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# Littering Perceptions, and Behaviors among the General Public in Maseru, Lesotho

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**Abstract- Littering is a growing environmental problem that has caught the eyes of different sectors of society. This study, which was conducted in Maseru, Lesotho, aimed to understand littering perceptions and behaviours among the general public. A qualitative phenomenological study design was used where data was collected through semi-structured interviews from a sample of 57 respondents. Data was analysed through content analysis. Findings revealed that Maseru city is perceived as heavily littered, although littering was seen to have decreased over time. Furthermore, litterers are predominantly female, aged between 26-35 and most have secondary education. Material factors such as the availability of waste receptacles and the convenience of the receptacle location influence littering behaviour, while keeping a clean environment was identified as the main promoter of anti-littering behaviour. The study concluded that there are positive perceptions and negative behaviours in littering in Maseru. Recommendations for reducing littering included the supply of more litter bins and creating awareness through education.**

**Keywords- Littering, Waste, Perceptions, Behaviours**

## I. INTRODUCTION

Litter consists of waste products that have been discarded incorrectly without consent at an unsuitable location (Novotry, 1999). The act of littering is an increasingly growing problem globally (Sibley, 2008) with sustained negative effects on the health of communities, environmental quality and economic growth of the urban and rural areas (Ojedokun &Balogun, 2011). Littering can lead to injuries from sharp materials, transmission of diseases through environmental pollution, blockage of drainages and damage to ecosystems and biodiversity. Understanding how people perceive litter and behave in relation to littering assists with intervention design, hence the need for this study in Maseru. The relationship of behaviour and littering according to Ong and Sovacool (2012) is that littering behaviour is normally influenced by the profile of the litterer such as gender, income, education level and age. Like in many countries,

littering in Lesotho is considered to be a growing problem due to piles of litter that can be seen disposed in many areas; this could be due to waste management receiving very little attention in Lesotho's development planning (Seholoholo, 1998) or communities' poor compliance to legislation. Lesotho's policy and legislative framework exists to achieve safe waste management. Legislative tools include the Lesotho Environmental Act of 2008, which supports pollution prevention and is in support of the Polluter-Pays principle, while the outdated Public Health Act (1970) requires people to take responsibility for the litter they cause.

The Local Government Act (1997) and Environmental Policy (1998) outline actions against littering. This study is therefore conducted to help the government and other stakeholders of waste management, to comprehend perceptions and common littering behaviours and attitudes so as to support sound decisions and appropriate interventions to avert littering. In Lesotho there is inadequate enforcement of environmental policy and legal framework, resulting in high littering levels. The increasing population of urban areas due to urban- rural migration, has led to litter being a serious environmental problem in the whole country especially Maseru (Seholoholo, 1998).

## II.LITERATURE REVIEW

Throughout human history, people have disposed of unwanted materials onto streets, roadsides, in small local dumps or often in remote locations. Littering is different from other types of pollution in that it results from sum of actions by many people (Cowen, 2016). Littering has always existed but it is now receiving global attention. According to Melosi (2009), the litter problem mainly resulted from industrialization and development in most cities around the world.

A study conducted by Schultz (2011), shows that littering is human descendent because high level of litter are directly proportional to the levels of human traffic. This could be the reason why most cities have high litter levels, since they have high population. Litter is not just dropped or left behind but it is deliberately left in certain places. Most of the littering is done where that litter can be hidden, or in places resembling litter bins (Williams, 2002). A stark reality is that Africa is urbanizing rapidly, therefore, population growth and rapid urbanization rate aggravate waste generation in cities. There exists, therefore, an increasing concern about the implications of environmental pollution problems such as littering on health, social, economic and aesthetic related issues of urban environments are justified.

The first efforts of behavior experts to solve environmental issues began with the problem of littering (Greve, 2016). This because littering was seen as a behavioural problem that could cause significant impact on the economy, environment and society (Togler,2008; Bennett, 2011 ). Littering is also related to economics, this means that littering is common in areas where there are more economic activities taking place (Nkwocha, 2009).

Personal factors such as age can also affect littering behaviors. The negative relationship between age and littering has been documented in several survey studies of littering behavior (Beck, 2007), with researchers reporting that younger people tend to litter more often than those who are older, for example (Hecht, 2000; Okeoma,2009; Ojedokun,2011; Heberlein,2001; Krauss, Freedman, and Whitcup, 2005). According to Okeoma (2009), young people litter more because they usually consume goods on the streets that litter the environment.

