IMPACT OF EWOM ON THE AWARENESS FOR ADOPTION OF ELECTRIC CARS: A STUDY OF AGRA CITY

By Akanksha Pathak* & Prof. Vijay Kumar Gangal**

* Research Scholar, Faculty of Commerce, Dayalbagh Educational Institute, Agra, Uttar Pradesh, India

** Head & Dean Faculty of Commerce, Dayalbagh Educational Institute, Agra, Uttar Pradesh, India

ABSTRACT

This paper presents raw inferential statistical data to determine the effect of eWOM on public awareness of the adoption of electric vehicles. A survey was conducted in the Indian metropolis of Agra. Quantitative research methods are used to analyse data. After giving the structured questionnaire to respondents who owned electric vehicles, its validity and dependability were confirmed. Using Smart PLS software and structural equation modelling (SEM), data is presented. The relationship between the main constructions in the data is estimated using SEM path analysis. This dataset reveals a positive relationship between eWOM and the adoption of electric vehicles, as well as satisfaction with range-recharge, cost, government policies, and environmental concerns. However, RRS and CS have demonstrated a negative and insignificant effect on the awareness and efficacy of Electric car adoption.

*Keywords***:** Awareness, Knowledge, Coast, Environment, Range, Electric Car, eWom

INTRODUCTION

Word-of-mouth (WOM) is one of the most effective means of disseminating information. However, conventional WOM communication is effective within particular social interaction constraints. The development of online social networking sites and advances in information technology have altered the manner in which information is shared and transcended the traditional limits of WOM.

Changing to electric vehicles could reduce greenhouse gas emissions from the transportation system as well as local pollution. However, these societal benefits are only realised once electric car owners have exhaustively researched range, charging infrastructure, cost and maintenance costs, government regulations, and environmental concerns. Moreover, the lack of an accessible awareness hinders the adoption of EVs. This type of product rarely sells itself to potential customers.

In addition to modern advances in manufacturing, it is necessary to have the most recent computerized marketing strategies. Verbal (WOM) correspondence has been defined as "oral, one-to-one correspondence between a recipient and a non-business communicator regarding a brand, product, or service" (Arndt, 1967). In addition, its temperament has been depicted as ephemeral because it "evaporates when it is expressed, because it occurs unrestrainedly and then disappears" (Harsh, 1994). In the era of the Internet, this admonition is no longer relevant. WOM no longer dissipates rapidly and is not truly unrestrained. There may also be a lack of recognition that the communicator is a non-business individual or even a genuine customer. From company-directed conversation papers to consumer-created complaint websites, the Internet has altered the actual meaning of WOM, as well as the ways in which marketers view and manage this essential component of the marketing mix. The effects of electronic WOM (eWOM) have been a topic of discussion since the introduction of the first user-friendly web browser, NCSA Mosaic, in 1993 (Zwass, 1996). However, it has only been in the last decade or so that this topic has been addressed in high-level marketing journals. Due to the relative novelty of this investigation, neither an exhaustive synthesis of the articles nor an examination of where the investigation has led have been conducted. This paper will address this deficiency using the worldview conduit method. This method permits scientists to account for the observed and expected while examining the methods and presumptions underlying a particular stream of writing (Nairn et al., 2007).

How word-of-mouth (WOM) Specialists have demonstrated that individual conversations and informal exchanges of information among colleagues influence customers' decisions and purchase decisions, as well as customer expectations, pre-use perspectives, and post-use impressions of a product or service. The positive criticism system between WOM and item sales is an intriguing aspect of the WOM effect that distinguishes it from conventional marketing effects. In other words, WOM causes more item sales, which in turn generates more WOM and more item sales.

Electronic word-of-mouth (eWOM) : The Internet has enabled new types of correspondence phases that further engage both suppliers and buyers, allowing for the transmission of information and insights from Business to Purchaser and from Customer to Customer. Electronic word-of-mouth (eWOM) correspondence refers to any positive or negative statement made by potential, actual, or former customers about a product or organisation that is made accessible to a large number of individuals and organisations via the Internet.

