DOI: https://doi.org/10.31357/jtfe.v9i1.3953

Perception of Generation Y on Waste Disposal and Waste Management in Sri Lanka with special reference to undergraduates of private universities in Colombo

Wanodya W.G.M.U.[1], Perera H.P.N.[2*]

[1]School of Accounting and Business, Institute of Chartered Accountants of Sri Lanka, Colombo, Sri Lanka
[2]Department of Sports Science, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka

Date Received: 05-12-2018 Date Accepted: 22-04-2019

Abstract

Solid waste piling has become a serious problem to Sri Lanka. Urbanisation, industrialisation, and improvements in quality of life lead the increase in quantity and complexity of generated waste. The main purpose of this study is to determine the perception of undergraduates on waste, waste disposal mechanisms and waste management techniques in their living area. The research data obtained from one hundred and seventy three (n=173) undergraduate respondents from private universities located in Western Province, Colombo 07. A self-administered pre-validated questionnaire was used and the questionnaire was developed according to the literature survey and adapted accordingly to suit the Sri Lankan context. The data collection method was cross sectional. SPSS16.0 was used for data analysis. Data were analysed using cross-tab and chi square test. Cronbach's alpha with the present sample was 0.63. The results revealed that 51% of the respondents do not have any clue of where their service providers are dumping their waste and 53% had reported that they are not concerned about it. Even though the responses are as such, 80% of the respondents had stated that they are aware that environmental degradation affects their families. The results revealed (based on p-value) that there is no association between gender and student perception on waste management. Furthermore student's concern about the environment and waste management was moderate. Research reveals that there should be a proper mechanism to improve young generation's concern about the environment and waste management to attain a sustainable future in the long term.

Keywords: Waste, waste management, service providers, dumping waste, environmental degradation

1. Introduction

Waste disposal and waste management has become a global issue. The most developed countries in the globe generates most the waste on Earth however, the waste has not become a main issue in developed countries even though they are the large scale waste generators because such countries are technologically advanced and have well established proper waste management systems. Dumping waste in urban and sub-urban areas has become an increasing problem in Sri Lanka specially in the Western Province, around Colombo area, where no effective solutions has been taken (Sabry, 2018). Recent incidents such as fire at Meethotamulla garbage dump site made the authorities to pay immediate attention on waste management in the urban and suburban areas in Sri Lanka. Colombo, the commercial capital and the most urbanised city, is the largest producer of solid waste in Sri Lanka (Gunaruwan and Gunasekara, 2016). However, the issue of MSW is most acute in the Colombo municipal area and in the suburbs of Colombo (Bandara , 2011).

*Correspondence: udariwanodya@gmail.com
ISSN 2235-9370 Print/ISSN 2235-9362 Online

