought to determine if the motorists' attitude towards Eco-cars affected their intention to adopt Eco-cars and if this effect was moderated by culture orientation, especially individualism versus the collectivist culture orientation.

Figure 1: Conceptual Framework
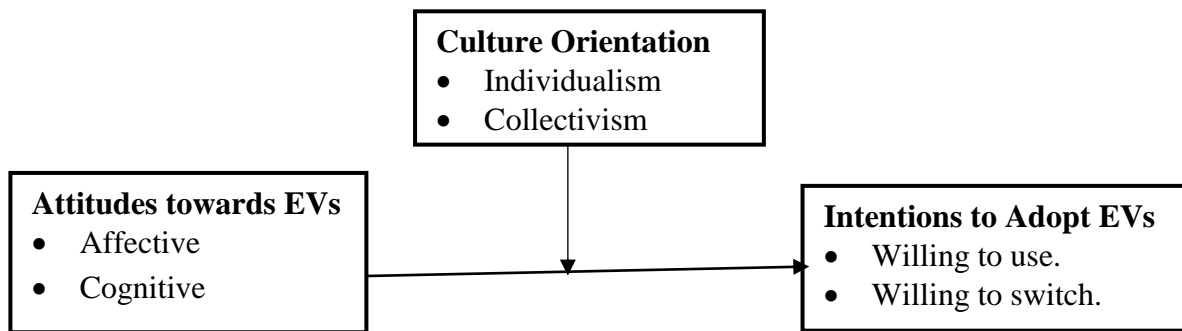
Source: Adopted from; Ajzen (1991); (Hofstede, 1984); Dunlap (2008); (Garcia Cadena, 2010; Hawcroft & Milfont, 2010; Takano & Osaka, 2018).

Hypotheses Development
Attitudes and adoption of Eco-cars
Hussain and Huang (2022) have discovered that attitudes toward environmentally sustainable goods are influenced by value orientations, which in turn drive the intention to purchase environmentally friendly products. The relationship between attitude and behaviour according to their findings, indicated that consumers usually acted to protect the environment. This meant that customers could continue to try to protect the environment in various ways, such as by buying only environmentally friendly goods and services. In his research on consumer attitudes toward electric vehicles in (Ivan & Penev, 2011) noted that consumers' attitudes towards Eco-cars were consistent with new product introductions which required the consumers to change. He further argued that consumers' acceptance of such products could be a real challenge all over the world. Therefore, analysing the attitude of consumers towards environmentally green products could help contribute to overcoming this challenge.

According to Anfinsen et al. (2019), some drivers perceive the eco-car electric motors as less powerful than cars with engines powered by fossil fuels and hence regard Eco-cars as inferior. Other motorists point to the lack of charging stations but also the inconvenience arising from having to wait for long periods for their cars to charge compared to the few minutes spent at the fuel stations that are even readily available, the unavailability of Eco-cars on the local market, and the unwillingness of governments to adopt them. Sanitthangkul et al. (2012) further argue that the ability of Eco-cars to save energy is restricted to a certain extent, and as such, car users regard them as inferior. The aforementioned attitude is key to the adoption of electric vehicles (Wang et al., 2017). Sharma et al. (2023) in their study of the key predictors of consumers' purchase of electric vehicles noted that positive attitudes toward electric vehicles like; simplicity and convenience, influenced the purchase of electric vehicles. Thus, the study hypothesizes that:

H1: Motorists' attitudes towards Eco-cars affect their intention to adopt the use of Eco-cars.

Attitude and Cultural Orientation Towards Eco-Cars
Existing research looks at the impact of culture orientation on behavior (Lobo & Greenland, 2017), consumer ethics (Huang & Lu, 2017), sustainable use (Chekima et al., 2016), and electric vehicle adoption. Scholars who study culture orientation put a greater focus on collectivism, face consciousness, and a long-term orientation, with results that are more culturally contextual (Qian & Yin, 2017).

Further, much of the research is conducted in developed nations (Muk et al., 2016) with marketing as a focal point (Blut et al., 2022; Gautam, 2017). The impact of culture orientation on people's attitudes toward Eco-cars receives little attention and without empirical support (Sanitthangkul et al., 2012).

