

The Influence of Public Awareness on Solid Waste Management, Case Study: Boondheere District in Mogadishu-Somalia

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Abstract: Public awareness is a marketing effort to build public recognition of a problem through media, messaging, and an organized set of communication tactics. The target a large number of people over a specific period of time to try and generate specific outcomes or achieve pre-determined goals. Waste is any discarded, rejected, abandoned, unwanted or surplus matter, whether or not intended for sale or for recycling, reprocessing, recovery or purification by a separate operation from that which produced the matter. Solid waste is the useless, unwanted and discarded material resulting from day to day activities in the community. **Objectives:** the aim of this study is to identify the knowledge level of the public awareness with waste management among Boondheere districts in Mogadishu-Somalia. **Methodology:** the study conducted in Boondheere districts, Mogadishu, Somalia and quantitative technique were used to find out information. The data performed by using questionnaire. **Findings:** The result of the study shows that the knowledge of the most respondents of the study were said agree on that they have some knowledge about solid waste with percentage of 65. Secondly, more respondents were underlined that the campaigning public awareness through multimedia will produce less solid waste with the percentage of 68. While, 74% of the respondents were said yes, for the question of "Are you satisfied with the municipality of waste management?" with ECCO Company. In addition to that, 49% of the respondents were said the frequent of the formal waste collection per month is once time. Fourthly, the most composition of waste generated at Boondheere districts were plastics with the percentage of 31. Furthermore, that 43% of the respondents were used as container to collect wastes cartoons and 34% for sacks. Finally, based on these findings and summery of discussion, the study concludes that the most population in Boondheere district has awareness with the waste management. But they are careless with throwing waste into the environment. **Conclusion:** This research study aimed to identify knowledge level of the public awareness with waste management among Boondheere districts in Mogadishu-Somalia. To categorize solid waste materials where its materials threat human health or environments, municipal waste and other non-hazardous waste. To assess the processes of handling, storage, transportation and disposal methods to be adopted. The researchers collected the primary data from the Boondheere district.

Keywords: Waste, Public awareness, Solid waste management

1.Introduction

Most human activities generate waste (Brunner and Rechberger, 2014). Despite that, the production of wastes remains a major source of concern as it has always been since pre historic period (Chandler et al, 1997). In recent times, the rate and quantity of waste generation have been on the increase. As the volume of wastes increases, so also does the variety of the waste increases (Vergara and Tchobanoglous, 2012). Unlike the pre historic period where wastes were merely a source of nuisance that needed to be disposed of.

Most of solid wastes are practiced by of households, institutions and business centers. Every country produces different amount of solid waste with different composition. Due to degree of urbanization, way of consumption, household revenue and lifestyle in each country (Eurostat, 2014) causes to increase the waste generated. In terms of solid waste definition, different ways has been defined. The term "solid waste" means any garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations (US Law-Solid Waste Act 2, 1999).

The term "management" is the activities of wastes from the point of generation to the point of disposal wastes, and

involves the generation and composition of waste, collection of waste, transportation and transfer of waste and finally the disposal of waste properly. Solid Waste consists of everyday items that is used and then thrown away such as, product packaging, grass clippings, furniture, clothing, bottles, food scraps, newspapers, appliances, paint, and batteries. Wastes come from homes, schools, hospitals, and business centers (EPA, 2011).

Proper management was not a major issue as the population was small and a vast amount of land was available to the population at that time. In those days, the environment easily absorbed the volume of waste produced without any form of degradation (Tchobanoglous et al, 1993).

The large population of people in cities and communities gave rise to indiscriminate littering and open dumps. These dumps in turn formed breeding grounds for rats and other vermin, posing significant risks to public health. The unhealthy waste management practices resulted in several outbreaks of epidemics with high death tolls (Tchobanoglous et al, 1993). Consequently, in the nineteenth century public officials began to dispose waste in a controlled manner in other to safe guard public health (Tchobanoglous et al, 1993).