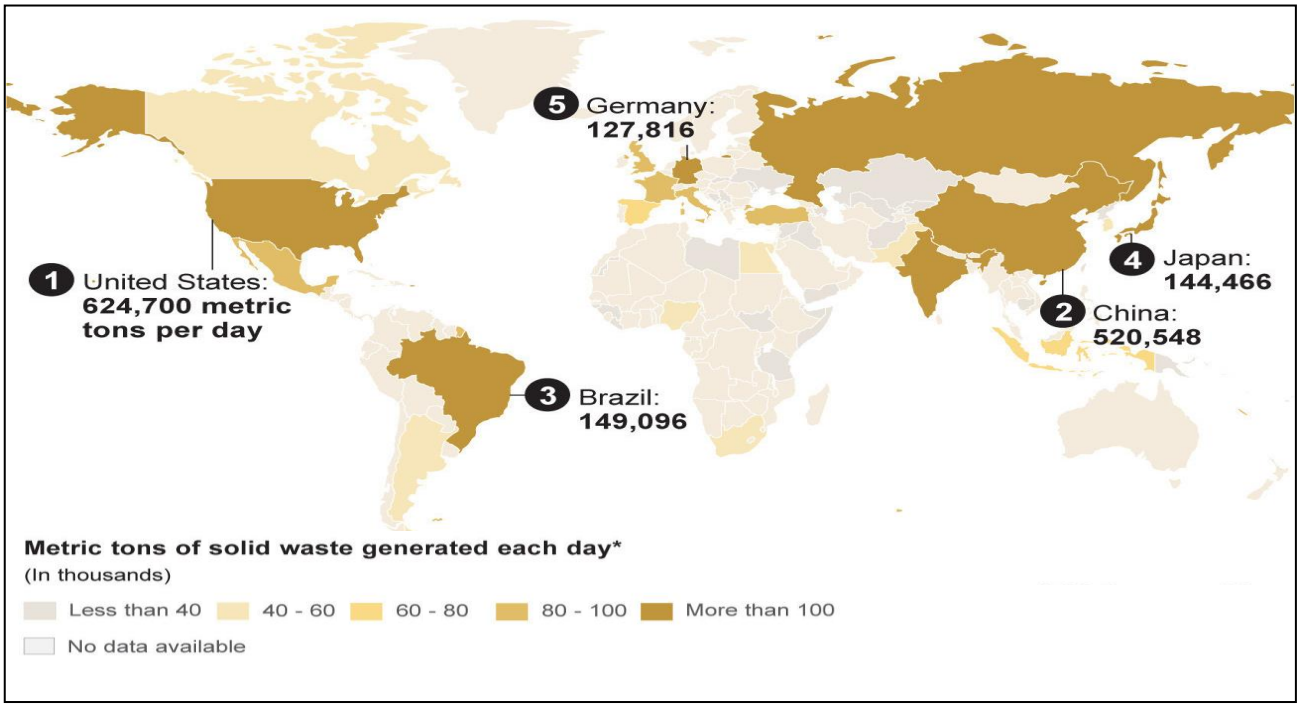

Figure 1: Waste generating countries and scale of waste generation.

The collection of Municipal Solid Waste (MSW) is the responsibility of corporations/ municipalities (Sharholy et al., 2008). In Sri Lanka, MSW collection was mainly done through community garbage collection points (authorized or unauthorized dump points) and house-to-house collection.

However, the government still failed to manage MSW up to the standard which ensure sustainable environment with less pollution. Sri Lankan government has taken actions in order to address this emerging issue on solid waste management but the expected success rates could not be achieved as planned. This could happen due to various factors such as weak institutional and legal framework, choice of technology, inadequate collection and transportation systems (Longe et al., 2009), poor planning without considering all consequences that could affect the success of the solid waste management systems, implementation issues, lack of monitoring on the progress of the plan, absence of specialists or committed officers to lead the projects, less support from the public towards the project were some issues that could be observed in Sri Lankan context. Unacceptable disposal of solid waste is one of the biggest environmental issues faced by the country at present (Bandara, 2011). The rational man finds that his share of the cost of the wastes he discharges into the commons is less than the cost of purifying his wastes before releasing them. Since this is true for everyone, we are locked into a system of "fouling our own nest" (Ranasinghe, 2017) which leads to improper waste disposal practices.

The issue regarding waste management needs to be observed in the eyes of the future generation because the sustainable environment practices needs to be established for the long term. Therefore, the study aims to identify how the undergraduate students' perception on solid waste management with special reference to the undergraduates at School of Accounting and Business, The Institute of Chartered Accountants of Sri Lanka.

Sri Lanka, with a current per-capita Gross National Product (GNP) of US$ 1350, is an island country in the Indian Ocean off the southern coast of India. It has a total land area of 65,610 km^2 hosting a population of about 20 million. Disposal of solid waste is a major environmental problem in Sri Lanka at present and has become a national issue. The National Action Plan of Sri Lanka has identified haphazard solid waste disposal to be one of the major causes for environmental degradation (Bandara and

Hettiarachchi, 2010), (Bandara, 2011). This is mainly due to increased consumption behaviour as a result of unplanned urbanization (Menikpura et al., 2012), increased population, industrialisation and economic growths (Sharholy et al. 2006; Dhokhikah and Trihadiningrum , 2012; Khan et al., 2018; Yukalang et al., 2018).

