

**WASTE MANAGEMENT DURING A PANDEMIC
(CASE STUDY: STUDENT OF ECONOMICS AND BUSINESS FACULTY
DIPONEGORO UNIVERSITY AND TADULAKO UNIVERSITY)**

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Abstract: Many actions were done by students online during the Covid-19 pandemic. This activity generates waste as well. The aim of this paper is to learn more about how students dealt with waste during the pandemic. The research was conducted using descriptive analysis. Samples were taken purposively by students of the Economics and Business Faculty Diponegoro University and students of the Economics and Business Faculty Tadulako University. According to the findings of the study, the majority of students who responded do not appropriately manage waste. This situation requires attention since students can be agents of change for the better in order to ensure the sustainability of the environment.

Keywords: *waste management, pandemic, student, environment*

1. Introduction

Many people's behavior has changed as a result of the Covid-19 pandemic. The Covid-19 pandemic has restricted activities that were formerly able to be made out in groups and open. Because of the virus's easy transmission, the community has been given new policies and rules to follow in their daily activities. One of these measures is social distancing, which forces people to spend more time at home.

There are various activities that can be done at home if people stay at home. Daily activities such as starting work, studying, shopping, and so on may all be done from home. The effect of these activities is the emergence of waste. According to Kumar (2016), and Tanaka (2014) that increasing economic activity carried out by humans will increase waste generation.

According to You, Son and Ok (2020), Rupani et al. (2020) stated that the current policy of working from home and school online due to the Covid 19 pandemic has increased the generation of domestic waste. People's habits of shopping online during the pandemic have increased domestic waste in the form of inorganic waste. According to a statement from the Director of Performance Assessment of B3 Waste and Non-B3 Waste Management of the Ministry of Environment and Forestry, Sinta Saptarina during a virtual discussion about Care for Medical Waste on February 15, 2021, stated that waste in Indonesia comes from domestic waste in the form of plastic waste, cardboard, styrofoam and other waste used to wrap packaged goods increased by 27% to 36% and medical waste increased by 30%.

Domestic waste grew during the pandemic as a result of a new trend in behavior: online purchasing. According to Roxanne (2021), using online applications can help consumers adapt to new habits and stay productive during the COVID-19 pandemic, as much as 86

percent of consumers using online applications can help them adapt to new habits and stay productive during the COVID-19 pandemic, according to research results from the Demographic Institute of FEB UI.

In the midst of the Covid-19 pandemic, students are also motivated to be productive. Students, in general, do not shop online just to fulfill their desires, but also to have fun and sustain their lifestyle (Minanda, Roslan and Anggraini, 2018). However, as a result of the Covid-19 pandemic's construction of social separation, internet shopping became a feasible. Food shopping over the internet is the most common pastime. This is in accordance with research conducted by Przebórska-Skobiej and Wiza (2021). These online food purchases have even become food waste in their homes. As many as 80% of students produce food waste. Li, Mirosa and Bremer (2021) stated that during the Covid-19 pandemic, waste generation increased and waste management was less than optimal, thus disturbing the environment. The aim of this paper is to analyze how students handled waste throughout the pandemic.

Literature Review

Household waste

According to Law no. 18/2008 concerning Waste Management, household waste is waste that comes from daily activities in the household, excluding feces and specific waste. Based on data from the Ministry of Environment and Forestry of the Republic of Indonesia in 2021, this household waste dominates the source of waste generation by 40.7%.

Organic and anorganic waste can both be found in household waste. Organic waste such as kitchen waste decomposes quickly, whereas anorganic waste such as plastic, cardboard, paper, metal, wood, glass, and other materials decompose slowly (Damanhuri and Padmi, 2010). Data from the National Waste Management Information System (SIPSN) - Ministry of Environment and Forestry (KLHK) of the Republic of Indonesia, states that the composition of waste in 2021 consists of 39.9% organic waste and 60.1% inorganic waste. The majority of organic waste is in the form of food waste, which is 27.2%, while the majority of inorganic waste is in the form of plastic waste, which is 15.1%.