According to the World Bank (1992) states between 0.7 and 1.8 Kg per capita of waste is produced every day in developed countries' urban areas and approximately 0.4 to

Volume 11 Issue 1, January 2022

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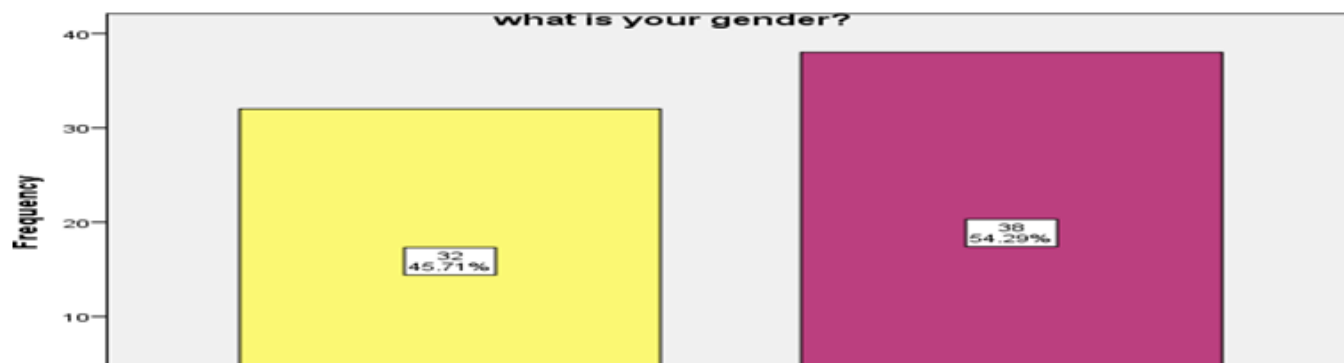
0.9 kg is produced in the cities of developing countries. Rapid economic growth in developing countries has led to the unexpected movements of people from rural areas to urban areas for searching better life (Lichter & Brown, 2011). As a result, the huge number of persons joined to the urban population in developing countries raise up challenges faced by governments, urban planners, non-governmental service providers and urban residents (Baqui, 2009).

Moreover, increasing population and economic growth which together increase the amount of solid waste generated.

Due to this, daily routine solid waste generation in developing countries increases (Alam & Ahmade, 2013). Solid waste is not only rising in quantity but also changing in composition (from less organic matter to more paper, packing materials, plastics, glass, metal and other substances), which is exacerbated by low collection rates (Solomon, 2011).

Solid waste disposal is seriously spoiling the environmental conditions in developing, developed and under developed countries. the growth of the world's population, increasing urbanization, rising standards of living, and rapid developments in technology have all contributed to an increase in both the amount and the composition of solid wastes disposal generated by industrial,

About Gender



Bar chart 1.1, shows that 54% of the respondents were female, while 46% of the respondents were male, thus, the

Although the title seems the huge one, the following objectives will guide and focus the article:

The main objectives of this research were:

- For the protection of environment through effective waste management techniques and to protect health, wellbeing and clean environment.
- For safe disposal of waste and to create awareness among the people about the impact of waste.

Specific Objectives

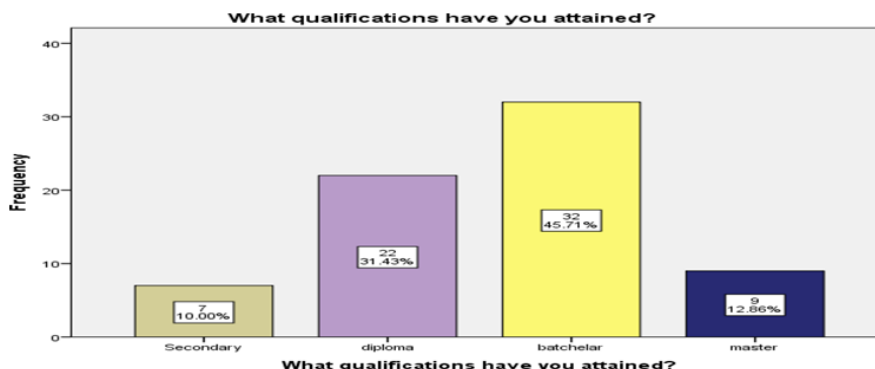
- To identify the knowledge level of the public awareness with waste management among Boondheere districts in Mogadishu-Somalia.
- To categorize solid waste materials where its materials threat human health or environments, municipal waste and other non hazardous waste.
- To assess the processes of handling, storage, transportation and disposal methods to be adopted.

2.Methodology

The article has designed as quantitative study, aiming to investigate the influence of public awareness on solid waste management among Boondheere district. This study was used descriptive research design. Among the quantitative methods, survey research will be used in this study.

implication of this result is that female respondents were more than male respondents.

