

Behavioral Model of Solid Waste Separation: An Empirical Study in the Federal District

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Abstract

The effective selective collection of urban solid waste in a city is fundamentally due to the positive behavior of individuals from that society. Therefore, the aims of this study was to propose steps to maximize engagement in relation to participation in the system of selective collection by Federal District's population. In order to achieve this goal, it is important to know the variables that lead to this type of behavior, given that the human being is subject to several factors that influence him. Thus, a method of structural equations was applied, using SmartPLS (Smart Partial Least Square), through a quantitative exploratory research. A questionnaire was applied to 120 people from the Federal District. As a result of this research, a validated and reliable model, with a composed reliability indicator of 0,895, that explains Behavior by 47,2% was obtained. The variable that most contributed to the prediction of waste separation behavior was the Perceived Behavioral Control, responsible for 27,8% contribution to the explained variance of the endogenous variable. Finally, a Behavioral Mobilization Strategy was proposed, integrating the pillars of awareness, strategic facilitation and transparency into an action plan that is the basis for the development of pro-environmental behavior.

Keywords

Selective Collection, Recycling, Waste Separation, Structural Equations, Partial Least Square (PLS) and Smart Partial Least Square (SmartPLS) .

References

Mariano, A. M., Gomes, A. T., Ribeiro, L. A. V., and Lopes, H. N. (2020). O Serviço de Compartilhamento de Bicicletas no Brasil: Um estudo exploratório via equações estruturais. *Revista Ibérica de Sistemas e Tecnologias de Informação*, (E27), 409-422.

- Mariano, A. M., Ramírez-Correa, P., Alfaro-Pérez, J., Painén-Aravena, G., and Machorro-Ramos, F. (2019). O Papel da Aceitação da Tecnologia nas Cidades Inteligentes: Um estudo das percepções dos usuários do Uber Brasil. *Revista Ibérica de Sistemas e Tecnologias de Informação*, (E17), 571-583.
- Xu, L., Ling, M., Lu, Y., and Shen, M. (2017). Understanding household waste separation behaviour: Testing the roles of moral, past experience, and perceived policy effectiveness within the theory of planned behaviour. *Sustainability*, 9(4), 625.

Biographies

Ari Mariano-Melo is currently working in the Department of Production Engineering at the University of Brasilia. He is a professor in the professional master's degree in applied computing at the University of Brasília. His research includes Bibliometrics, Active Methodology, Consumer Behavior, Service Quality, and Multivariate Methods. He holds a MSc and a Ph.D. in Business from the University of Seville, Spain. He has been visiting Professor at the Catholic University of the North, Coquimbo (Chile).

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Felipe Moutinho de Oliveira is Production Engineer, research in the area of selective garbage collection.