Waste management

According to Damanhuri and Padmi (2010), waste management is the overall handling of waste so that the waste does not interfere with health, aesthetics, and the environment. The handling includes how to move it from the source, process it, and recycle it again. According to Law no. 18/2008 waste management is a systematic, comprehensive and sustainable activity that includes waste reduction and handling. In Presidential Decree No. 97 of 2017 concerning national policies and strategies for the management of household waste and similar household waste contains policy directions, strategies, targets, and programs for reducing and handling household waste and similar household waste.

Policy Directions include:

1. Waste reduction includes limiting generation, recycling, and reuse.
2. Waste sorting includes sorting, collection, transportation, processing, and final processing.

Waste Reduction Strategy, including:

1. Preparation of norms, standards, procedures, and criteria.
2. Strengthening coordination and cooperation between the Central Government and Regional Governments.

3. Strengthening the commitment of the executive and legislative institutions at the central and regional levels in providing budgets.
4. Capacity building for leadership, institutions, and human resources.
5. Establishment of an information system.
6. Strengthening community involvement through communication, information, and education.
7. Implementation and development of incentive and disincentive systems.
8. Strengthening the commitment of the business community through the implementation of producer obligations.

Waste Handling, including:

1. Preparation of standard norms, procedures, and criteria.
2. Strengthening coordination and cooperation between the Central Government and Regional Governments.
3. Strengthening the commitment of the executive and legislative institutions at the central and regional levels in providing budgets.
4. Capacity building for leadership, institutions, and human resources.
5. Establishment of an information system.
6. Strengthening community involvement through communication, information, and education.
7. Implementation and development of investment, operational and maintenance schemes.
8. Strengthening law enforcement.
9. Strengthening the involvement of the business world through partnerships with the Central Government.
10. Application of environmentally friendly and efficient technology.
11. Implementation and development of incentive and disincentive systems.

2. Research Method

This study uses descriptive analysis to describe waste management carried out during the Covid-19 pandemic. Samples were taken by purposive sampling because of the pandemic. Respondents were FEB UNDIP students and FEB UNTAD students. The number of samples is 109 respondents. This research was conducted in April-May 2021. Google form as a medium for distributing questionnaires to respondents.

3. Results and Discussion

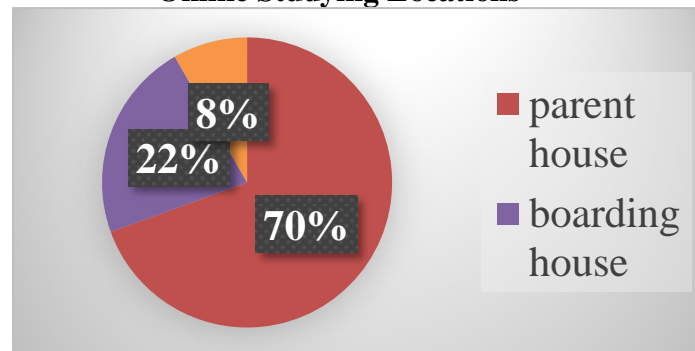
3.1. Results

According to the Joint Decree of the Four Ministers No. 5/KB/2021 dated June 15, 2020 on Guidelines for Implementing Learning for the Academic and Academic Year 2020/2021 During the Corona Virus Disease (Covid-19) Pandemic, learning methods in universities must be carried out online for theoretical studies and wherever possible for practical study. Based on these rules, students carry out their learning activities online or do distance learning.

Students do their activities from the comfort of their own homes. Apart from learning online, students also engage in other activities such as purchasing goods online, including both food and other necessities. When the PSBB was enforced during the Covid-19 pandemic, according to Pusparsa (2020), up to 51% of new consumers shopped online, and the amount of requests for items needed online surged 5-10 times.

During the pandemic, the majority of pupils stayed with their parents in their hometowns. Because of the pandemic, the Teaching and Learning Process is conducted online, and students opt to return to their separate areas of origin, as directed by the government. This is in line with the findings of Barrot, Llenares, and Rosario (2021), who looked into online learning for Filipino students.