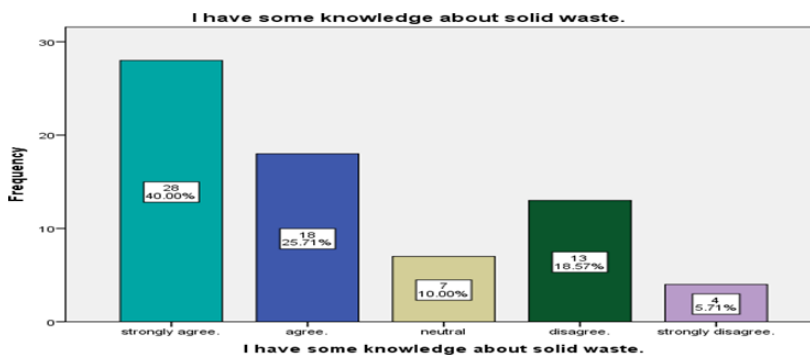
About level of education



Bar chart 1.2, indicates that 46% of the respondents have had bachelor degree, 31% of the respondents have had diploma, while 13% of the respondents have had master degree, lastly 10% of the respondents have had secondary

certificate. Thus the implication of this result is most respondents of this study have had bachelor degree with percentage of 46.

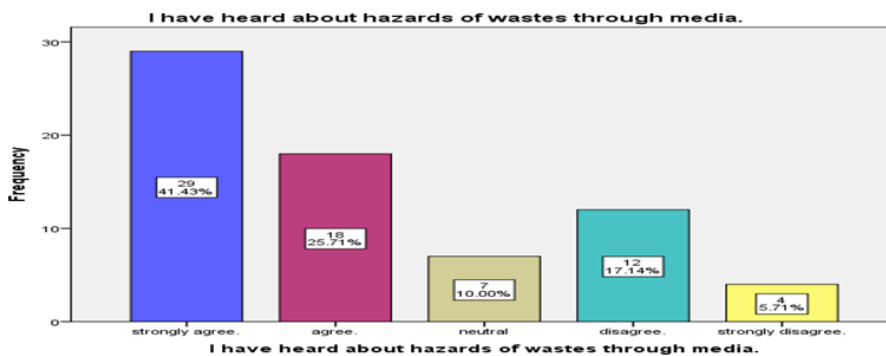
About, I have Some knowledge about solid waste



Bar chart 1.3, shows, 40% of the respondents were said strongly agree that they have some knowledge about solid waste; while 26% of the respondents were said agree on that idea. In addition to that 13% of the respondents were said disagree, 10% of the respondents were said neutral on that idea. Lastly, 6% of the respondents were said strongly disagree. Thus, the implication of this result is most

respondents of this study said that strongly 43% of the respondents were used as container to collect wastes cartoons, 34% for sacks 43% of the respondents were used as container to collect wastes cartoons, 34% for sacks agree on that I have some knowledge about solid waste with percentage of 40.

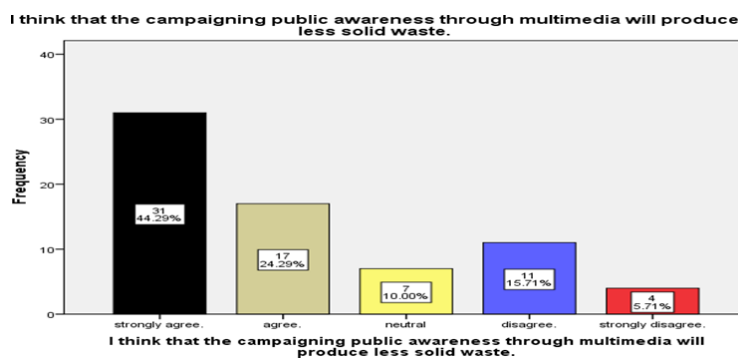
About, I have heard about hazards of wastes through media



Bar chart 1.4, shows, 41% of the respondents were said strongly agree that they have heard about hazards of wastes through media; while 26% of the respondents were said agree on that idea. In addition to that 17% of the respondents were said disagree, 10% of the respondents

were said neutral on that idea. Lastly, 6% of the respondents were said strongly disagree. Thus, the implication of this result is most respondents of this study said that strongly agree on that they have some knowledge about solid waste with percentage of 41.

About, I think that the campaigning public awareness through multimedia will produce less solid wastes.