It is thus important to establish if culture orientations influence attitudes toward the adoption of Eco-cars. Qian and Yin (2017) investigated the impact of culture orientations on people's attitudes toward electric cars and found, that collective culture orientation forms positive attitudes toward eco-friendly products. Furthermore, Wamimbi (2017) also observed that culture influences how people perceive the environment. As a result, culture has the power to affect the behavioural changes required to ensure the long-term viability of the transportation industry. Samarasinghe (2012) also found that both collectivism and long-term orientation as culture orientations are important predictors of environmental attitudes formation.

Furthermore, (Lobo & Greenland, 2017) argue that buyers who identify as collectivists are more likely to engage in green purchasing behaviour due to their positive environmental attitudes, and tolerance for inconvenient situations when it comes to purchasing eco-friendly products. Yasin et al. (1989) and Fatehi et al. (2020) noted that the impact of culture orientation on decision-making attitudes varies depending on one's country's culture. Country-specific studies showed a connection between collectivism and environmental attitudes (Malik & Singhal, 2017).

Cognizant of the importance of a holistic approach to policymaking, policymakers ought to be aware of the interplay between culture orientation and people's attitudes in various industries, hence justifying an investigation on the impact of culture orientation on buyer attitudes in particular sectors such as the transport sector. Thus, it can be hypothesized that:

H2: Motorists' collective culture orientation of motorists enhances the effect of attitude on intentions to adopt Eco-cars.

Methodology

The study employed a cross-sectional research design and quantitative research methods. A cross-sectional research design is a type of observational study that analyses data collected from a population, or a representative subset of that population, at a specific point in time. Cross-sectional studies are often used to examine the prevalence of certain behaviours within a population, to identify associations between variables, and to describe the characteristics of a population at a particular point in time (Gravetter & Forzano, 2018). It targeted motorists in Kampala capital city, noting that Kampala is host to 2.5 million commuters daily and with the highest share of cars in Uganda, that is: 30% of the approximately 2,302,021 cars, and with the highest growth rate of cars, averaging at 9.43% (Insurance Regulatory Authority of Uganda, 2020). Gurzu (2021) noted that most of the air pollution in Uganda is attributed to motor cars and since a greater percentage (80%) of cars in Uganda are second-hand, on average over 15 years old, thus the choice of Kampala for the site of the study. The target population was subdivided into two; motorists driving public service vehicles and those with private cars. The motorists of both the public and private cars were mostly accessed on the main roads of Kampala during times of high traffic jam, especially in the evening between 4:00PM and 9:00PM, when traffic flow occasionally comes to a temporary total halt. The drivers of public service cars were also accessed at the taxi parks and the private motorists at parking lots of other public places, like shopping malls.

According to Krejcie and Morgan (1970), a sample size of 384 motorists was taken in two stages, firstly, by stratifying public and private motorists, and then conveniently sampling within each stratum, according to the motorists' availability and willingness to participate in the survey. Primary data was collected from the targeted population with the help of a structured questionnaire which contained closed-ended questions that were anchored on a five-point scale. The questionnaire was primarily self-administered but in instances where the motorists could not fill it, it was interview-administered to them in the language they understood. Prior to the administration of the questionnaire, validity of the measurement items was ensured by subjecting it to the opinion of three experts in the fields of; transport, green marketing and energy transition. The comments of the experts were then followed to make modifications to improve the relevance of the measurement items. Additionally, the experts filled the questionnaires that were anchored on a two-point scale of; "Very relevant" and "Not relevant", and these were used to compute the content validity index.

Data Analysis and Results

Respondent's characteristics

The characteristics of the respondents were such that, most of them were private car owners (69%), and the rest were public service car drivers. Male drivers dominated the study (73%). The education level of most respondents was tertiary (47%), followed by university graduates (19%), and the rest were at the secondary school level or lower.

Data Diagnostics

The study involved two main tests, that is; normality and homogeneity of variance. This was important because the parametric statistical methods; correlation and regression analyses used to address the hypotheses are only reliable under those assumptions. To test whether the variables are normally distributed, the Kolmogorov-Smirnov test was employed because it's more appropriate for large sample sizes. The Levene test on the other hand was employed to test for homogeneity of variance of the two populations, that is; public and private motorists.

Test for normality

The results in Table I show that for all the study variables, the Kolmogorov-Smirnov test is significant at the 5% level, which is an indication of the variables having a skewed distribution. The variables were therefore transformed using their natural logarithms, after which all the variables reported significance levels of the Kolmogorov-Smirnov test above 0.05, indicating that the transformed variables were normally distributed.