Figure 1
Online Studying Locations



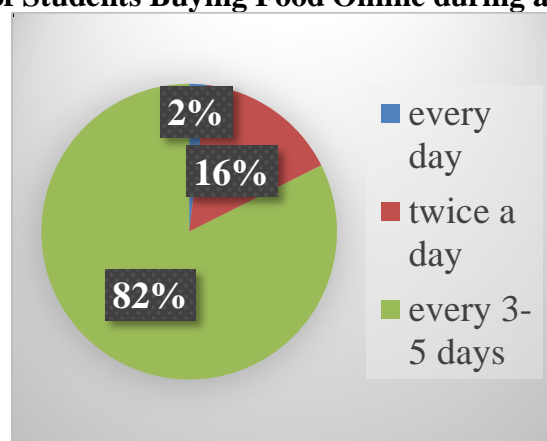
Source: primary data (processed)

WHO recommends studying from home to break the cycle of the Corona virus's transmission. Schools have been temporarily closed due to the virus's highly contagious nature. Despite the Covid pandemic, teaching and learning activities can take place even with different media.

3.2. Discussion

Students boost the size of their meals by purchasing food online to support student activities while studying online. The frequency of food purchases made by students can be explained in the following figure.

Figure 2.
Frequency of Students Buying Food Online during a Pandemic



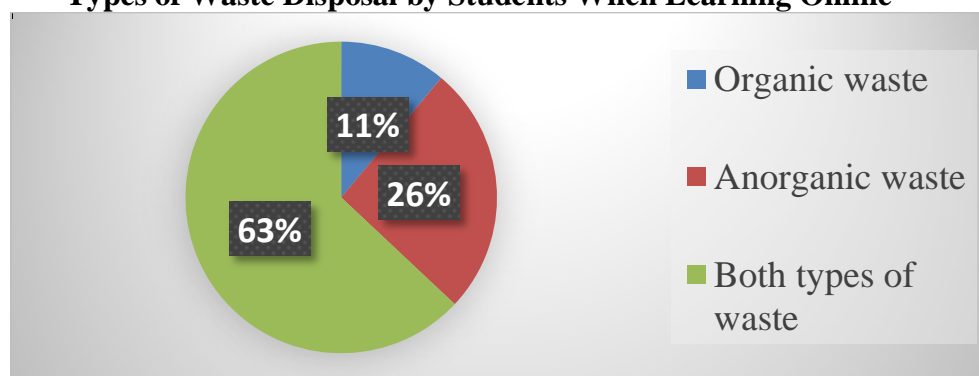
Source: primary data (processed)

Eating is the majority of activities students do while studying online. This is in accordance with Larasati's research (2020) which examines the consumption patterns of students in Bandung. The reason students often buy food is to support their learning

activities. Figure 2 shows that students buy food online every 3-5 days. According to research conducted by the FEB UI Demographic Institute, one of the online services that customers frequently utilize during a pandemic is go food, which has a 65 percent usage rate.

It appears that these pupils generate waste as a result of their actions. Food and non-food waste account for the majority of the waste. Plastic waste, cardboard, and styrofoam are examples of non-food waste used to wrap food. Anorganic waste is waste that is no longer used and is difficult to decompose. Anorganic waste is made of a material that is difficult to disintegrate and will be buried in the ground for an extended period of time, causing soil layer harm.