The main component of Solid Waste (SW) is decomposable organic waste which has a range of 42% to 80.2%. Other solid waste components, which appear in less portion, are paper, plastic, cloth, metals, glass, ash and others could also be identified (Dhokhikah and Trihadiningrum , 2012). The relative percentage of organic waste in solid waste is generally increasing with the decreasing socio-economic status; so rural households generate more organic waste than urban households (Sharholy et al., 2008). Municipal Solid Waste (MSW) of Sri Lanka typically consists of a very high percentage of perishable organic material which is about 65-66% by weight with moderate amounts of plastics and paper and low contents of metal and glass (Bandara, 2011). In 1999, the estimated average solid waste generation in Sri Lanka was 6,500 tonnes/day. With a 1.2% population growth rate, total MSW generation in 2009 was approximately 7,250 tonnes/day. In 1999, the average per capita MSW generation was 0.89 kg/cap/day and has been predicted to reach 1.0 kg/cap/day by 2025 (Menikpura et al., 2012).

Five typical problem areas can be identified in Municipal Solid Waste Management (MSWM) of developing countries: i) inadequate service coverage, ii) operational inefficiencies of services, iii) limited utilisation of recycling activities, iv) inadequate management of non-industrial hazardous waste, and v) inadequate landfill disposal (Ivy et al., 2013). The Local Authorities (LAs) are responsible for the collection and proper disposal of waste generated by the people within its territory. Except for the Municipality of Colombo which has a separate Solid Waste Management Unit, the public health department of the Local Authority is responsible for solid waste management in addition to their other responsibilities including health and sanitation. The daily collection of MSW in the country is about 2,683 tons of waste. However, the generated amount far outweighs this with almost negligible collection in rural areas of the country (Bandara, 2011) Municipal solid waste management (MSWM) encompasses the functions of collection, transfer, resource recovery, recycling, and treatment. The primary target of MSWM is to protect the health of the population, promote environmental quality, develop sustainability, and provide support to economic productivity (Yongsheng et al., 2006). For the collection process, house-to-house solid waste collection is being performed by most of the municipal councils. In addition, community and roadside collections are also being practiced by some municipal councils (Menikpura et al., 2012). According to a household survey conducted for the municipality of Moratuwa, municipal waste collection is available to only 56% of the households. About 20% of the households dump their waste on the roadside and 8% dump the waste into pits in their own back yards. Insignificant number of households uses alternative waste management techniques, while 7% compost their waste and practice recycling (Bandara, 2011). The World Bank reports vast amounts of uncollected waste in urban areas; estimates suggest between 40% and 70% of discarded materials remaining uncollected. This pollution leads to significant impacts on human health and the environment (Yukalang et al., 2018).

Efficiency of waste management also depends on how people perceive waste and waste management practices of local authorities. According to Kajor et al., 2015 and Longe et al., 2009; Holland and Rosenberg (1996) stated that the perception is one's capability is said to set a limit to what to do and ultimately what can be achieved. Further, perception influences how a person views himself and the world around him and how it tends to govern his behaviour. Individual perception is governed by past experience and present outlook, conditioned by values, moods, socials circumstances, individual expectation (Kajor et al., 2015), cultural values, responses and success of solid waste management systems (Longe et al., 2009). However, population perception of waste management describes the whole process of how the populace comes to know what is going on regarding best practices in waste

management, awareness and enlightenment programs through information, education (formal and informal), capacity building, coupled with implementation and execution of laws and regulations on proper waste management (Kajor et al., 2015).

Generation Y, who are also referred as millennials, who were born after 1980s (Olejniczak and Olejniczak, 2018) are the emerging generation who will be the young adults of a country. They are negatively described as lazy, narcissistic and prone to jump from job to job (Main, 2017). Elderly members of Generation Y have already entered job market and younger ones will enter it in following years. Generation Y is basically different from their predecessors from Generation X and Baby Boomers Generation (Mackayova and Balazova, 2011). Thus the perception of these millennials are very important in efficiency of waste management practices.

Several links have been identified regarding social factors influencing citizens' perceptions and attitudes towards environmental policies. Indicative examples of such factors are income and educational level, age, social norms and the level of social trust (Jones et al., 2010). The importance of human factor for the minimisation of waste and argue that waste could be prevented by changing the attitudes of the people. However, the involvement of people is being ignored from the waste management equation. For successful waste management practices, interdisciplinary approaches between all the stakeholders are essential (Kulathunga et al., 2006). Moreover, these factors have interrelationships (Sharholy et al., 2006).