Table I: Kolmogorov-Smirnov test for normality

	Before Transformation			After transformation		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Attitude	.079	201	.004	.024	199	.200*
Culture Orientation	.150	201	.000	.017	199	.200*
Intention to Adopt	.092	201	.000	.021	199	.200*

Test for homogeneity of variance

The results for Levene's test for homogeneity of variance in Table II, reveal data that the significance level for all the variables is above 0.05, indicating that we failed to reject the hypothesis that there is no difference between the variances for the two groups, that is: public and private motorists and hence fulfilling the assumption of homogeneity of variance.

Table II: Levene's test for homogeneity of variance

Variable	Levene Statistic	df1	df2	Sig.
Attitude	1.200	3	196	.311
Culture Orientation	.875	3	196	.455
Intention to Adopt	1.443	3	196	.232

Descriptive and Correlation analysis
The results in Table III show that the arithmetic mean values for all the study variables were above 3.6, implying that the respondents agreed with the existence of positive attitudes among the motorists for both the cognitive and affective dimensions. On the variable of culture orientation, agreement meant that the motorists were mostly collectivists rather than individualists, and concerning intention to adopt, the motorists were on average ready to adopt Eco-cars.

Further, the correlation results show that intention to adopt Eco-Cars has a positive and significant correlation with attitude (r=.206**) and culture orientation (r=.258**), an indication that a positive attitude towards Eco-cars and a collective culture orientation is associated with high levels of intentions to adopt Eco-cars. Further, there was found to be a significant relationship between attitude and culture orientation (r=.172**), implying that a collective culture orientation corresponds to a positive attitude towards adopting Eco-cars.

Table III: Correlation analysis

	Mean	SD	1	2	3	4	5
Attitude (1)	3.7	0.8	1				
Cognitive (2)	3.9	0.7	.576**	1			
Affective (3)	3.7	1	.492**	.715**	1		
Culture Orientation (4)	4.1	1.1	.172**	.086	.097	1	
Intention to adopt (5)	4.2	1	.206**	.225**	.239**	.258**	1

**. Correlation is significant at the 0.01 level (2-tailed).

Internal Consistency
Reliability of the instrument on the other hand was guaranteed by conducting the Cronbach Alpha test. The results for both the validity and reliability tests are presented in table 1, below.

Table IV: Validity and Reliability tests

Variables	Content Validity index	Cronbach's Alpha	Number of Items
Attitude	0.847	.895	14
Culture Orientation	0.885	.912	17
Intentions to Adopt	0.794	.877	8

Results in Table IV show that all the study variables; that is; attitude, culture orientation, and intention to adopt, had a content validity index above 0.75 and a Cronbach alpha statistic of over 0.85, as such the value for the measure of content validity for each variable is above the threshold of 0.7 according to Polit et al. (2007). This indicates that all the variables had relevant measures capturing the theoretical concepts depicted by the study variables. Similarly, regarding the reliability of the items, Cortina (1993) suggests that a Cronbach Alpha statistic

above 0.7 indicates acceptable reliability of the measures, therefore, values over 0.85 for each of the study variables as seen in Table IV, guarantee high levels of internal consistency.

Regression Results

Multiple regression analysis results in Table V show that attitude has a significant positive effect on the intention to adopt (beta = 865, p = 0.045), an indication that the more positive motorists are towards the Eco-cars, the more they intend to adopt them. The finding supports H1: Motorists' attitude towards Eco-cars positively influences their intention to adopt Eco-cars. Furthermore, culture orientation was found to have a positive and significant effect on the intention to adopt Eco-cars (beta = 0.744, p = 0.032)) signifying that the more motorists tend towards a collective orientation, the more they will intend to adopt Eco-cars. The interaction between attitude and culture orientation was also found to be positive and significant (beta = .229, p = 0.006), implying that the influence of attitude on the motorists' intention to adopt Eco-cars is higher among motorists with a collectivist orientation than among motorists with an individualistic orientation. The regression model was also found to be significant (F Statistic = 43.674, P = 0.000), implying that at least one of; attitude, culture orientation, or the interaction between attitude and culture orientation has a significant effect on the adoption of Eco-cars, as such the regression model for intention to adopt is significant. Furthermore, both independent, moderating variable and interaction, have a predictive potential of 16.5% (R Square = 0.165), implying that attitude, culture orientation, and the interaction term contribute 16.5% of the variation in the adoption of eco-cars.

