BRIEFING NOTE

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WEEE TRANSFORM – TRAINING OF THE INFORMAL SECTOR AND HOUSEHOLD PARTICIPATION IN THE E-WASTE SECTOR

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KEY FINDINGS

The study was conducted to determine the operations of waste reclaimers and e-waste, their willingness to undergo training in the repair of e-waste, the success of such training and the e-waste recycling behaviour of households in Gauteng. The results showed that e-waste is collected, dismantled and processed by waste reclaimers often in ways that poses danger to their health and the environment. Waste reclaimers were very willing to undergo training and two training sessions were conducted in the repair of small appliances. The training was evaluated as very successful, and reclaimers indicated a need to be also trained in the repair of bigger appliances. The research conducted in households found that significant volumes of e-waste are stockpiled in households. Respondents are willing to recycle their e-waste, but the lack of information and infrastructure are hindering participation. The only demographic variable that influences recycling participation was age and the drivers of recycling participation were determined using principal component analysis.

INTRODUCTION

Waste electrical and electronic equipment (WEEE or also referred to as e-waste) is the fastest-growing waste stream globally and in South Africa. Annually about 360 000 tonnes of e-waste is generated in South Africa and only 11% of this waste stream is recycled. Of the e-waste that is recycled, the informal sector is responsible for recycling around 25%.

E-waste is both a threat and an opportunity – a threat to the environment and human health, but an opportunity as it contains valuable and scarce materials. Properly managed e-waste represents a valuable resource for recovery of raw materials and a market niche with new job opportunities that has barely been exploited in South Africa.

The first aim of this study was to profile and investigate operations of waste reclaimers in the collection, storing, dismantling and processing of e-waste as well as their willingness to receive training in the repair of e-waste. The second aim was to develop and conduct training in the repair of small appliances with the informal sector. The last aim was to determine the volume of e-waste in households as well as the e-waste recycling behaviour of Gauteng residents.

METHODOLOGY

For the first aim of this study a total of 229 waste reclaimers were interviewed using a structured questionnaire. Demographic data, data on their operations, willingness to undergo training and their recommendations for training were collected. Data were analysed using descriptive statistics and thematic analysis.

The second part involved the training of 20 waste reclaimers in the repair of small appliances. The Kirkpatric model was used to evaluate the training and the reclaimers also conducted a self-evaluation.

To determine the volume of e-waste in households and the recycling behaviour or residents, data were collected using a structured questionnaire on an online platform. A total of 346 respondents participated in the survey. Data were analysed using descriptive and inferential statistics for the quantitative data, while thematic analysis was used for the qualitative data.

MAIN RESULTS

Waste reclaimers

The profile of the waste reclaimers showed that it was mostly men (83.4%), Black/African (87.3%) and South Africans (81.6%) that collected e-waste as part of their

operations. The majority completed some high school (65.2%) and three respondents had a post-matric qualification. E-waste was collected with other recyclables and the most common type of e-waste collected was cables (45.9%) followed by screens (43.1%). Wheelie or dustbins outside of houses recorded the highest number as place of collection of e-waste with 74.2%. Scrap metal dealers (76.4%) were preferred by reclaimers as the buyer of their e-waste and buy-back centres came in as the second option with 49.8%.

Waste reclaimer also conducted urban mining as 68% dismantled and 60.2% processed e-waste to extract the most valuable parts of it. This was done using crude tools such as hammers and even stones as well as burning to get rid of the plastic parts of e-waste. A more positive finding was that 75% of the waste reclaimers also repaired e-waste collected – either for personal use or the be sold. However, they had little to no training in the dismantling, processing and repair of e-waste and 80.6% indicated their willingness to be trained in the repair of e-waste.

Training of waste reclaimers

Two rounds of training were conducted and 20 reclaimers were trained in the repair of small appliances. The training consisted of a theoretical and practical component. The trainees all agreed or strongly agreed that the training provided will benefit their daily operations, and 85% agreed or strongly agreed that the content of the training was relevant to their daily activities.

Reclaimers were asked to do a self-evaluation on their level of competency before and after the training. The self-evaluation showed a huge improvement in both the theoretical knowledge and practical skills of the reclaimers. The weakest area in the theory component was South African legislation relevant to e-waste where 80% of participants rated themselves on a moderately high or high level of competency. For the practical component, all waste reclaimers indicated moderately high to very high levels of competency in the repair of different appliances. Only one trainee rated his/her level of competency as average for the repair and refurbishing of a blender.

A notable finding was the request of waste reclaimers to also include the repair of bigger appliances such as fridges and stoves in future training. The training can be considered as highly successful and it resulted in an accredited short learning programme in the repair of e-waste.

Volume of e-waste in households

The volume of e-waste was collected under four categories, namely small and large appliances, consumer electronics and information and communication technology (ICT). Although it is not e-waste per se, responses showed that there are EEE in households that were no longer needed. For example, 19.4% of respondents hand one or more electric heaters, VCR players (50.3%), GPS (44.2%) and mobile phones (31.4%) that were no longer needed or used in households.

Stockpiling of e-waste was common in households and also included obsolete equipment and devices such as GPS devices, MP3 players, fax machines, etc. Electric heaters came out top again for large appliances with 13.9% of respondents indicating that they had one or more no longer in working condition. For small appliances, 12.1% of respondents said they had broken irons and for consumer electronics it was e-smoking devices (27.9%). ICT equipment that are perceived to have value or have data security concerns were also stockpiled in households. For example, 28.7% of respondents had mobile phones no longer working and 19.4% had laptops.

E-waste recycling behaviour

Just more than half of respondents (54%) have recycled their e-waste. An encouraging finding was that 80.1% indicated that they planned to recycle their e-waste in the future. Different demographic variables were tested to determine if it had an influence on e-waste recycling participation. Only one variable, namely age, showed a statistically significant relationship with recycling participation.

Principal component analysis was performed on 28 statements to identify the underlying factors that influence recycling participation. Seven factors were identified to influence recycling participation – ranging from recognising the benefits of recycling to privacy and security concerns.

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