Past research has shown that the amount of waste generated is proportional to the population and the average mean living standards or the average income of the people. In addition, other factors may affect the amount and composition of waste. These are climate, living habits, level of education, religious and cultural beliefs, and social and public attitudes (Bandara et al., 2007).

The waste generation rate varies depending on the income levels of individuals (Bandara, 2011) and households as well as on the degree of urbanisation of settlements. Low-income households, for instance, generate half a kilogram of garbage per day while high-income groups average nearly double that amount (Gunaruwan and Gunasekara, 2016; Jones et al., 2010). Former surveys revealed that a high percentage of households from high- and upper-middle- income groups enjoy municipal waste collection services and a lower percentage from the low income groups does so. Further, they also revealed that a higher percentage of low-income and lower-middle income group households dispose of their waste along roads (Bandara, 2011).

The per capita solid waste generation rate varies among different cities. The per capita per day waste generation on the average was 0.85 kg in Colombo Municipal Council (CMC), 0.75 kg in other Municipal Councils (MC), 0.60 in Urban Councils (UC) and 0.4 kg in Pradeshiya Shabhas (PS) (Bandara, 2011). Furthermore, gender disparities greatly influence the people's attitude and perception on household waste management. Recent findings however suggest that gender difference could influence people's perception on solid waste management (Longe et al., 2009). Most of the 3R concept practitioners were women (Dhokhikah and Trihadiningrum , 2012). Age is also expected to play a significant role as maturity could affect level of awareness on environmental health and sanitation. The data on age shows that subjects are matured adults whose reasoning level as regard household waste and management is expected to be high and thus facilitate public involvement in solid waste management process (Longe et al., 2009). The influence of educational attainments could as well be an important factor that could influence people's perception on waste management. This could negatively influence their perception and attitude on waste management in general (Longe et al., 2009). The number of people in a household increases, there is a reduction in the per capita waste generation rate. Thus in determining the waste generation of a municipality per household waste generation is as important measure as the per capita waste generation rate (Bandara, 2011). The number of employed people in a household was also shown to be a contributing factor to waste generation. The average amounts of waste generated per households of

different income levels can be used to predict the total amount of waste generated within a municipality (Bandara, 2011). In cities public awareness was improved after receiving guidance concerning environmental issues (Dhokhikah & Trihadiningrum , 2012). In addition, various occupational groups have different attitudes towards the generation and controlling of waste (Kulathunga et al., 2006).

2. Methodology

Participants completed self-developed questionnaire adapted from above mentioned authors under the supervision of the researchers in order to obtain relevant information for the study. The population of the study was 173 undergraduates from the private universities, vested in Colombo 07 geographical area where the population is recorded to be 312. The sample size was decided upon the table developed by Krejcie and Morgan in 1970 which depicts sample size for a given population size. The reliability of the questionnaire was assessed by calculating Cronbach's Alpha.

The Cronbach's alpha obtained with the present sample was 0.637. The conceptual framework was developed based on the previous research work conducted by (Lutui, 2001) and adapted accordingly to suit Sri Lankan Context. Methods used to analyse data were Cross tab and Statistical package for social sciences (SPSS) Version 20.0 was used to analyse data. A total of 173 subjects participated in the study.