Figure 3.
Types of Waste Disposal by Students When Learning Online

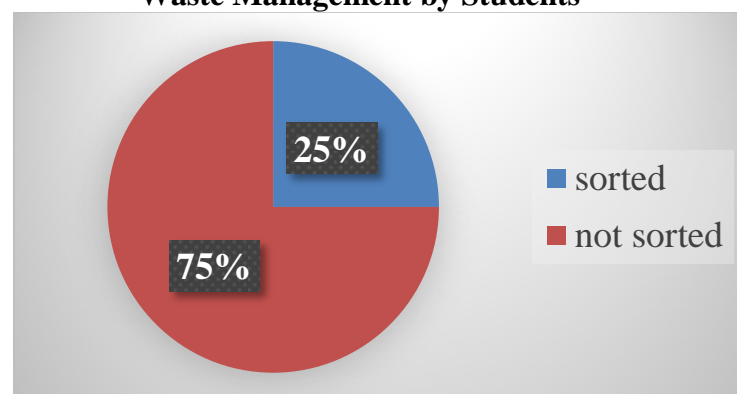


Source: primary data (processed)

Humans generate waste as a result of their activities. Figure 3 depicts how students leave food waste and packaging when they buy food as a result of their activities. Plastic, cardboard, and Styrofoam are types of inorganic packaging waste. According to data from the Ministry of Environment and Forestry, inorganic waste in Indonesia increased throughout the pandemic. Plastic waste has also surged over the world as a result of the pandemic (Suryarandika, 2021).

The waste generated from the respondent's activities, was not managed properly. Figure 4 below shows that the majority of respondents did not segregate their waste first.

Figure 4
Waste Management by Students

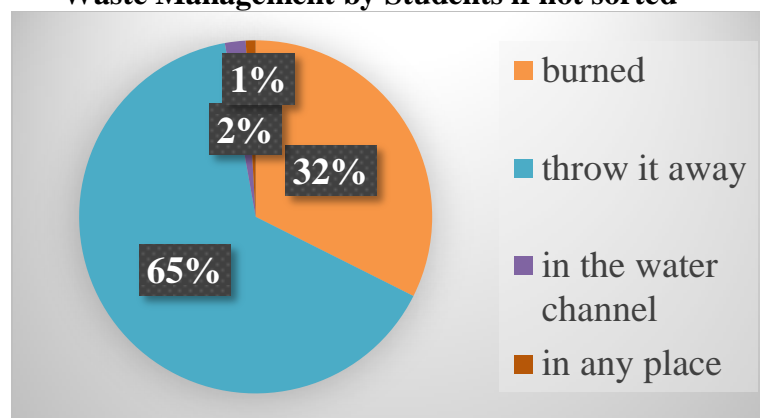


Source: primary data (processed)

According to katadata.co.id (2019), less than half of Indonesia's population sorts waste. The primary reason for not sorting the waste is that you do not want to be bothered. Residents believe that waste is quickly thrown in the trash, and that the government is subsequently responsible for disposing of it. Faizah (2008) stated that the government's responsibility in waste management has been just 40.09 percent in urban areas and 1.02 percent in rural areas. According to Qodriyatun (2015), waste management by the government and local governments in various parts of Indonesia is still far from ideal.

Waste sorting is still a rare kind of independent waste management. The waste management that is not separated by students is seen in Figure 5.

Figure 5
Waste Management by Students if not sorted



Source: primary data (processed)

According to Figure 5, the majority of students dump their waste into the trash without first sorting it, and some students discard their waste carelessly. Based on the 2018 Basic Health Research (Riskesdas) Indonesian Health Ministry, the majority of households in Indonesia manage waste by burning it (49.5%), then 7.8% is dumped into rivers or streams and 5.9% of waste is dumped in any place. Only about 34.9% of households dispose of waste in its proper place and only 0.4% of households make compost from discarded waste.

This situation requires attention, because students are among the most educated individuals, and they are aware of the negative consequences of improper waste management, which will lead to future problems. The population's understanding of effective waste management, including that of students, must be raised. Although the population's education is sometimes adequate, the population's environmental awareness and participation are sometimes lacking (Kumar, 2016).

4. Conclusion

Student activities are carried out at home during the pandemic. At home, there are a variety of activities that generate waste. The waste generated as a result is not appropriately controlled. The majority of students do not separate their waste before throwing it away. As educated individuals, students should be more concerned about the environment. They have the ability to affect change in a variety of ways, including the proper disposal of waste. So that the environment is maintained sustainably and the ecosystem can be preserved in a long-term manner.

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