Table V: Multiple Regression Model for Intention to Adopt Eco-cars.

Model summary						
R	**R-Square**	**MSE**	**F**	**df1**	**df2**	**P**
0.4058	0.165	0.657	43.674	3	380	0.000

Model						
	Coeff	**se**	**T**	**P**	**LLCI**	**ULCI**
Constant	1.499	1.725	0.870	0.385	-1.892	3.891
Attitude	0.865	0.303	2.858	0.045	0.515	2.787
Culture Orientation	0.744	0.346	2.153	0.032	0.065	1.424
Interaction term	0.229	0.084	2.747	0.006	0.393	0.065

Test for Moderation

Results in Table V show that the effect of attitude on intention to adopt eco-cars is significant for both the collectivist culture (beta = 0.893, p = 0.022 and individualism culture (beta = 0.132, p=.024). The result is validated by the results on the F-test on the interaction term that there is a difference in the main effects for the two categories of culture orientation. The results in Table VI show that the F-test for the interaction term is significant at the 0.05 level. Following the findings in Table 5 on the interaction term, it implies that there is a significant

difference in the effect of attitude on intention to adopt Eco-cars in the two categories of culture orientation.

Table VI: Test for Moderation

Culture Orientation	Effect	se	t	p	LLCI	ULCI
Collectivism	0.8932	0.3897	2.2923	0.0224	0.2408	3.1457
Individualism	0.1321	0.0548	2.4104	0.0243	0.02436	0.2399

F-Test of highest order unconditional Interaction (s)

R^2 Change	0.0108
F Statistic	4.4421
df1	1
df2	380
P	0.036

Further to the test of moderation, as summarized in Table VI, the Modgragh in Figure II shows that the slope for the graph of intention to adopt on attitude is higher for collectivism and lower for individualism. This, therefore, confirms that the moderation of culture orientation is significant, and the post hoc analysis reveals that there is a stronger effect among motorists with a collectivist culture orientation and weaker among those with an individualistic culture orientation.

Figure II: Moderation of Culture Orientation on Attitude and Intention to Adopt Eco-cars
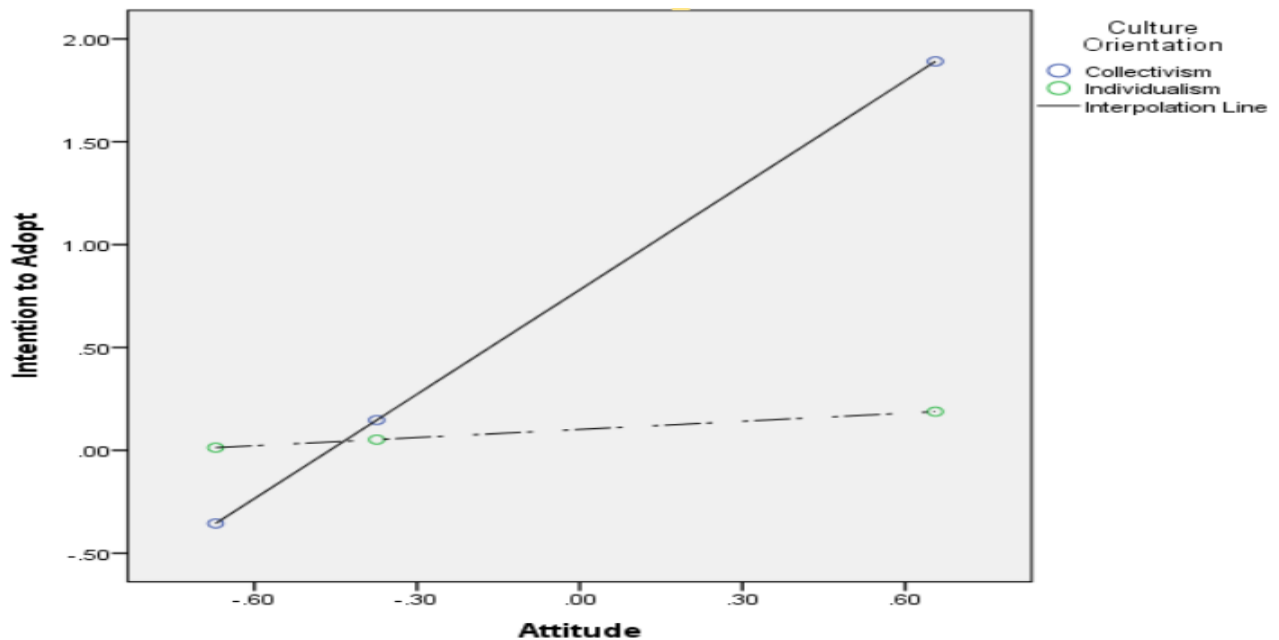
Discussion