Online consumer review: The web-based consumer survey, a type of eWOM, consists of positive or negative statements made by purchasers about a product available for purchase in online shopping malls. This shopper-generated data is useful for dynamic on-sales because it provides buyers with rounded experiences. Two sections (witness and recommender) are expected in an online consumer review for social impact purposes. As a source, online purchaser summaries provide additional client-specific data. As a referrer, they may provide a positive or negative indication of a thing's reputation.

Effectiveness of eWOM and its activities It can be difficult for customers to make the best purchase decision when shopping online because they cannot always try the product out for themselves to see if it lives up to their expectations. Several studies on sufficiency in eWOM have been conducted. It's possible to classify these investigations into two categories: market-level and personal. The difference between the two rests in the interpretation of the facts. Studies of eWOM emerge from muddled client activities inside eWOM frameworks.

LITERATURE REVIEWS

Marketing Network: Word-of-mouth (WOM) communication has received considerable attention from both marketing academics and practitioners (Breazeale, 2008). Indeed, increased advertising is associated with a decline in online consumer word-of-mouth (Jie Feng and Purushottam Papatla, 2011). The influence of word-of-mouth on brand awareness, association, loyalty, and perceived quality is overwhelmingly positive. Consequently, brand awareness, association, loyalty, and perceived quality have a substantial and positive effect on brand equity (Murtasih.S et al., 2013). The eWOM communications network provides four social media communication strategies: evaluation, embracing, endorsement, and explanation (Kozinets. R. et al., 2010). Positive feedback mechanism emphasises the significance of word-of-mouth in generating and maintaining retail revenue (Duan.W et al., 2008). The concept of perceived value is a crucial factor in conventional consumer behaviour. However, online channels have not been thoroughly investigated (Ahmed S. Ajin, 2018). eWOM has a substantial impact on consumer purchase decisions (Jalilvand.MR et al., 2010).

Government Policies: Past examinations show that monetary impetuses gave by states surely impact buyers' goal to take on EVs (Schmalfub et al., 2017; N. Wang et al., 2019). High price tag and support cost are the two essential boundaries to the acknowledgment of EVs by expected buyers (Heffner et al., 2007; Helveston et al., 2015; S.Wang et al., 2017; X. Zhang et al., 2013).

Environmental concern: Natural concern is related with individual-explicit convictions (Aguilar-Luzón et al., 2020; Higueras-Castillo et al., 2020; Inkpen and Baily, 2020).

Cost Satisfaction: A main consideration straightforwardly influences client satisfaction (Parasuraman and Grewal, 2000). Through cost insight and genuine cost examination, customers will pursue different purchasing choices and deal with venders (Van Roy et al., 2014).

Range- Recharge: The driver must plan their trip carefully and may not have the option for a particularly lengthy journey. This makes driving reach an impediment (Teinhilber et al., 2013)

concentrated on the fundamental apparatuses and techniques for introducing new innovation and development by interrogating key impediments to an electric vehicle in two nations. Yu et al. (2012) presented a driving example recognition strategy for evaluating the driving range of EVs based on the excursion fragment partitioning calculation.

IMPLICATION OF THE STUDY

- This study is useful for implementing new marketing strategies relevant to electric mobility.
- This study is useful for all the parties like vehicle users, retailers, dealerships, manufacturers and overall automobile industry.
- This study can be used as a measurement tool to determine the awareness of electric vehicles in a small city like Agra.
- The study provides a valuable contribution in the development of knowledge in the field of digital marketing, especially eWOM that concentrates on consumer behavior to attain knowledge about electric mobility and adoption of electric vehicles.

1. **Data:** Primary data was obtained through literature studies, as seen in Table1. From the literature studies obtained later developed into a questionnaire. This questionnaire then distributed in various Electric Car users in Agra city, India. 120 questionnaires were distributed, No. of questionnaires returned were 96 in which 20 were incomplete, finally total No. of questionnaires for the study were 76. To meet quality feasibility, this data then analyzed by considering values: Cronbach's Alpha (0.6), Composite Reliability (0.7), AVE (0.5) and Loading Factor (0.7). To determine the level of significant path coefficient, the bootstrap and T-Statistics processes are used above 1.96 at the 95% confidence interval. The measurement accuracy data can be seen in Table 2 and the structural model can be seen in fig.1. As the last data, Table 3 displays the output model analysis data.