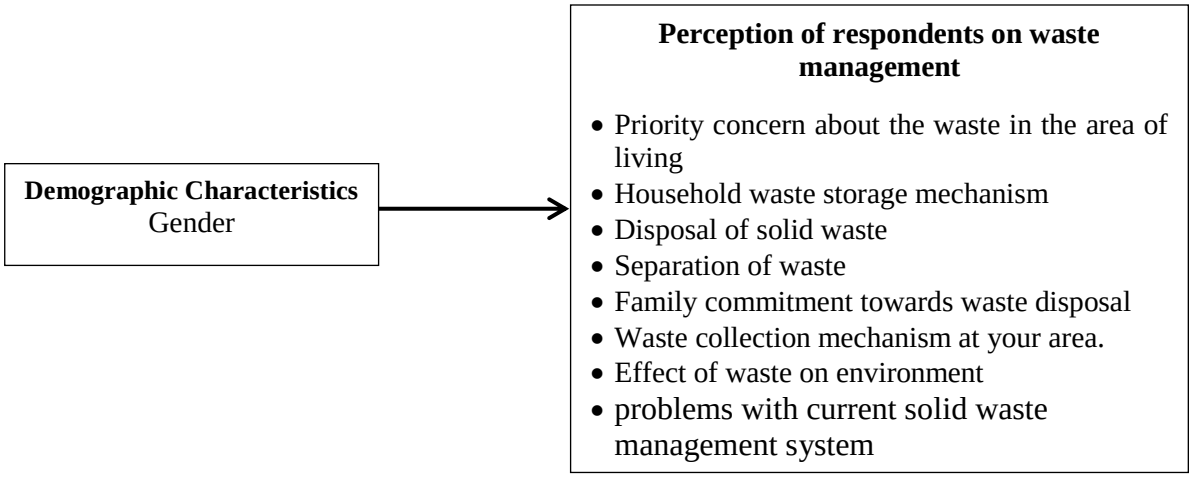

Figure 2: Conceptual framework.

3. Results

The descriptive statistics of the sample were as follows. According to Table 1, most of the participants were female (54%) and males were 46%. Age of team players ranged from 18 to 33 years. The age was categorized into four groups as below 20 years (4.1%), 21-25 years (90.1%), 25-30 (5.2%), and above 30 years (0.6%). The living areas were categories into three groups (Table 1). As Table 1 illustrates, more participants are from urban area (56.1%). Most of them were studying for both degree and professional exams and are unemployed (63.6%). The average family members were 4-6. Most of the families were in the range of Rs.50,0001 -100,000 family income level (41%).

The impact of gender on waste, waste disposal mechanism, and waste management techniques were also analysed using cross-tab. Gender is considered as one of the standard demographic component of social sciences researches. According to table 2, most participants had responded that waste littering and look bad and waste influence on human health and environment. Participants had given order preferences as their answers. According to table 3 the p value is more than 0.05, and hence cannot derive an association between the variables namely, littering looks bad, effect on human health, and effect on environment, with gender.

Table 1: Descriptive statistics for respondents' profile.

Variable	Frequency	Percentage
Gender		
Male	80	46%
Female	93	54%
Age		
Below 20 Years	7	4.1%
21-25 Years	156	90.1%
26-30 Years	9	5.2%
Above 30 Years	1	0.6%
Home town		
Urban	97	56.1%
Suburb	55	31.8%
Rural	21	12.1%
Education		
Only reading for Degree		
Degree and other	63	36.4%
professional qualifications	110	63.6%
Employment		
Unemployed	110	63.6%
Working full time	56	32.4%
Part time	4	2.3%
Self employed	3	1.7%
Total family members		
3 or less than 3	33	19%
4-6 Members	132	76.3%
7 and More than 7 members	8	4.7%
Occupation of the parents		
Self employed	58	33.5%
Private sector	68	39.3%
Public sector	38	22%
Other	9	5.2%
Average Family Income		
Less than Rs.50,000	36	20.8%
Rs.50,001-100,000	71	41%
Rs.100,001-200,000	43	24.9%
More than Rs.200,000	23	13.3%

Source: Survey Data 2018.

Table 2: Priority concern about the waste in the area of living.

Gender	Littering and looks bad			Effect on human health			Effect on environment			Other		
	Most Important (MI)	2nd choice	3rd Choice	MI	2nd	3rd	MI	2nd	3rd	MI	2nd	3rd
Male	65%	1%	34%	20%	76%	4%	5%	20%	65%	10%	3%	88%
Female	56%	1%	43%	22%	77%	1%	5%	22%	56%	17%	0%	83%
% within Gender	60%	1%	39%	21%	77%	2%	5%	21%	60%	14%	1%	85%

Source: Survey Data 2018.

Table 3: Chi-Square Test summary (In your opinion which of these is a priority concern about waste in the area?).

	Pearson Chi-Square Asymp. Sig. (2-sided)	Minimum Expected count
Littering and looks bad	0.460	0.92
Effect on human health	0.500	1.85
Effect on environment	0.500	1.85
Other	0.132	0.92

Table 4: What do you use to store your household garbage in? (Household waste storage mechanism).