Physical environments may also affect the littering behaviours. In a study on "Understanding District Citizens and Business Community Attitudes towards Litter and Responses to Anti-litter Messaging and Strategies" Alice Ferguson Foundation (2011) found that people are likely to litter less in a cleaner environment but will litter more at a dirty environment. Furthermore, they are likely to litter in a public location as they assume someone else will clean it up, and they also litter if there are no bins or if the distance between the bins is too far (The New South Wales Office of Environment and Heritage, 2013). This is because of the human need to get rid of the litter item as soon as possible (Wanjohi 2016). In addition, Okeoma (2009) asserts that the lack of bins is a major contributor to littering on the streets, while a lack of regular litter removal caused litter to accumulate in the street encouraging littering (Poswa, 1997).

There is a relationship between knowledge, attitude and behavior. For the relationship between knowledge and attitude toward the behavior, Fryxell and Lo (2003) found that both theoretical and practical knowledge has positive effects on attitude toward the behavior. As for the relationship between knowledge and the behavioral intention, Vagias et al. (2014) found that both theoretical and practical knowledge has direct positive effects on the behavioral intention. Bradley (1999) and Chekima (2016), argue that people with high environmental knowledge have positive environmental behavior and attitude. In addition, an individual's knowledge of practical programs also has positive effects on his or her attitude toward the behaviour. People's ignorance Waghorn (2013), various socio-economic factors, littering frequency and willingness to take litter preventive approaches (Arafat, 2007) and

personal factors (Stuart, 1979) all affect littering behaviours.

According to Schultz (2011), age has a small impact on littering, but it is a demographic variable that is statistically significant predictor of littering behaviour. Even though different age groups do not produce the same amount of litter, there is no specific demographic age group that has been found to produce the most litter. Young people litter more because the habit of cleanliness has not been well reinforced in the brains yet (Okeoma,2009, Ojedokun,2011 and Shukor et al. ,2012). Another reason is that young people usually consume goods on the streets and litter the environment (Okeoma, 2009). According to Ojedokun (2011), the attitude becomes negative as they grow older and the tendency to act in a pro-environmental behaviour increases. Steg (2009) in Melbourne found that among all age groups, people under the age of 25 had highest proportions of littering (38% of people under age of 25).

The impact of giving economic incentives for pro-environmental behaviour was studied by Thorgersen (2003), and the results proved them to affect the behavioural intention positively. Given findings from research studies tabled, developing countries and in particular, those that have waste management challenges like Lesotho need to understand factors and perceptions in their own context, thus it is imperative understand the perceptions and behaviours associated with waste littering in the Lesotho context.

## III.METHODOLOGY

A qualitative cross-sectional study design was used. The study was carried out in the littered Maseru bus stop area which is dominated by small and medium enterprises and street vendors. From the vast general population of the study, a sample size of 57 was calculated using the Nassiuma coefficient of variation formula which yielded a sample size of 57 participants. Participants were recruited through convenience sampling (face-to-face during data collection), based on their willingness to participate. Data was collected through semi-structured interviews and although saturation could possibly be reached before 50 participants, the entire 50 participants were interviewed to cater for the broadness of the research question and the vastness of the population (Polit & Beck, 2007).

Data was collected for five days within a period of two weeks and in each session a minimum of 15 people were reached. Semi-structured interviews were used when gathering information on behaviours and attitudes. Semi-structured interviews are used because they provide qualitative data and create understanding of the issue for both the researcher as well as the interviewee. Content analysis was used to analyze the data and allow behaviour and perception themes to emerge from the data.

### 1. RESULTS

**1. Demographic information of participants**

The summary of participants' demographic information is given in Table 1.