2. Methodology

Table 1 Demographic Profile of Respondents

Basis	Profile of Respondents	Frequency	Percentage
Age	19 to 30	17	22.7
	31 to 40	32	42.7
	41to 50	17	22.7
	50 to 60	9	12.0
	Total	75	100.0
Gender	Male	55	73.3
	Female	20	26.7
	Total	75	100.0
Qualification	Up to 10th	12	16.0
	Up to 12th	8	10.7
	Up to Graduation	18	24.0
	Up to Postgraduation	31	41.3
	Professional Degree	6	8.0
	Total	75	100.0
Occupation	Owned a Business	22	29.3
	Govt. Job	20	26.7
	Pvt. Job	9	12.0
	Profession	24	32.0
	Total	75	100.0
Annual Income (in Lakhs INR)	Up to 5	45	60.0
	Up to 10	15	20.0
	More than 10	15	20.0
	Total	75	100.0
Marital Status	Unmarried	34	45.3
	Married	41	54.7
	Total	75	100.0
Family Members	Up to 2	7	9.3

Basis	Profile of Respondents	Frequency	Percentage
	Up to 3	35	46.7
	Up to 4	19	25.3
	Up to 5	7	9.3
	Up to 6	7	9.3
	Total	75	100.0
Average Kilometers travelled in a day	Up to15	12	16.0
	Up to 30	24	32.0
	Up to 45	29	38.7
	Up to 60	5	6.7
	Up to 60+	5	6.7
	Total	75	100.0

(Source: Author's Calculation)

In the above table the demographic data of 75 respondents is given in which 55 were males and 20 were females means 73.3% and 26.7% respectively, In Age of respondents major part of age group is 31-40 which is 31 people means 42.7% of total respondents. Mostly respondents were post graduate that is 32 means 41.3%, occupation of most of the respondents were profession which is 32% means 24 in numbers. Most of the respondents (45)were having Annual income up to 5 lakhs means 60%. More than half respondants were married. Family composition of most of the respondents was up to 3 people, which is 46.7% (35 respondents). Mostly respondents (29) which is 38.8% of total, travel around 45kms a day.

The data presented is based on qualitative and quantitative research. Qualitative data was obtained based on literature studies to obtain awareness variables, as seen in Table 2. While quantitative data were obtained by distributing questionnaires to respondents. The survey method is considered as the right data collection method because it enables standardized data collection that allows researchers to Produce eWOM-believing information that addresses key variable questions that influence the awareness and adoption of electric vehicles.

Table2: Variable in impact of eWOM for gaining knowledge regarding Electric Mobility

Area	Sub Area
Range recharge satisfaction**(RRS)**	**RRS1**To gather information of charging stations for electric car in my area.
	RRS2 To gather information about daily Use of electric cars.
	RRS3 To collect information about charging stops and charging time of Electric Cars during winter.
	RRS4 To know the speed and performance of Electric Cars.
	RRS5 To collect in information regarding use of Electric cars waterlogged areas and rain.
Believe on online word of mouth for cost satisfaction **(CS)**	**CS-1**It is good for collecting information regarding Market price of Electric cars.
	CS-2 It is good for collecting information regarding maintenance cost.
	CS-3 It is good for collecting information regarding charging costs.
Believe on online word of mouth for government policies and financial benefits **(GP)**	**GP-1**It is good to acquire knowledge regarding toll policies, exemptions and discounts for Electric Car users.
	GP-2 It provides information related to tax and loan benefits for electric car users.
	GP-3 It provide updates regarding registration process and renewal charges for electric cars.
Believe on online word of mouth for environment concerns **(EC)**	**EC-1**It gives true information regarding harmful impact of use of petrol and diesel cars on our planet.
	EC-2 It provides all the information regarding carbon footprint of conventional cars and zero tailpipe emissions of electric cars.
	EC-3 It gives updates about silent functioning & capability of no noise pollution of electric cars.
	EC-4 It is good to gain knowledge about non-fossil fuel based energy resources used for Electric Cars.

Awareness	I believe in EWOM is a tool of gathering knowledge and awareness.

