



Driving Change: Analysing the Factors Influencing Public Acceptance of Autonomous Vehicles

^{1*}Elmallah, M.K., ²Ali, M.A.,

¹mohamedkamel146@gmail.com, The German University in Cairo, Egypt

² The German University in Cairo, Egypt

Autonomous vehicles have great potential to transform the transportation industry [1]. According to Garidis et al. (2020), autonomous driving, a key technology of the fourth Industrial revolution, is poised to emerge as the automotive industry's next significant digital transformation [2]. The positive effects associated from the adoption of autonomous vehicles are numerous. Some of these effects are encompassed in enhancements in safety [3], environmental advantages, and increased mobility access for individuals with limited mobility [4]. While automobiles are indispensable in today's society, they present challenges such as congestion, noise pollution, and traffic accidents [1]

While the global dialog on autonomous vehicles AVs often overlooks Africa, a closer examination exposes a compelling need for exploring their potential adaptation to the continent's unique context. Away from simply replicating Western models, investigating AVs in Africa demands a context-specific approach that addresses existing challenges and leverages unique opportunities. This is due to many factors such as underdeveloped infrastructure, unpredictable driving behavior and limited internet access. Exploring the context of Africa is of high importance because of the continents high levels of road accident casualties. AVs could be the solution to one of Africa's most demanding problems

This study attempts to explore the significant factors affecting the acceptance of autonomous vehicles in a developing country context. Furthermore, the driving style construct is explored as a moderating variable for acceptance of autonomous vehicles. The AVAM model is taken as a theoretical base.

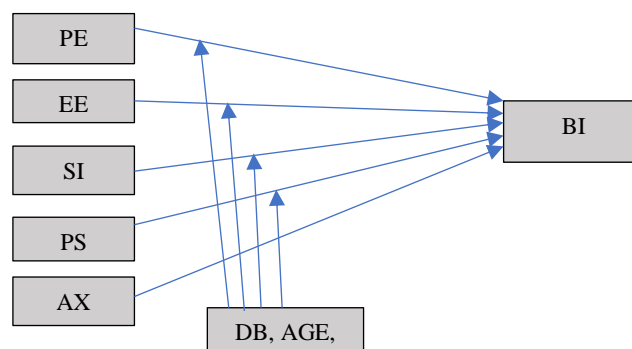


Fig. 1 Tested model based on AVAM [12]



A survey was developed and tested for both reliability and validity. A sample of 71 respondents in Cairo, Egypt was collected. The results revealed that Performance Expectancy, Perceived Safety and Social Influence have significant effects on respondent Behavioural Intentions to accept autonomous vehicles. There was no evidence of significant moderation for the driving style construct, yet further analysis using simple slope method revealed For respondents with an anxious driving style, it is proposed that the behavioural intentions of respondents with higher anxious driving styles will depend more on PE, PS, and AX. Additionally, for the same driving style, Behavioural intentions of respondents with higher anxious driving styles will depend less on social influence. For respondents with an angry driving style, it is proposed that behavioral intentions of respondents with higher angry driving styles depends more on PS than those with lower angry driving styles. For the cautious driving style respondents, the behavioural intentions of respondents with higher cautious driving styles will depend less on PS than those with lower cautious styles

This study is a continuation of the research stream in autonomous vehicle adoption/ acceptance. It responds to the call for more research in developing countries. To the authors' best knowledge, this study is the first to inset driving styles as a moderator between factors affecting AV acceptance and BI to accept AVs. Our results can be informative for a better understanding of why people accept or do not accept self-driving cars in a developing country context, and how acceptance can be enhanced through the different driving styles.

- [1] C. Olaverri-Monreal, "Promoting trust in self-driving vehicles," *Nature Electronics. Nature Research*, 2020.
- [2] K. Garidis, L. Ulbricht, A. Rossmann and M. Schmah, "Toward a User Acceptance Model of Autonomous Driving," in *Proceedings of the 53rd Hawaii International Conference on System Sciences*, 2020.
- [3] W. G. K. J. S. J. D. & B. J. Najm, "Frequency of target crashes for intellidrive safety systems.," 2010.
- [4] S. K. S. M. M. I. & S. S. Bouton, "Urban mobility at a tipping point.," *Sustainability & Resource Productivity*, 2015.
- [5] W. H. O. (WHO), "Global Status Report on Road Safety," 2018.