Results of the study reveal that the attitude of motorists towards Eco-cars matters regarding their intention to adopt and use them. This is in line with earlier studies (Ivan & Penev, 2011; Rice et al., 1996) that showed that attitudes towards environmentally friendly products were consistent with the introduction of new products. This follows the positive attitude of consumers which translates into awareness and values that are pro-environmental conservation. On the other hand, where motorists have a negative attitude towards Eco-cars regarding performance, safety, time spent charging, and the charging infrastructure like charging stations and availability of spare parts, this would discourage the motorists and hence get them to consider not adopting Eco-cars (Anfinsen et al., 2019; Sanitthangkul et al., 2012). Consumers will most likely adopt Eco-cars if they perceive them to be affordable to buy and maintain. In the same vein, Tu and Yang (2019) posited that consumers perceived Eco-cars as being simpler and more convenient to operate as well as being the technology of the future, thereby warranting their adoption.

The findings of the study also showed that culture orientation especially collectivism has a positive moderation effect on the influence of attitude on the adoption of Eco-cars. The findings rhyme with previous studies such as Wamimbi (2017) culture influences how people perceive the environment, arguing that culture has the potential to influence behavioural changes that support a viable and sustainable transport industry. According to Samarasinghe (2012) collectivism as a culture orientation influences environmental attitudes formation, which according to Lobo and Greenland (2017), in turn, encourages green purchasing behaviour. Malik and Singhal (2017) argued that there is a connection between collectivist orientation and environmental attitudes and hence the adoption of eco-friendly products. Furthermore, Dalpian et al. (2015) noted that culture has an influence on consumption behaviours and that this influence is critical in the context of sustainable consumption attitudes and behaviours. They added that collectivism has a significant moderating effect on the relationship between personal norms and intention to buy electric vehicles.

The attitude of motorists being critical to their intentions to adopt Eco-cars and with evidence that this relationship is enhanced by the collective culture orientation, it's therefore important that government and private businesses engaged in motor sales, and manufacturers focus their promotional strategies towards influencing the attitude of motorists towards Eco-cars, targeting; the charging infrastructure, features that guarantee the safety of Eco-cars, and engine performance to ensure that once the Eco-cars are adopted, motorists do not return to the use of internal combustion engine cars.

Conclusion

Owing to the findings of the study, the Government of Ugandan and other developing countries should promote policies that target car users' attitudes toward Eco-cars. Motor car dealers should be encouraged to focus not only on profit making but also on the factors that may form the attitude of customers towards switching to Eco-cars. The government should also incentivize the adoption of Eco-cars by, formulating low-cost environment-friendly and energy-saving incentive policies, such as reducing taxes on the importation of Eco-cars as well

as their spare parts. Furthermore, materials required for the installation of the charging infrastructure being focal on the adoption of EVs should be made affordable to guarantee convenience to consumers intending to adopt Eco-cars. From the theoretical perspective, the study revealed the level of influence that the attitude of motorists has on their behavioural intention to adopt Eco-cars by virtue of the culture orientation the motorist subscribes to. This study focused on attitude and culture orientation, yet several other factors contribute to the intention to adopt Eco-cars including the readiness of the motor industry in Uganda in terms of their technical capacity, hence the need for further research.

References

Achtnicht, M. (2012). German car buyers' willingness to pay to reduce CO 2 emissions. *Climatic change*, *113*, 679-697.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I., & Schmidt, P. (2020). Changing behavior using the theory of planned behavior. In *The handbook of behavior change.* (pp. 17-31). Cambridge University Press. https://doi.org/10.1017/9781108677318.002

Anfinsen, M., Lagesen, V. A., & Ryghaug, M. (2019). Green and gendered? Cultural perspectives on the road towards electric vehicles in Norway. *Transportation Research Part D: Transport and Environment*, *71*, 37-46.