(Source: Author's Calculation)

For this research, respondents from the Indian city of Agra were selected. To assess the data, researchers propose a model that incorporates Range Recharge Satisfaction, Cost Satisfaction, Government Policies and financial benefits, Environmental Concerns, and the likelihood of recommending the product to others.

Table 3 : Measurement accuracy assessment

Research Constructs	PLS Code Items	Mean	SD	Cronbach,s Alpha Value	Composite Reliability	Average Variance Extracted (AVE)	Factor Loading	VIF
CS	CS1	3.81	1.123				0.541	1.132
	CS2	3.45	1.318	0.703	0.82	0.604	0.165	2.011
	CS3	3.80	1.040				0.549	2.096
EC	EC1	4.16	.987				0.081	2.919
	EC2	3.97	1.065	0.841	0.845	0.585	-0.067	2.106
	EC3	3.25	1.253				0.52	1.773
	EC4	3.95	1.089				0.584	2.818
GP	GP1	3.60	.915	0.747	0.569	0.358	-0.652	1.808

	GP2	4.04	.907				0.7	1.745
	GP3	3.79	1.154				0.82	1.286
RRS	RRS 1	3.68	1.016	0.695	0.001	0.294	0.232	1.819
	RRS 2	4.25	.931				0.486	1.815
	RRS 3	3.36	1.280				-0.344	2.541
	RRS 4	3.45	1.177				-0.524	2.6
	RRS 5	3.63	1.271				0.194	1.249

(Source: Author's Calculation)

The results of testing the validity and reliability of the data are shown in Table 3.. Above are outcome variables. The model proposed by the researcher must be tested for validity from the proposed model and to determine whether the data, which has been collected in the field, matches the proposed conceptual model. The quality of the measurement model is determined based on its validity and reliability.

- *Path model : -*

The PLS estimation results for the structural model, path coefficients values as well as the item loadings for the research constructs are shown in Fig. 1 (Table 4). The main data source (questionnaire) is used to collect data from respondents in the territory of Indonesia. The Microsoft Excel spreadsheet worksheet is used to enter all data and draw conclusions from the data obtained. The Statistical Package for Social Sciences (SPSS) and Smart PLS software for structural equation modeling techniques (SEM) is used to record data and carry out the statistical analysis. In addition, Smart PLS supports exploratory and confirmation research; normal multivariate and good for small sample sizes.
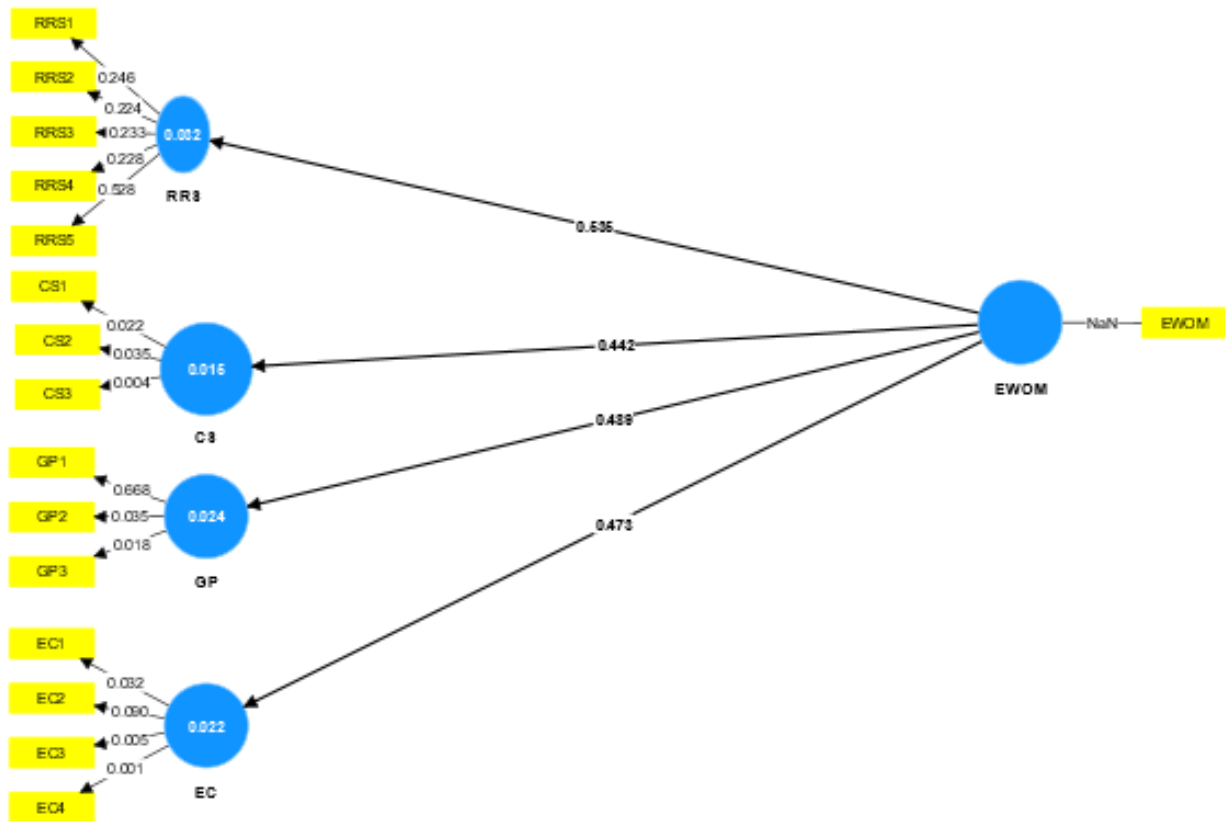
Fig.1 Measurement and structural model results.

