

ABSTRACT

The ever increasing levels of electronic waste (e-waste) and limited capacities for disposal and recycling have worsened e-waste management considering only 10% of e-waste is properly managed globally. In developed countries, e-waste management is guided by extended producer responsibility frameworks that ensure e-waste collection and recycling through consumer participation whereas, in Asia and Africa e-waste is managed through inefficient solid waste systems resulting to degradation of the environment. The downstream e-waste management sector is informal with no regulations to ensure proper management yet, recyclers' capacity to efficiently manage e-waste is not known. Studies have shown socio-economic factors and awareness levels influence participation in e-waste recycling however, socio-economic factors have greater influence. Despite this important link, there is hardly any empirical data on this relationship regionally. The success of a recycling system depends on the active and sustained participation of citizens in the correct separation and collection of waste. Therefore, the purpose of this study is to assess the influence of socio-economic factors on e-waste management in Kisumu Central Business District (CBD) where electronic and electrical equipment use is pervasive. The specific objectives of this study were to; examine the influence of occupation type on e-waste management and e-waste generation in Kisumu CBD, investigate the influence of education level on e-waste recycling in Kisumu CBD, establish the influence of income level on e-waste recycling in Kisumu CBD and to assess the influence of technical training on e-waste recovery and refurbishment in Kisumu CBD. The study adopted a cross-sectional research design and the units of analyses were EEE consumers and technicians. A sample of 290 consumers was derived from a population of 1,193 businesses and 39 technicians derived from 44 repair shops operating within Kisumu City CBD. The respondents were selected through systematic random sampling. Primary data was collected through questionnaires, key informant interviews and observations. E-waste management practices, preferred scheme of recycling and willingness to participate in e-waste recycling was assessed. Linear regression technique was used to determine willingness to participate in recycling, and binary logistic regression was used to determine e-waste management. Results show that consumers are willing to pay (WTP) not more than 5% of the cost of electronic and electrical equipment cost, the average production of e-waste per person in the CBD is 0.8 Kg/year and 'deposit-refund' drop-off scheme is the most preferred collection method. Consumers in professional services have the highest likelihood of not managing e-waste with an odds ratio of 0.61 ($p < 0.0001$) and wholesale business were the lead producers of e-waste accounting for (29.57%) of 1.07 tonnes/year produced. Education levels and income levels of consumers had significant associations ($p = 0.0008$ and $p < 0.0001$ respectively) in predicting WTP, an increase in income led to 38.8% increase in WTP in comparison to education level at 35.4%. Willingness to drop-off (WTD) was only predicted by income levels ($p = 0.0001$) with an increase in income level leading to 43.3% increase in WTD. The technical training of the technicians influenced e-waste recovery outcomes, but refurbishment was not significant. Therefore, occupation, income levels and education levels of consumers should be factored in designing of an e-waste management system in Kisumu CBD. There is need for civil education on e-waste management especially on consumers in professional services; recycling levy should not exceed 5% of the cost of the equipment to guarantee participation from all groups and there is need for capacity building of technicians by original equipment manufacturers to enable them to de-manufacture recyclables from e-waste and also, incentives should be given for collection of non-recyclables.