Table 1: Summary of respondents' demographic characteristics

| Sex | | | Age group | | | | | Education level | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | <18 | 18-25 | 26-35 | 36-50 | >50 | Primary | Secondar | Tertiary |
| n | 23 | 27 | 3 | 9 | 18 | 16 | 4 | 17 | 30 | 3 |
| % | 46 | 54 | 6 | 18 | 36 | 32 | 8 | 34 | 60 | 6 |
| Total 100 | | | 100 | | | | | 100 | | |

The respondents in this study were males (46%) and females (54%), with more than half of them (68%) aged between 26 and 50 years old, which demonstrated closeness to the sex distribution of males (49%) to females (51%), in Lesotho according to 2016 census. Only 6% of the respondents had attained a tertiary level of education and over half of the respondents (60%) had secondary education. With Lesotho's adult literacy rates at 87.4%, the educational status of participants was commensurate to national Charts.

2. Perceptions of littering in Maseru

Table 2: Maseru CBD and litter

| Perceptions of the status of littering in Maseru | | | | |
|---|---|---|---|---|
| Generally a littered city | | Heavily littered | Moderately littered | Slightly littered |
| Yes | No | 58% | 36% | 6% |
| 96% | 4% | | | |

The majority of participants gauged the levels of littering at heavy littering (58%), Moderate (36%) while the minority considered the city to be only slightly littered (6%). Perceptions could vary based on the tolerance of litter of each individual. The most littered areas of the city were considered to be the bust stop area (90%) and the environs of businesses (80%) while open spaces of the CBD were perceived to be the least littered (34%), as outlined in table 3. The environs of businesses are surrounded by a growing population of street vendors, especially at the bus stop area and other high-pedestrian areas of the city.

Table 3: Respondents' perceptions on the most littered areas in Maseru

| City area | Percentage (%) |
|---|---|
| Bus stops/stations ,taxi ranks | 90 |
| Outside commercial areas | 80 |
| On the streets | 50 |
| Roadside drainage systems | 36 |
| Open spaces/recreation areas (e.g. Parks) | 34 |

Findings also reveal that the majority of the participants (58%) were concerned over the levels of littering observed. Of the researchers' surprise were the 12% who expressed their lack of concern over the observed littering (Chart 1).

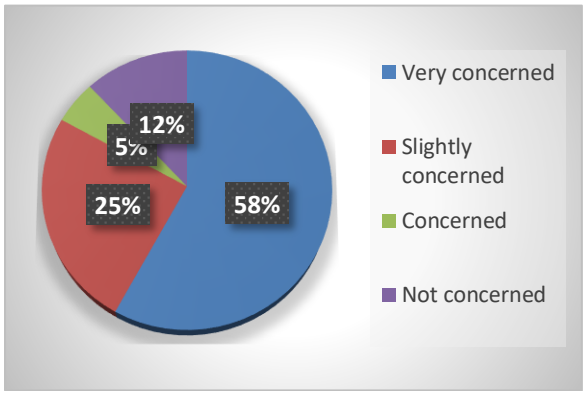


Chart 1: Participant concern on littering

Identified litter sources were found to be Pedestrians (92%), Unclaimed roadside litter (70%) and overflowing business receptacles (50%) while uncovered waste collection vehicles with waste in transit contributed to (8%) of the littering.

All participants acknowledged the impact of littering on the economy (92%) and on the environment (92%).

### 3. Littering behaviours

Littering behaviours were also inquired into, to observe variations by age, sex and educational level of participants.

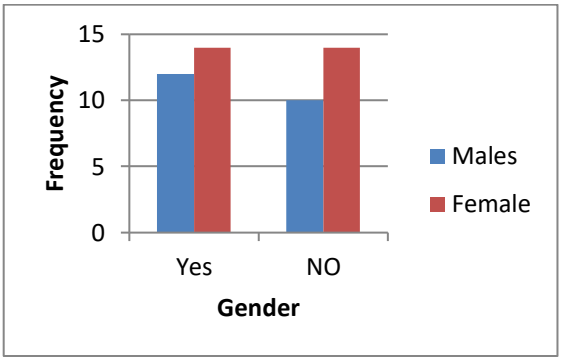


Chart 2: Comparison of littering behaviour **by sex**

A cross tabulation of the results by sex reveals that fewer females declared having littered before (50%) while 54.5% of their male counterparts alluded to littering. Approximately 45.4% of males claimed never to have littered while half of the females claimed never littering.