Gender	Plastic Bags			Cardboard			Bin			Other			Non storage	
	MI	2nd	3rd	MI	2nd	3rd	MI	2nd	3rd	2nd	3rd	4th	MI	5th%
Male	58%		43%		98%		36%		55%	10%	3%	88%	10%	90%
Female	51%		50%		100%		40%		50%	11%	0%	0%	11%	89%
% within Gender	54%		46%		99%		38%		52%	10%	1%	1%	11%	90%

Source: Survey data, 2018.

According to Table 4 most people irrespective of their gender, used plastic bag and bins to drop waste, and a considerable proportion is there who do not store waste in any means.

Table 5: Chi-Square Test summary (What do you use to store your household garbage in?).

	Pearson Chi-Square Asymp. Sig. (2-sided)	Minimum Expected count
Plastic Bags	0.360	36.99
Cardboard boxes	0.125	0.92
Bins	0.752	7.86
Other (to disposal vehicles)	0.307	0.92
Non storage	0.916	8.21

According to Table 4, the p value is more than 0.05, and hence cannot derive an association between the variables (i.e. use of plastic bags, cardboard boxed and bind or any other disposal mechanisms) with gender.

Table 6: Where do you dispose your generated waste?.

Gender	Nearby container			Open spaces			Near home		
	MI	2nd	3rd	MI	2nd	3rd	MI	2nd	3rd
Male	59%	16%	25%		25%	75%	41%	59%	
Female	59.1%	10%	31%		31%	69%	41%	59%	
% within Gender	59%	13%	28%		28%	72%	41%	59%	

Source: Survey data, 2018.

According to Table 6, most people irrespective of their gender, drop waste in nearby places and the next priority is given for nearby containers and near home respectively.

Table 7: Chi-Square Test summary.

	Pearson Chi-Square Asymp. Sig. (2-sided)	Minimum Expected count
Nearby container	.360	10.17
Open space	.368	22.66
Near home	.959	32.83

According to Table 7, the p value is more than 0.05, and hence cannot derive an association between the variables (i.e. waste disposal to nearby container, open space or near home) with gender.

Table 8: Crosstab summary for Q19-23.

Gender	Separation of different type of waste at your home?		Satisfaction with your current waste collection service		participate in any community clean-ups activities or other voluntary clean-ups		Is waste management an environmental problem		How your service provider disposes your collected waste		environmental degradation has negative effect on your family		Are you concerned about the disposal methods of the service provider	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Male	50%	50%	75%	24%	54%	44%	75%	24%	54%	44%	81%	19%	43%	57%
Female	47%	51%	69%	30%	41%	57%	69%	30%	41%	57%	79%	21%	50%	50%
% within Gender	49%	51%	72%	27%	47%	52%	72%	27%	47%	51%	80%	20%	47%	53%
p-value	0.409		0.644		0.220		0.6440		0.220		0.728		0.363	
minimum expected value	0.920		0.920		1.850		0.9200		0.019		0.152		0.370	

Source: Survey Data, 2018.

The above Table 7 depicts the yes and no responses given by the respondents to the mentioned questions. Half of the respondents (49%) said that they separate waste and another half (51%) that they do not separate waste. Most respondents are satisfied with their current waste collection services (72%). More than half of the respondents (52%) reported that they or their family members had participated in waste clean-ups community services and simultaneously had reported that they see waste as an environmental problem. One of the main issues in relation to waste disposal are dumping waste to unoccupied lands by service providers, 51% of the respondents had said that they do not have any clue of where their service providers are dumping their waste and unfortunately 53% had reported that they are not concerned about where their service providers dump their waste. Even though the responses are as such, 80% of the respondents had stated that they are aware that environmental degradation affect their families.

Table 9: Identifying some of the main problems with current solid waste management system.

Gender	waste lying around			Bad odour		Rats and flies	
	MI	2nd	3rd	MI	2nd%	2nd	3rd
Male	19%	59%	23%	81%	19%	22.5	78%
Female	24%	58%	18%	76%	24%	18.3	82%
% within Gender	21%	58%	20%	79%	21%	20.2	80%

Source: Survey Data, 2018.

The order preference given for waste as a problem are bad odour, waste lying around and animals (rats and flies) respectively. According to Table 10, the p value is more than 0.05, and hence cannot derive an association between the variables with gender.

Table 10: Chi-Square Test summary (Identifying some of the main problems with current solid waste management system).