Barnes, J. H., Hayes, E. T., Chatterton, T. J., & Longhurst, J. W. S. (2014). Air quality action planning: why do barriers to remediation in local air quality management remain? *Journal of Environmental Planning and Management*, *57*(5), 660-681. https://doi.org/10.1080/09640568.2012.762573

Blut, M., Beatty, S. E., & Northington, W. M. (2022). Cultural personal values and switching costs perceptions: Beyond Hofstede. *Journal of Business Research*, *150*, 339-353. https://doi.org/https://doi.org/10.1016/j.jbusres.2022.06.005

Chekima, B., Chekima, S., Syed Khalid Wafa, S. A. W., Igau, O. A., & Sondoh Jr, S. L. (2016). Sustainable consumption: the effects of knowledge, cultural values, environmental advertising, and demographics. *International Journal of Sustainable Development & World Ecology*, *23*(2), 210-220. https://doi.org/10.1080/13504509.2015.1114043

Cherry, K. (2023). *Individualistic Culture and Behavior*. https://www.verywellmind.com/what-are-individualistic-cultures-2795273

CISL. (2022). *Pathways to e-mobility transitions in Uganda: Policy brief on transition to electric mobility*. https://www.cisl.cam.ac.uk/files/pathways_to_e-mobility_transition_in_uganda.pdf

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of applied psychology*, *78*(1), 98.

Dalpian, P. R. C., da Silveira, T., & Rossi, C. A. V. (2015). "One less car" the collective initiative toward sustainability. *Journal of Macromarketing*, *35*(1), 99-110.

Delang, C. O., & Cheng, W.-T. (2012). Consumers' attitudes towards electric cars: A case study of Hong Kong. *Transportation Research Part D: Transport and Environment*, *17*(6), 492-494. https://doi.org/https://doi.org/10.1016/j.trd.2012.04.004

Dunlap, R. E. (2008). The New Environmental Paradigm Scale: From Marginality to Worldwide Use. *The Journal of Environmental Education*, *40*(1), 3-18. https://doi.org/10.3200/JOEE.40.1.3-18

Fabien, D., Jean, R., & Caroline, B. (2012). Could Perceived Risks Explain the 'Green Gap' in Green Product Consumption? *Electronic Green Journal*, *33*. https://doi.org/https://doi.org/10.5070/G313310923

Fatehi, K., Priestley, J. L., & Taasoobshirazi, G. (2020). The expanded view of individualism and collectivism: One, two, or four dimensions? *International Journal of Cross Cultural Management*, *20*(1), 7-24. https://doi.org/10.1177/1470595820913077

Gallagher, K. S., & Muehlegger, E. (2011). Giving green to get green? Incentives and consumer adoption of hybrid vehicle technology. *Journal of Environmental Economics and management*, *61*(1), 1-15.

Garcia Cadena, C. (2010). *Psychological approaches to sustainability. Current Trends in Theory, Research and Applications*.

Gautam, V. (2017). Moderation effect of culture on the relationships among hedonism, product information, social integration and attitude towards advertising: an empirical study. *International Journal of Business Forecasting and Marketing Intelligence*, *3*(1), 38-49. https://doi.org/10.1504/IJBFMI.2017.082547

Gravetter, F. J., & Forzano, L.-A. B. (2018). *Research methods for the behavioral sciences*. Cengage learning.

Gurzu, A. (2021). *Africa's air quality problem: Old cars and no data*. Devex. https://www.devex.com/news/africa-s-air-quality-problem-old-cars-and-no-data-99744

Haustein, S., & Jensen, A. F. (2018). Factors of electric vehicle adoption: A comparison of conventional and electric car users based on an extended theory of planned behavior. *International Journal of Sustainable Transportation*, *12*(7), 484-496. https://doi.org/10.1080/15568318.2017.1398790

Hawcroft, L. J., & Milfont, T. L. (2010). The use (and abuse) of the new environmental paradigm scale over the last 30 years: A meta-analysis. *Journal of Environmental Psychology*, *30*(2), 143-158. https://doi.org/https://doi.org/10.1016/j.jenvp.2009.10.003

Hofstede, G. (1984). *Culture's Consequences: International Differences in Work-Related Values*. SAGE Publications. https://books.google.co.ug/books?id=Cayp_Um4O9gC

