Exploring consumer participation in environment management: Findings from two-staged structural equation modelling-artificial neural network approach

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Abstract
A manufacturer’s extended producer responsibility for environment management cannot be fulfilled without the participation of end consumers. Therefore, the present study aims to explore the role of consumers in recycling programs of end of life mobile phones. Based on the theory of planned behavior, hypotheses were developed for which data was collected from 746 respondents and a two staged structural equation modelling-artificial neural network was applied. Both techniques generated similar results which provides validation of the hypothesized relationships. Based on the findings, results are discussed and accordingly policy implications are recommended.

KEYWORDS
environment management, extended producer responsibility, recycle, SEM-ANN, TPB

1 | INTRODUCTION

With an increased concerns towards environment protection and preservation, sustainable organizational operations and practices emerged as an important determinant for organizational competitiveness (Ahmed et al., 2020; Chang, 2018). This sustainability is not just bound with the environmental compliant processes from raw material extraction to the delivery of end product to consumers, instead it also covers the waste management at the end of the product’s life (Andalib Ardakani & Soltanmohammadi, 2019; Najmi, Kanapathy, & Aziz, 2019). Such management can efficiently be done with the help of reverse logistics. In reverse settings, though the role of end consumers’ changed whereby they act as the supplier of the products, however anticipation from the consumers of discretionary reversing the product flow remains a challenge (Dixit & Badgaiyan, 2016). Hence for an organization to fulfill its corporate social responsibility (CSR) of environment conservation which is also termed as extended producers’ responsibility (EPR), participation from general stakeholders (Teng & Wu, 2018) especially end consumers is imperative (Afroz, Masud, Akhtar, & Duasa, 2013).

Urbanization and an improved standard of living has shown a drastic increase in the levels of household waste (Khan, Ahmed, Najmi, & Younus, 2019). According to the estimations of the World Bank, the yearly levels of the general household solid waste by 2025 is estimated to have 2.2 billion metric tons globally. The case of electronic waste (e-waste) is different from the general household solid waste because of the nature of material and its toxicity and hazardousness (Borland, Bhatti, & Lindgren, 2019). E-waste emits more methane and requires proper disposition process (Man, Naidu, & Wong, 2013). In addition to the plastic, the other material in e-waste includes arsenic, lead, mercury and chromium which is threat to the human health if dumped in the landfills directly (Molinari, 2010). Moreover, an increased production in coping the consumer demand which is voracious and ever-changing is also leading to an increased e-waste which raises serious concerns on its management (Kochan, Pourreza, Tran, & Prybutok, 2016).

In addition to the ecological threat because of the improper waste management, its generation is also increasing whereby developing countries are anticipated to generate more e-waste than developed countries (Sthiannopkao & Wong, 2013). On the other hand, since there is an existence of value even at the end of product’s life, there