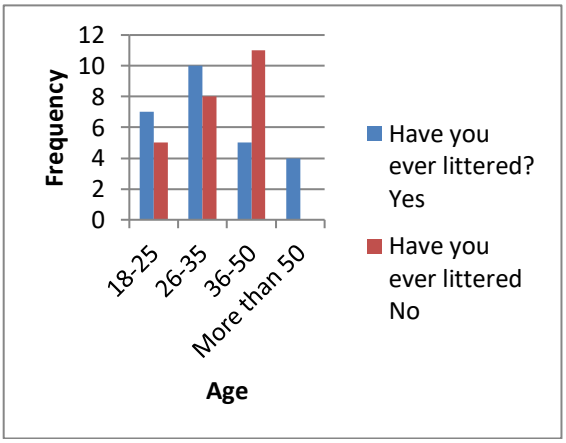


Chart 3: Variation of littering behaviour by age

Age is a known factor of littering (Vesilind , Worrell, and Reinhart). Most people who engaged in littering were found to be in the age range of 26-35. This was a surprising finding since being younger is more associated with littering than higher ages. The age group that had the highest claim of not littering is 36-50 while no respondents above the age of 50 claimed they have never littered**. The educational level of an individual affects decision-making and thus behaviours.**

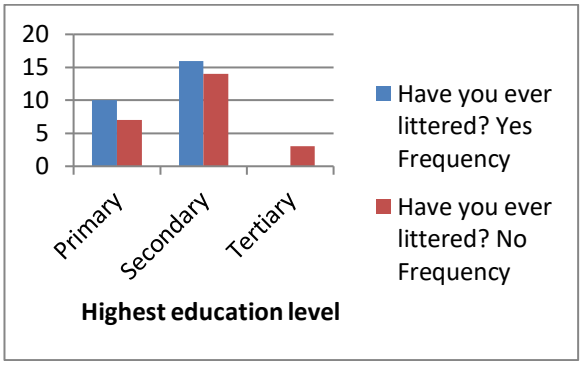


Chart 41: Variation of littering behaviour by educational level

Level of education was also another factor that was seen to influence littering. Respondents whose highest level of education is secondary were observed to have littered the most (61.5%), while no (0%) respondents with tertiary education claimed to practice littering behaviour.

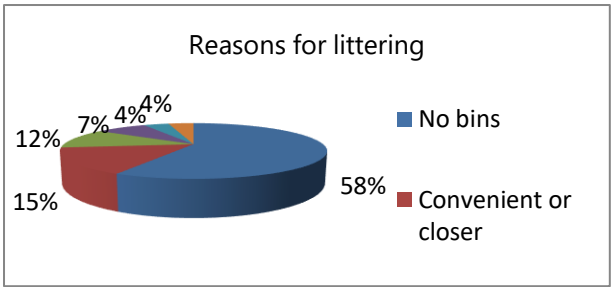


**Chart 5: Participants' reasons for littering**

Most participants (58%) identified the lack of bins as the main reason why they litter. The lowest reasons accounting for littering was the fact that everybody is doing it and that Maseru City council will collect the litter (4% each).

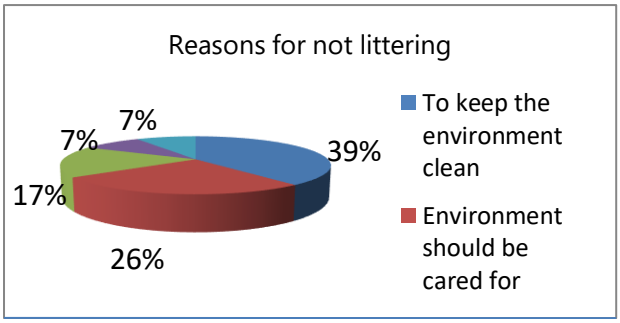


**Chart 6: Participants' reasons for not littering**

Keeping the environment clean (39%) was found to be the major motivator against littering behaviour, followed closely by caring for the environment (26%). This shows that communities value the environment they live in. Prior acquired knowledge or the way one was raised (7%) as well as morals around littering (7%) proved to be the least important reason for not littering.

**2. Recommendations for promoting anti-littering behaviours**

3.