Huang, C.-C., & Lu, L.-C. (2017). Examining the Roles of Collectivism, Attitude Toward Business, and Religious Beliefs on Consumer Ethics in China. *Journal of Business Ethics*, *146*(3), 505-514. https://doi.org/10.1007/s10551-015-2910-z

Hussain, S., & Huang, J. (2022). The impact of cultural values on green purchase intentions through ecological awareness and perceived consumer effectiveness: An empirical investigation [Original Research]. *Frontiers in Environmental Science*, *10*. https://www.frontiersin.org/articles/10.3389/fenvs.2022.985200

Insurance Regulatory Authority of Uganda. (2020). *Status of Motor Vehicle Insurance in Uganda*. https://ira.go.ug/cp/uploads/STATUS%20OF%20MOTOR%20VEHICLE%20INSURANCE%20IN%20UGANDA%20(1).pdf

Ivan, C., & Penev, A. (2011). Chinese consumer attitudes towards the electric vehicle. In.

Jaini, A., Quoquab, F., Mohammad, J., & Hussin, N. (2020). "I buy green products, do you…?". *International Journal of Pharmaceutical and Healthcare Marketing*, *14*(1), 89-112. https://doi.org/10.1108/IJPHM-02-2019-0017

Johnstone, M.-L., & Tan, L. P. (2015). An exploration of environmentally-conscious consumers and the reasons why they do not buy green products. *Marketing Intelligence & Planning*, *33*(5), 804-825. https://doi.org/10.1108/MIP-09-2013-0159

Ju, N., Lee, K.-H., & Kim, S. H. (2021). Factors affecting consumer awareness and the purchase of eco-friendly vehicles: Textual analysis of Korean market. *Sustainability*, *13*(10), 5566.

Kacen, J. J., & Lee, J. A. (2002). The Influence of Culture on Consumer Impulsive Buying Behavior. *Journal of Consumer Psychology*, *12*(2), 163-176. https://doi.org/https://doi.org/10.1207/S15327663JCP1202_08

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, *30*(3), 607-610.

Lai, C. K. M., & Cheng, E. W. L. (2016). Green purchase behavior of undergraduate students in Hong Kong. *The Social Science Journal*, *53*(1), 67-76. https://doi.org/https://doi.org/10.1016/j.soscij.2015.11.003

Lai, I. K. W., Liu, Y., Sun, X., Zhang, H., & Xu, W. (2015). Factors Influencing the Behavioural Intention towards Full Electric Vehicles: An Empirical Study in Macau. *Sustainability*, *7*(9), 12564-12585.

Lamit, H., Majid, M., Shafaghat, A., & Keyvanfar, A. (2012). Sidewalk design decision making model based on walking behaviour pattern recognition: Proposal validation. *OIDA International Journal of Sustainable Development*, *4*(1), 27-34.

Lobo, A., & Greenland, S. (2017). The influence of cultural values on green purchase behaviour. *Marketing Intelligence & Planning*, *35*(3), 377-396.

Malik, C., & Singhal, N. (2017). Consumer environmental attitude and willingness to purchase environmentally friendly products: An SEM approach. *Vision*, *21*(2), 152-161.

Mostafa, M. M. (2007). A hierarchical analysis of the green consciousness of the Egyptian consumer. *Psychology & Marketing*, *24*(5), 445-473. https://doi.org/https://doi.org/10.1002/mar.20168

Muk, A., Chung, C., & Kim, J. (2016, 2016//). A Cross-National Study of Consumer Beliefs, Attitudes and Behaviors Toward Liking Brand Page. Marketing Challenges in a Turbulent Business Environment, Cham.

Murwantono, D. (2022). A Study of the Individualism Accounts on American Literature through Reader Response Criticism. *Rubikon : Journal of Transnational American Studies*, *9*, 194. https://doi.org/10.22146/rubikon.v9i2.78146

Muslim, N. H., Keyvanfar, A., Shafaghat, A., Abdullahi, M. a. M., & Khorami, M. (2018). Green driver: Travel behaviors revisited on fuel saving and less emission. *Sustainability*, *10*(2), 325.

National Planning Authority. (2020). *Third National Development Plan (NDP-III) 2020/21 - 2024/25*. N. P. Authority. https://www.health.go.ug/wp-content/uploads/2020/08/NDP-3-Report.pdf

Polit, D. F., Beck, C. T., & Owen, S. V. (2007). Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Research in nursing & health*, *30*(4), 459-467.