(Source: Author's Calculation)

- *Ethical considerations*

The researcher guarantees that the respondents have adequate knowledge related to the purpose of this research, besides that they also obtain complete and transparent information. Respondents are guaranteed confidentiality about their personal data.

Table 4 Outcome of structural equation model analysis

Hypotheses	*Path*	β values	T Statistics	Result
Ha1	EWOM -> CS	-0.121	0.768	Negative and insignificant
Ha2	EWOM -> EC	0.149	0.718	Significant
Ha3	EWOM -> GP	0.154	0.692	Significant
Ha4	EWOM -> RRS	-0.18	0.621	Negative and insignificant

- *Academic, practical, and policy implications of this data article*

The data presented in this article have implications for academics, such as the path coefficient of (Beta= 0.149) indicating that eWOM has a positive and statistically significant influence on the effectiveness of environmental knowledge gathering. Therefore, this finding can help academicians in the field of Electric mobility to better understand the relationship between eWOM and Electric Mobility-related environmental awareness. This is a worthwhile contribution to literature. On the practitioner's side, prospective purchasers can benefit from this discovery's implications. For instance, there is a strong relationship between eWOM and awareness of government policies (GP) (Beta= 0.154); therefore, prospective buyers must pay heed to eWOM regarding the use of electric vehicles. In addition, this data article provides policymakers (boards of directors) of automobile companies with implications for the implementation of marketing strategies to expand the Electric Car market by paying attention to consciousness variables. This data article provides government officials with implications for designing future policies based on the aggregate demand for accomplishing environmental objectives. Thus, the findings from this research data collection can be utilised to generate new policies and aid in the revision of existing ones.

REFERENCES

Bhutto, M. H., Shaikh, A. A., & Sharma, R. (n.d.). *Factors Affecting the Consumers' Purchase Intention and Willingness-to-Pay More for Electric-Vehicle Technology*.

Coffman, M., Bernstein, P., & Wee, S. (2017). Electric vehicles revisited: A review of factors that affect adoption. *Transport Reviews*, *37*(1), 79–93. https://doi.org/10.1080/01441647.2016.1217282

Eppstein, M. J., Grover, D. K., Marshall, J. S., & Rizzo, D. M. (2011). An agent-based model to study market penetration of plug-in hybrid electric vehicles. *Energy Policy*, *39*(6), 3789–3802. https://doi.org/10.1016/j.enpol.2011.04.007

Jiang, Q., Wei, W., Guan, X., & Yang, D. (2021). What Increases Consumers' Purchase Intention of Battery Electric Vehicles from Chinese Electric Vehicle Start-Ups? Taking NIO as an Example. *World Electric Vehicle Journal*, *12*(2), 71. https://doi.org/10.3390/wevj12020071