	Pearson Chi-Square Asymp. Sig. (2-sided)	Minimum Expected count
Waste lying around	.649	16.18
Bad Odour	.433	17.10
Rats and flies	.491	16.18

Source: Survey Data, 2018.

4. Discussion

There are countless numbers of researches available in waste management and waste management practices in different countries. This study was focused on to assess the impact of gender on the perception of respondents on waste management policies and practices. The decisions were made based on p value. According to the respective p values derived on behalf of priority concern about the waste in the area of living, household waste storage mechanism, disposal of solid waste, sseparation of waste, family commitment towards waste disposal, waste collection mechanism of the area concern, effect of waste on environment and problems with current solid waste management system revealed that there is no significant association of such variables with gender. The study results are partially agreeing with the studies conducted by Longe et al. (2009). However the study results contradicts with the concept stated by Kaoje et al. in 2017, "within the household setting there exist distinctive division of labour between males and females. The current practice of household waste handling is considered and designated as women's responsibility" because as per the survey findings waste disposal practices do not have a significant association with gender.

The study revealed that most of the participants are concerned about the effect on human health due to poor waste disposal practices. This could be mainly due to emerged health issues such as dengue which caused more deaths in the recent past. A significant important was placed on the fact that improper waste disposal causes the surrounding looks bad and littering. This could be mainly seen in the suburban areas in the country. The findings are complying with the study conducted by Lutui (2001).

Majority of the selected sample households use plastic bins or polythene bags to drop the waste generated. These could be also dangerous in terms of environmental pollution because plastic and polythene are non-decaying materials in general thus could get accumulated in garbage dump sites. These will cause long term issues associated with the current waste disposal practices used in the households. The findings are complying with the study conducted by Lutui (2001).

Nearby spaces were the mostly used method of waste disposal of the respondents. This is in line with the survey findings of Khan et al. in 2018 which also revealed that approximately 50% of the waste generated is collected and transported to landfills with the remaining half left and dumped in the streets and vacant plots. This may create unauthorised garbage dumping places around households which is a good residence for stray animals and rats. Even though the respondents have identified these consequences could occur as a result of their poor waste disposal practices, a majority have not taken actions to minimise such issues.

Most of the respondents were satisfied with the service provided in terms of waste collection. This could be because a majority of the population comprises from the Colombo and suburban cities. This fact could be supported by the statistics of the Central Environment Authority, Sri Lanka that 58% of the waste in Colombo District is being collected. This was the highest waste collection percentage in Sri Lanka by 2014. However, this could be varying if the population composition varies with a majority from rural and suburban cities which are out of Colombo area.

A greater majority of respondents were concerns about the impacts of waste but only a slight majority concerns about where their waste get disposed by the service providers and only a slight majority knows exactly where the waste get disposed. This could be due to typical nature of millennials who are less concerns about the social aspects and lazy to consider about such factors. The same applies when considering the participation in community waste cleaning projects, where just a slight majority concerns on it. The key solutions: development of a municipal waste management policy and an associated implementation plan; reduce the need for the landfill by generating a waste separation program (including education, infrastructure and economic policy), improving the existing waste collection system, and improving the financing of waste management could be considered (Yukalang et al., 2018).

5. Conclusion

The research revealed that the there is no impact of gender on perception on waste disposal and waste management of generation Y. Further it highlights the need of awareness and effective waste management programmes in Sri Lanka that will reach the minds of the millennials. This is mainly because the millennials thinking patterns and behaviour is significantly different from other generations, thus to ensure a sustainable future it is required to ensure positive support through positive attitudes towards the environment, waste and waste management.

Acknowledgement

The authors acknowledge Prof. K. A. S. Dhammika, Senior Lecturer, University of Kelaniya, Sri Lanka, who is also the Director at School of Accounting and Business, Institute of Chartered Accountants of Sri Lanka for his support to make this a success.

References

Bandara, N.J., 2011. Municipal solid waste management-The Sri Lankan case. *In Proceedings of International Forestry and Environment Symposium.*

Bandara, N.J. and Hettiaratchi, J.P.A., 2010. Environmental impacts with waste disposal practices in a suburban municipality in Sri Lanka. *International Journal of Environment and Waste Management*, 6:107-116.