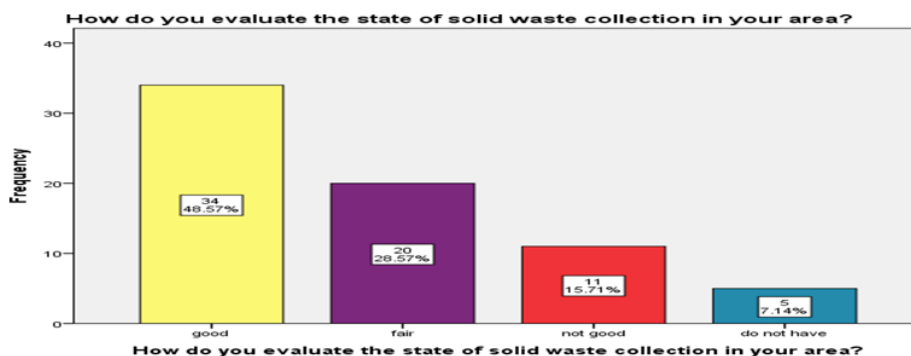
Bar chart 1.5, shows, 44% of the respondents were said

strongly agree that they thought that campaigning public

awareness through multimedia will produce less solid waste.; while 24% of the respondents were said agree on that idea. In addition to that 16% of the respondents were said disagree, 10% of the respondents were said neutral on that idea. Lastly, 6% of the respondents were said strongly

disagree. Thus, the implication of this result is most respondents of this study said that strongly agree on that they thought that campaigning public awareness through multimedia will produce less solid waste with percentage of 44.

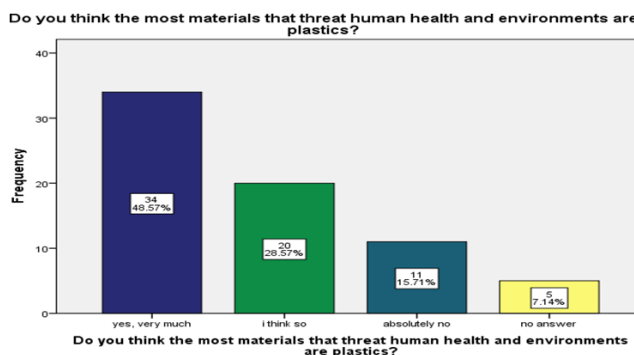
About, how do you evaluate the state of solid waste collection in your area?



Bar chart 1.6, shows that 49% of the respondents were said well for their evaluation solid waste collection in their area.27% fair, 15% not good and 7% of the respondents were said do not have any idea (neutral). Thus, the

implication of this result is most of the respondents in Boondheere for their evaluation of waste generated collection is good with the percentage of 47.

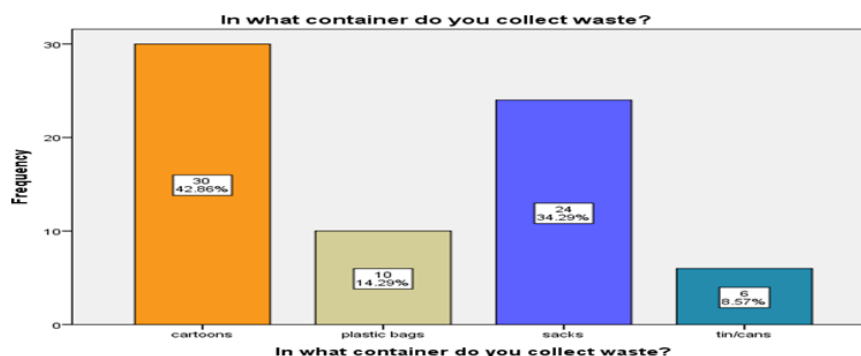
About, Do you think the most materials that threat human health and environment are plastics?



Bar chart 1.7, shows that49% of the respondents answered of the question “do you think the most materials that threat human health and environments are plastics?” yes very much, 29% I think so, 16% absolutely no; while 7% of the respondents were said no answer. Thus, the

implication of this result is most of the respondents in Boondheere for their most materials that threat human health and environments are plastics with the percentage of 49.

About, in what container do you collect waste?



Bar chart 1.8, Shows that 43% of the respondents were used as container to collect wastes cartoons, 34% for sacks, and 14% for plastic bags while 9% of the

respondents were used tin/cans. Thus, the implication of this result is most of the respondents in Boondheere collect their wastes for cartoons with the percentage of 43.

About, are you satisfied with the municipality of waste management?



Bar chart 1.9, shows that 74% of the respondents were said yes, for the question of “Are you satisfied with the municipality of waste management?” while 26% of the respondents were said no. Thus, the implication of this result is most of the respondents in Boondheere answered yes with the percentage of 74.