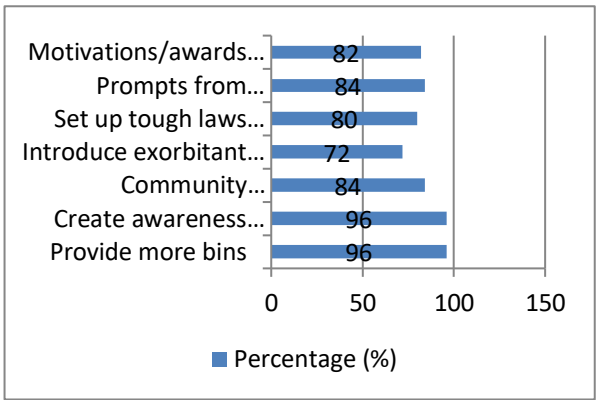


**Chart 7: Respondents' proposed solutions to littering**

The majority of respondents believe that littering behaviours in Maseru can be improved by provision of more bins and improving public education on littering (96%). The economic tool of enforcing taxes and fines to littering entities was the least recommended solution (72%).

## IV.DISCUSSION

Most of the respondents (96%) were of opinion that Maseru bus stop area is generally littered and 58% of them said that it is heavily littered. This study found that Maseru CBD is generally littered not only due to lack of litter bins but inadequate waste collection. These findings also agree with a study by Bulane (2009) that the litter in Maseru increased because the Maseru city Council struggles to cope with the collection of all waste around Maseru. The respondents from these study also mentioned that there is always frequent increase in number of people especially street vendors in Maseru CBD, therefore more people may cause more litter. Bulane (2009), also found that the litter is increased with an increase in population growth.

While perceptions of littering were high (58%), most participants (54%) felt that the level of litter has decreased compared to the past years. This may be attributed to efforts to decrease litter such as increasing bin numbers, cleaning campaigns and street sweeping that have been undertaken by the

Maseru City Council (MCC). Furthermore the International Solid Waste Association (ISWA, 2019) attests that the trend of perceived decreasing litter happens in most developing countries, as also demonstrated by Nyawira (2013)'s study undertaken in Kenya. On the contrary, (Kelly, 2020) discovered that in Ireland's towns and cities, littering had gotten worse over time.

Most of the respondents said that most of the littering was observed in the high population areas of the bus stop, on the streets, on the roadsides around commercial areas (retailing and vending areas). These findings agree with those of Freire (2014) who established that high population increases littering. Also, a preliminary study done in South Africa by Poswa (1997) revealed that an inadequate supply of bins leads to increased littering while a lack of regular litter removal caused litter to accumulate in the street, encouraging littering even where bins exist. Quian (2019) also suggests that people who litter hold the belief that littering is a social good that can provide lower-income people with financial resources and job opportunities.

Pedestrians were identified as the major source of litter by respondents. Pedestrians were then followed by litter by the roadside. The finding confirms those of Kelly (2010) who posited that pedestrians are the biggest source of litter than other groups and KAB (2017) further suggests pedestrians mostly litter open spaces, parks and beaches, contributing 98.5% of litter.

Most of the respondents (92%) agreed that littering has the impacts on both the economy and environment. Queensland Government (n.d) further found that apart from the environment and the economy, littering additionally negatively affects tourism. Evidence from Brooks & Davoudi (2017) suggests that littering not only impact the environment but deposition of one litter type may lead to the accumulation of multiple types of litter and additional environmental incivilities such as fly-tipping, fly-posting, graffiti and vandalism. This implies that littering behaviours have longer-reaching and cumulative effects beyond just the environment.

Most of the respondents (52%) admitted to having littered. These findings tally with studies suggesting that approximately 50% of people litter or have littered at some point. For example, Keep Scotland Beautiful (2007) found that 54% of respondents admitted to having ever dropped litter, with 46% admitting to dropping litter at least occasionally nowadays. Similarly, Alice Ferguson Foundation (2011) found 50% of people admitting to littering in the last year in 2009/10. Lack of litter bins, which is a material factor, was the most cited reason for the respondents littering behaviours. This corresponds with the findings of Okeoma (2009) who found the same major factor contributing to littering on Nigerian streets. This may be due to the human need to get rid of the litter item as soon as possible. Whereas physical factors such as lack of bins (58%) and inconvenient location of bins (15%) highly influenced littering among litterers, non-litterers cited personal factors of the quest to keep the environment clean (39%) and care for the environment (26%) for not littering. The former finding aligns with Hansmann & Steimer(2017) identified that mainly litterers blame external factor like insufficient infrastructure for their own littering, and seldom attribute their main attitudes and behaviours.