Qian, L., & Yin, J. (2017). Linking Chinese cultural values and the adoption of electric vehicles: The mediating role of ethical evaluation. *Transportation Research Part D: Transport and Environment*, *56*, 175-188. https://doi.org/https://doi.org/10.1016/j.trd.2017.07.029

Rice, G., Wongtada, N., & Leelakulthanit, O. (1996). An investigation of self-efficacy and environmentally concerned behavior of Thai consumers. *Journal of International Consumer Marketing*, *9*(2), 1.

Riemer, H., Shavitt, S., Koo, M., & Markus, H. R. (2014). Preferences don't have to be personal: expanding attitude theorizing with a cross-cultural perspective. *Psychol Rev*, *121*(4), 619-648. https://doi.org/10.1037/a0037666

Samarasinghe, R. (2012). The influence of cultural values and environmental attitudes on green consumer behaviour. *The Journal of Behavioral Science*, *7*(1), 83-98.

Sanitthangkul, J., Ratsamewongjan, A., Charoenwongmitr, W., & Wongkantarakorn, J. (2012). Factors affecting consumer attitude toward the use of eco-car vehicles. *Procedia-Social and Behavioral Sciences*, *40*, 461-466.

Sharma, V., Jangir, K., Chowhan, S. S., & Pathak, N. (2023, 2023//). Key Factors Influencing Electric Vehicle Purchase Decisions by Consumers: An Empirical Study of Indian Consumers. Renewable Energy Optimization, Planning and Control, Singapore.

Singh, V., Singh, V., & Vaibhav, S. (2020). A review and simple meta-analysis of factors influencing adoption of electric vehicles. *Transportation Research Part D: Transport and Environment*, *86*, 102436. https://doi.org/https://doi.org/10.1016/j.trd.2020.102436

Sserwanga, M. P. (2023). *2022 Has been a good year as uganda takes giant steps in the development of its nascent automative industry* https://www.linkedin.com/pulse/2022-has-been-good-year-uganda-takes-giant-steps-its-sserwanga/

Stockkamp, C., Schäfer, J., Millemann, J. A., & Heidenreich, S. (2021). Identifying Factors Associated with Consumers' Adoption of e-Mobility—A Systematic Literature Review. *Sustainability*, *13*(19).

Takano, Y., & Osaka, E. (2018). Comparing Japan and the United States on individualism/collectivism: A follow-up review. *Asian Journal of Social Psychology*, *21*(4), 301-316. https://doi.org/https://doi.org/10.1111/ajsp.12322

Triandis, H. C., Chan, D. K. S., Bhawuk, D. P. S., Iwao, S., & Sinha, J. B. P. (1995). Multimethod Probes of Allocentrism and Idiocentrism. *International Journal of Psychology*, *30*(4), 461-480. https://doi.org/https://doi.org/10.1080/00207599508246580

Tu, J.-C., & Yang, C. (2019). Key factors influencing consumers' purchase of electric vehicles. *Sustainability*, *11*(14), 3863.

Wamimbi, P. W. (2017). How Our Cultural Values Shape Our Way of Living. *New Vision*. https://www.newvision.co.ug/news/1445681/cultural-values-shape-living

Wang, S., Li, J., & Zhao, D. (2017). The impact of policy measures on consumer intention to adopt electric vehicles: Evidence from China. *Transportation Research Part A: Policy and Practice*, *105*, 14-26. https://doi.org/https://doi.org/10.1016/j.tra.2017.08.013

Wanyama, M. (2021). *Kampala clean air drive - for our health & planet*. https://www.globalgiving.org/projects/reduce-air-pollution-in-uganda-to-save-lives-and-planet/reports/?subid=171737

Yan, X., & Crookes, R. J. (2010). Energy demand and emissions from road transportation vehicles in China. *Progress in Energy and Combustion Science*, *36*(6), 651-676.

Yasin, M. M., Zimmerer, T., & Green, R. F. (1989). Cultural values as determinants of executive attitudes on decision making: An empirical evaluation. *International Journal of Value-Based Management*, *2*(2), 35-47. https://doi.org/10.1007/BF01714881

Zhuang, W., Luo, X., & Usman Riaz, M. (2021). On the Factors Influencing Green Purchase Intention: A Meta-Analysis Approach. *Front. Psychol*, *12*(644020). https://doi.org/doi: 10.3389/fpsyg.2021.644020