3.Literature Review

The environment was clean and safe, and reverses the serious damage humans activities; such as bags and cartons. The Agro-pastoralist wastes to the environment were organic matter. Pastoral waste was both animal and human waste, and was seen as part of the land. While the waste of farmers were the remnants of their crop barks. Urbanization creates enormous social, economic and environmental changes. Somalis’ urbanization was increasing after the independency of the country, due to the competing for senior government positions. In the 1960, the total population of Somalia was 2, 755, 972, while the urban population was: 477, 113. The rate of urbanization was 17.3 % (264, 430), (worldmeter, 2020).

For the beginning of the revolutionary government (1969), the total population of Somalia was 3, 444, 568 while the urban population was: 781, 165. The rate of urbanization was 22.7 % (920, 759). The revolutionary government has effective functioning municipality (worldmeter, 2020).

After the revolutionary government was overthrown and the country was into a situation civil war 1991, the total population of Somalia was 7, 225, 092 while the urban population was: 2, 193, 935.

The rate of urbanization was 30.4% (802, 121), (worldmeter, 2020). The destruction to the buildings, abandon vehicles, animal feces, plastic bags, cardboard, sewage sludge; are among what we have gone due to lack of affective government that builds the awareness of the community and the local government municipality. So, after collapsed the central government of Somalia in 1991, the country faced poor management of wastes, especially; solid and liquid waste management.

A quick look at definitions of waste in media and printed documents reveal that waste is considered an unwanted

good that is no longer useful or desirable. In the German Waste Act of August (1993) waste is defined as “a portable object that has been abandoned by the owner” and also as an “orderly disposal garbage” Bilitewski et al (1994). The Framework Directive on Waste in the United Kingdom states posit that waste is a substance and/or object that is discarded by its owners (Slack, Gronow, & Voulvoulis, 2009).

Udocha and Uchegbu (2002), waste is defined as those materials which are generated as a result of normal operations over which we have control in terms of their production, disposal or discharge. Waste could be seen as any substance or object which the producer or holder discards or intends or is required to discard. Wright (2005) sees waste as the total of all the materials thrown away from homes and commercial establishments and collected by local governments. It encompasses food wastes, household waste, containers and product packaging, dirt, demolition and construction wastes and other kinds of inorganic wastes from residential, commercial and institutional sources, the collection and disposal of which are performed by local authorities and which may be in either solid or semi-solid form. Examples of this kind of waste are electronic appliances, newspapers, clothing, food scrapes, boxes, disposable table wares, office and classroom papers, furniture, wood pallets, rubber tyres and restaurant wastes (Ndubuisi-Okolo Purity, Ifeoma, & Yusuf, 2016).

Waste Management is a globally challenging issue especially in developing countries, due to its adverse environmental effects. Mankind naturally depends on the environment to sustain their lives but solid waste is one of the environmental problems in Somalia, many other developing and even the developed countries are threatened. It plays a significant role in the ability of nature to sustain life within its capacity (Taiwo, 2009).

Waste management according to Adewole (2009) is the collection, keeping, treatment and disposal of wastes in such a way as to render it harmless to human and animal life, the ecology and the environment generally. This definition is very crucial because the import of waste management is to protect human lives in particular and the environment in general (Taiwo, 2009).

Before the collapse of the central government of Somalia, the government has effective management of solid wastes. While after collapsed the central government of Somalia in 1991, the country faced poor management of solid waste. "The urban areas in southern-central Somalia suffer from poor solid, municipal and industrial management and non-functional sanitation" said by Ibid. Waste and garbage are piled around cities, creating a situation of uncontrolled and unmanaged hazardous waste and non-hazardous waste.

Public awareness is the public's level of understanding about the importance and implications of a certain programmed or an activity (Burns, O'Connor, & Stocklmayer, 2003). Raising public awareness is not the same as telling the public what to do. It is explaining issues and disseminating knowledge to people so that they can make their own decisions. High public awareness occurs when a significant proportion of society agrees to certain decisions (Daughton, 2001).

Public is the most affected group in every environmental decision made by the authoritative body. Therefore, their involvement in environmental assessment is a common practice in Europe and some other countries worldwide (González et al., 2008).

Charnley & Engelbert (2005) suggested that the involvement of public in an environmental decision-making was driven by the demand of public to have greater role in a decision (Charnley & Engelbert, 2005).