A cross tabulation of the results by sex reveals that members of the public have a perception that it is mostly females who litter in Maseru CBD while in some studies males were found to litter more. For example, a study by Steg (2009) found that women are more likely to think that littering is not understandable under any circumstances, therefore litter less than men. In addition, US research into littering attitudes, Midden (2008) describes men as being on average less 'pro-social' in their attitudes to littering, compared to women. The difference in results of our study from other findings could be due to females being dominant in numbers in this study.

Age was seen as another factor that influences littering. The majority of litterers are of age range of 26-35. Several studies (Khawaja & Shah, 2013; de Kort et al., 2008) attribute people younger than 20 being the main litterers. According to Shukor et al (2012), younger people (adults) litter more because they are not in the habit of urban cleanliness as it has not been well grounded in them during their upbringing. Furthermore, the young tend to consume goods and foods on the streets that litter the environment (Okeoma, 2009). However, as age increases, their attitudes become negative (Ojedokun, 2011) and as age increased, the tendency to take littering prevention actions also increased

(Ojedokun & Akungba-Akoko, 2013).These changes in behavior with age can reduce effectiveness of interventions against littering. The level of education was also another factor that was seen to influence littering. Respondents whose highest level of education is secondary said they had littered the most (61.5%). While this could also be due to them being dominant in numbers in this study, Okeoma (2009), affirms that people with higher levels of education were found to have lower than average littering rates. Also, Dyer and Motebang (1995), found that there is a strong positive relationship between education level and littering and agrees that the more educated people litter less compared to uneducated. In the view of UNESCO (2017), more people are now educated in Lesotho and this could be another reason for the perceived decrease in litter levels over time in Maseru city.

The level of concern usually influences littering behaviour as it makes people to be more environmentally conscious. In our findings, even though 58% of the respondents showed they were very concerned about littering, the level of concern did not have a bearing on littering behaviour. This is seen by the fact that 31% of those who had littered before the survey said they were very concerned about littering in Maseru. Therefore, to come up with effective ways of dealing with litter, the mental attitude and behavior must be examined so that their thoughts match their actions. The same respondents also said they were willing to participate in an anti-littering campaign or event despite their age, gender or education levels. The result of this could be that most people are now aware of the negative effects of littering and they want to take responsibility. A study by Line (2018) also found that the general public is concerned about littering and most of them said they were willing to take action against littering.

Ultimately, the majority of respondents believe that littering behaviours in Maseru can be improved by provision of more bins (96%) and public education (96%). Studies show that most people in developing countries believe that increasing the number of litter collection bins can reduce littering while studies in developed countries show main solutions as solutions that are about behavioural change (Nyawira, 2013). None of the respondents mentioned collection frequency, even though it can also be a solution to littering. Contrarily, Khawaja and Shah (2013)'s study found that internalising the cost of littering led to a drop in littering, although it was not seen as a major solution in this study.

## V.CONCLUSION

Understanding littering perceptions and behaviour is the key to finding meaningful ways to deal with this problem. This study has shown that littering is perceived to be high in Maseru with younger and more predominantly female and secondary-educated members of the public being the main litterers. Also pedestrians and roadside dumping are the highest sources of litter. Further, Personal and material variables are the most common drivers of littering attitudes and behaviours in Maseru city and its preventive actions. Since the majority of respondents are concerned with littering, the study concludes that residents of Maseru have a positive attitude and a negative behaviour towards littering hence they litter rampantly. In addition, littering is seen to have an enormous impact on the environment and the economy. The study therefore recommends authorities to focus attention on civic education and awareness and provision of more bins to dissuade littering.

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## REFERENCES

[1] Bulane I. (2009). The selection of transfer locations for Maseru municipality; A research report submitted to the Faculty of Science, University of the Witwatersrand, inpartial fulfillment of the requirements for the degree of Master of Science.Johannesburg.

[2] Brooks L., Davoudi S. (2017). Litter and Social Practices. Journal Of Litter and Environmental Quality , 1 (1), 16-22

[3] Cowen, 2016, "about the Great American clean-up", www.kab.org, 2016/01/25

[4] de Kort, Y. A. W., McCalley, L. T., & Midden, C. J. H. (2008). Persuasive Trash Cans. Environment and Behavior, 40(6), 870–891.