Bandara, N.J., Hettiaratchi, J.P., Wirasinghe, S.C. and Pilapiiya, S., 2007. Relation of waste generation and composition to socio-economic factors: a case study. *Environmental Monitoring and Assessment*, 135:31-39.

Daily Mirror, 2018 January 18. Fire at Meethotamulla garbage dump. *Fire at Meethotamulla garbage dump*. Colombo, Western Province, Sri Lanka: Daily Mirror E-news paper.

Dhokhikah, Y. and Trihadiningrum, Y., 2012. Solid waste management in Asian developing countries: challenges and opportunities. *Journal of Applied Environmental and Biological Sciences*, 2:329-335.

Gunaruwan, T. and Gunasekara, W., 2016. Management of municipal solid waste in Sri Lanka: A comparative appraisal of the economics of composting. *NSBM Journal of Management*, 27-45.

Haider, A., Amber, A., Ammara, S. and Salee, K., 2015. Knowledge, Perception and Attitude of common people towards solid waste management-a case study of Lahore, Pakisthan. *International Research Journal of Environment Sciences*, 100-107.

Ivy, N., Uddin, M.M., and Hossain, M.K., 2013. People's perception on using waste bins in Reduce, Reuse and Recycle (3Rs) process for Solid Waste Management (SWM) in Chittagong, Bangladesh. *International Journal of Applied Science, Technology and Engineering research*, 2:30-40.

Jones, N., Evangelinos, K., Halvadakis, C., Sophoulis, C. and Iosifides, T., 2010. Social factors influencing perceptions and willingness to pay for a market-based policy aiming on solid waste management. *Elsevier, Resources, Conservation and Recycling*, 54:533-540.

Kajor, A., Sabir, A., Yusuf, S., Jimoh, A. and Raji, M., 2015. Residents' perception of solid waste disposal practices in Sokoto, Northwest Nigeria. *African Journal of Environmental Science and Technology*, 94-102.

Khan, S., Alvarez, L.C. and Wei, Y., 2018. Sustainable management of municipal solid waste under changing climate: A case study of Karachi, Pakisthan. *Asian Journal of Environmental Biotechnology*, 23-32.

Kulatunga, U., Amaratunga, R., Haigh, R. and Rameezdeen, R., 2006. Attitudes and perceptions of construction workforce on construction waste in Sri Lanka. *An International Journal*, 17:57-72.

Longe, E., Longe, O. and Ukpebor, E., 2009. Peoples' Percption on Household Solid Waste Management in Ojo Local Government Area in Nigeria. *Iranian Journal of Environmental Health, Science and Engineering*, 209-216.

Lutui, V., 2001. Waste Management practices, perception and attitudes in Tonga.

Mackayova, V., & Balazova, V., 2011. Characteristics of generation Y and it's future occupation-comparison of opinions. *Human Resource Management & Economics*, 5.

Main, D., 2017 September 08. *LiveScience.* Retrieved from Who are millenials?.

Menikpura, S., Gheewala, S. and Bonnet, S., 2012. Sustainability assessment of municipal solid waste management in Sri Lanka: problems and prospects. *Journal of Material Cycles and Waste Management*, 14:181-192.

Olejniczak, D. and Olejniczak, J., 2018. changes in the attitudes of Y generation members towards participation in the activities of municipalities in the years 2008-2017.

Ranasinghe, P., 2017 April 21. Mirror Business. *Sri Lankan solid waste management theory and tragedy of commons*. Colombo, Western Province, Sri Lanka: Daily Mirror E-newspaper.

Sabry, H., 2018 August 26. No solution in sight for Colombo's garbage problems. Colombo, Western Province, Sri Lanka: Sunday Leader.

Sharholy, M., Ahmad, K., Mahmood, G. and Trivedi, R., 2008. Municipal solid waste management in Indian cities-A review. *Waste Management*, 459-467.

Sharholy, M., Ahmad, K., Vaishya, R. and Gupta, R., 2006. Municipal solid waste characteristics and management in Allahabad, India. *Waste Management*, 490-496.

Yongsheng, Z., Henry, R. and Jun, D., 2006. Municipal solid waste management challenges in developing countries-Kenyan case study. *Waste Management*, 92-100.

Yukalang, N., Clarke, B. and Ross, K., 2018. Solid waste management solutions for a rapidly. *International Journal of Environmental Research and Public Health*, 23.