The media – the role of the media is twofold. As the most effective means, information they are intrinsic to the successful implementation of public awareness and educational activities. On the other hand, they are a major target audience to be educated about the waste management.

Schools and academic institutions have to learn the children methods of waste management and related services and that is a good strategy since it assures a future environment-literate generation.

The declaration of 2005 to 2014 as the Decade of Education for Sustainable Development heralds a new phase in the continuous evolution of environmental education and its subsidiary, conservation education. This initiative, for which UNESCO is the lead agency, is an international educational effort that aims to encourage changes in behavior that will create a more sustainable future in terms of environmental integrity, economic

viability and a just society for present and future generations (UNESCO, 2005), (Howe, 2009).

The literature on generation of solid waste examines solid waste generation and related issues are as follow: 1. How much solid waste is generated? 2. What is the composition of solid waste generated? 3. Whether there is any correlation between the solid waste generated and the population growth and class background of the households? 4. What are the implications of the characteristics of solid waste generated for its management?

Waste generation encompasses activities in which materials are identified as no longer of value and are either thrown away or gathered together for disposal. For example, the wrapping of a candy bar is usually considered to be little further value to owner, once the candy is consumed, and more often it is just thrown away, especially outdoors.

It is important, in waste generation, to note that there is an identification step and it varies with each individual waste (Tchobanoglous, Theisen, & Vigil, 1993).

The waste generation is at present, an activity that is not very controllable. In the future, however, more control will be exercised over the generation of wastes.

In the countries where waste diversion goals are set by the law and must be met under threat of economic penalty, it is necessary to put in place of a manifest system to monitor waste diversion, source reduction, although not controlled by solid waste managers, is now included in system evaluations as a method of limiting the quantity of solid waste generated (Tchobanoglous et al., 1993).

Waste disposal is removing and destroying or storing damaged (used or other unwanted domestic, agricultural or industrial products and substances).

In Mogadishu, apart from the local government, the Ministry of Natural Resources and environment deals with the identification of the dumping locations, there are two big dumping locations in Mogadishu one situated in Medina district while the other one is located in Karan district. These two dumping places are the official places to dump the wastes that are collected from the different districts of Mogadishu. The names of the two dumping sites are: Qashinweyne in Karan and Kaawo in Madina (World Development Indicators 2010).



Figure 2.2 pictures of the two biggest dumping locations in Mogadishu

For the last four years the Turkish Government has been assisting the Benadir administration with waste collection. The Turkish government is accountable for the entire process. Recycling: No recycling is practiced in Mogadishu. There are cleaning companies that operate in certain compounds. They clean regular trash from such areas and dispose waste in the respective places. Afterwards, the Turkish and Benadir Administration take the wastes to the dumping sites.

4. Conclusion

This section summarizes conclusion of the findings. The study investigated three objectives and they are:

- 1) To know the knowledge level of the public awareness with waste management among Boondheere districts in Mogadishu-Somalia.
- 2) To categorize solid waste materials where its materials threat human health or environments, municipal waste and other non-hazardous waste.
- 3) To assess the processes of handling, storage, transportation and disposal methods to be adopted.

Consequently, objectives contained 16 key findings. Firstly, the study found out that knowledge level of population regarded to solid waste awareness in Boondheere district was so good. The implication of the first question result is most respondents of the study said that strongly agree on that they have some knowledge about solid waste with percentage of 40. Secondly, more respondents were underlined that the campaigning public awareness through multimedia will produce less solid waste with the percentage of 44.

Thirdly, 74% of the respondents were said yes, for the question of "Are you satisfied with the municipality of waste management?" with ECCO Company. In addition to that, 49% of the respondents were said the frequent of the formal waste collection per month is once time. Fourthly, the most composition of waste generated at Boondheere districts were plastics with the percentage of 31. Furthermore, that 43% of the respondents were used as container to collect wastes cartoons and 34% for sacks. Finally, based on these findings and summery of discussion, the study concludes that the most population in Boondheere district has awareness with the waste

management. But they are careless with throwing waste into the environment.

5. Recommendation

Based on the findings, the researcher has recommended:

- Benadir administration should guide the overall policy and strategic of development the management of solid wastes.
- That the federal government, Boondheere municipality, relevant institution and all stakeholders concerned with sanitation to transport solid waste from the district without money.
- Benadir municipality and waste collectors should provide programs to inform the community the danger and the consequences of wastes and help Boondheere residents reduce sanitation activities that have led to several health hazards.

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