Kittner, N., Tsiropoulos, I., Tarvydas, D., Schmidt, O., Staffell, I., & Kammen, D. M. (2020). Electric vehicles. In *Technological Learning in the Transition to a Low-Carbon Energy System* (pp. 145–163). Elsevier. https://doi.org/10.1016/B978-0-12-818762-3.00009-1

Liao, F., Molin, E., & Van Wee, B. (2017). Consumer preferences for electric vehicles: A literature review. *Transport Reviews*, *37*(3), 252–275. https://doi.org/10.1080/01441647.2016.1230794

Morton, C., Anable, J., & Nelson, J. D. (2016). Exploring consumer preferences towards electric vehicles: The influence of consumer innovativeness. *Research in Transportation Business & Management*, *18*, 18–28. https://doi.org/10.1016/j.rtbm.2016.01.007

Okada, T., Tamaki, T., & Managi, S. (2019). Effect of environmental awareness on purchase intention and satisfaction pertaining to electric vehicles in Japan. *Transportation Research Part D: Transport and Environment*, *67*, 503–513. https://doi.org/10.1016/j.trd.2019.01.012

Rastogi, A., Thomas, R. G., & Digalwar, A. K. (2021). Identification and analysis of social factors responsible for adoption of electric vehicles in India. *Current Science*, *121*(9), 1180. https://doi.org/10.18520/cs/v121/i9/1180-1187

Thananusak, T., Rakthin, S., Tavewatanaphan, T., & Punnakitikashem, P. (2017). Factors affecting the intention to buy electric vehicles: Empirical evidence from Thailand. *International Journal of Electric and Hybrid Vehicles*, *9*(4), 361. https://doi.org/10.1504/IJEHV.2017.089875

Trivedi, J. P., & Kishore, K. (2020). Investigating the factors influencing consumers' purchase intention for electric cars: An emerging market perspective. *International Journal of Economics and Business Research*, *20*(2), 117. https://doi.org/10.1504/IJEBR.2020.109137

Tu, J.-C., & Yang, C. (2019). Key Factors Influencing Consumers' Purchase of Electric Vehicles. *Sustainability*, *11*(14), 3863. https://doi.org/10.3390/su11143863

Zang, Y., Qian, J., & Jiang, Q. (2022). Research on the Influence Mechanism of Consumers' Purchase Intention of Electric Vehicles Based on Perceived Endorsement: A Case Study of Chinese Electric Vehicle Start-Ups. *World Electric Vehicle Journal*, *13*(1), 19. https://doi.org/10.3390/wevj13010019

BIBLIOGRAPHY

Adjei, M.T., Noble, S.M. & Noble, C.H. (2009). The influence of C2C communications in online brand communities on customer purchase behavior. Journal of the Academy of Marketing Science, 38, 634 653.

Bambauer-Sachse, S. & Mangold, S. (2010) Brand equity dilution through negative online word-of-mouth communication. Journal of Retailing and Consumer Services, 18, 38-45.

Bickart, B. & Schindler, R.M. (2001). Internet forums as influential sources of consumer information. .Journal of Interactive Marketing, 15, 31 40.

Godes, David, Dina Mayzlin, Yubo Chen, Sanjiv Das, Chrysanthos Dellarocas, Bruce Pfeffer, et al. (2005), "The Firm's Management of Social Interactions," Marketing Letters, 6 (3–4), 415–28.

Gould, Emily (2008), "Exposed," New York Times Magazine, (May 25), (accessed October 27, 2009), [available at http:// www.nytimes.com/2008/05/25/magazine/25internet-t.html].

Dellarocas, Chrysanthos N. (2003), "The Digitization of Word-of-Mouth: Promise and Challenges of Online Feedback Mechanisms," Management Science, 49 (10), 1407–24.

Dellarocas, Chrysanthos N., Neveen F. Awad and Xiaoquan Zhang (2007), "Exploring the Value of Online Product Reviews in Forecasting Sales: The Case of Motion Pictures," Journal of Interactive Marketing, 21 (4), 23–45.

Elberse, Anita and Jehoshua Eliashberg (2003), "Demand and Supply Dynamics for Sequentially Released Products in International Markets: The Case of Motion Pictures," Marketing Science, 22 (3), 329–54