[5] Hansmann R, Steimer N. Subjective reasons for littering: A self-serving attribution bias as justification process in an environmental behaviour model. J Environ Res Eng Manag. 2017;73(1):8–19. https://doi.org/10.5755/j01.erem.73.1.18521

[6] Khawaja, F. S., & Shah, A. (2013). Determinants of Littering: An Experimental Analysis. *The Pakistan Development Review*, *52*(2), 157–168. http://www.jstor.org/stable/24397933

[7] Kelly O, 2020, "Dirty old towns: Litter levels in towns and cities hit 13-year high", irishtimes

[8] Line, 2018. Image matters: incentivizing green tourism behavior. Journal of Travel Research. 57, 296–309.

[9] Melosi M. V. 1981. Garbage in the cities- Refuse, Reform and the environment. College Station, TX: Texas A&M Press.

[10] Novotry, T. E &Zhao, F, 1999, Consumption and production of waste: another externality of tobacco use. Tobacco control, 8, p75-80

[11] Ojedokun A. O. and Adekunle A. 2013. The Role of Socio-demographical and Psychological Factors in Taking Littering Prevention Actions. International Journal of Advances in Psychology (IJAP) 2 (4).

[12] Okeoma, I. O. and Nkwocha E. E. 2009. Street Littering in Nigerian Towns: towards a Framework for Sustainable Urban Cleanliness. African Research Review, 3 (5), 147-164. http://www.ajol.info/index.php/afrrev/article/download/51149/39825.

[13] Ong BLJ, Sovacool BK (2012). A comparative study of littering and waste in Singapore and Japan, Resources, Conservation and Recycling, 61, 35-42.

[14] Polit DF, Beck CT. (2007). Essentials of Nursing Research: Appraising Evidence for Nursing Practice (9th Ed). Lippincott Williams & Wilkins, Philadelphia, USA

[15] Poswa T. (1997). A Comparison of Attitudes Towards and Practices of Waste Management in Three Different Socio-economic Residential Areas of Umtata. Unpublished Masters thesis.

[16] Queensland Government (n.d). https://wetlandinfo.des.qld.gov.au/wetlands/management/pressures/litter-illegal-dumping/effects-values/economic-impacts.html. Accessed 18th March 2023

[17] Schultz P.W., Bator R.J., Large L.B., Bruni C.M. and Tabanico J.J. 2011. Littering in context: Personal and environment predictors of littering behaviour. Article in Press.

[18] Seholoholo (1998). Solid waste management in low and high income residential areas of Maseru: a comparative study of Maseru West and Seapoint. Unpublished Masters thesis

[19] Seidman.I, 2004, Interviewing as qualitative research: a guide for researchers in education and social sciences, teachers college press

[20] Shukor FAS, Mohammed AH, Awang M and Sani SIA (2012). Litter reduction: a review for the important behavioral antecedent approaches. 3rd International Conference on Business and Economic Research ( 3rd icber 2012 ) proceeding

[21] Sibly, C.G & Liu, J.H, 2008, Differentiating active and passive littering: A two-stage process model of littering behaviour in public spaces, Environment and behaviour, p35

[22] Steg L, 2009,Encouraging pro-environmental behavior: an integrative review and research agenda. J. Environ. Psychol. 29, 309–317.

[23] Thorgerson. J, 2003, monetary incentives and recycling: behavioural and psychological reactions to perform a performance dependant garbage fee, p197-128

[24] Togler B, Valinas A. 2008. Justifiability of littering: An Empirical investigation. Basel: centre for research in Economics, management and the arts.

[25] Vesilind P. A., Worrell, W., Reinhart, D.R.(2012). *Solid Waste Engineering*, ( 2nded), Thomson, India.

[26] Waghorn-Lees C., Michael F., Kyle D. and Lynn D. 2013: Litter Reduction from a Behavioural Science Perspective. Hollin Consulting.

[27] Wanjohi PN. (2016). An assessment of attitude and behaviour towards littering among the citizens of Nairobi City. Unpublished Masters thesis

[28] Williams, 2002. Segmentation research: Public Behavioural Survey into littering.

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