

CHAPTER 1 - INTRODUCTION

1.1. Background

Waste has become a problem, especially since the rising of global population, consumerism and growth of industrialization in the twenty-first century (Stoeva & Alriksson, 2017). The wastage generated increases as people's lives become more prosperous, and according to World Bank (2013) the total output of solid waste generated is expected to triple by 2100. Waste reduction leads to depletion of natural resources and contamination, and both have received a lot of attention in recent years (X. Zhang et al., 2017). Furthermore, the global rates of landfill are still high, even in the European Union (EU) nations, the recycling rates and waste reduction are still poor (Malinauskaite et al., 2017).

Generally, the global environment keeps changing and it has impacted the life forms due to nations not taking considerations of worsening pollutions of agricultural lands such as the manufacturing of plastics. Thus, paper is suggested to be an alternative to plastics in a packaging aspect because paper is eco-friendly and it has no harmful impact towards the environment as it is non-toxic for the soil when it is being disposed (Jalil et al., 2013).

On the other hand, according to Okunola (2019), plastics are made of synthetic organic polymers that has the properties of chemicals compositions, although, it was believed that plastics to be harmless to the environment, the impact towards plastics consumptions has been a major environmental problem; as for plastics packaging, it is often to be disposed after usage, which as of now are being discarded everywhere, making it harmful for the environment (Okunola A et al., 2019). Thus, As the development of globalization is growing and people's quality of life has improved, consumers are no longer satisfied with only the quality of the product's goods rather lately, they are taking more seriously of the product's packaging that emphasize the development for the environment or environmentally friendly, such as paper based packaging (J. Huang, 2017).

Most of the packaging industry has already implemented the production of corrugated paper boxes, these papers are combinations between waste papers that originated from offices, public facilities, households, and manufacturers (M et al., 2015). The reasons for the switch of raw materials (virgin pulp) to produce these corrugated paper box is because the restrictions that is available, papers can no longer be pure based from wood materials (virgin pulp), rather to shift the raw materials into recycled paper (waste paper) and other non-wood material, others could be a mix between waste and virgin paper (Ramirez, 2018). Nowadays, a lot of corrugated paper boxes contain 60-100% of the recycled materials, this makes the corrugated paper box much cheaper than virgin paper that contains pure forest-based materials (Ramirez, 2018).

With 50% of the production of corrugated paper boxes worldwide, using waste paper as their raw materials, the industry is growing to be more dependent on recycled waste paper as their raw materials (Stoykova & Marinova, 2014). However, the environmental awareness in Indonesia is still low, with 88.65% of households in DKI Jakarta not sorting their waste; as a result, it became a difficult process to recycle waste, especially to recycle paper (Iswanto, 2019).

To add to the information, one of many problems that is faced by urban areas is the lack of management of municipal solid waste (MSW), which has become a concern for those who live within those cities (Damanhuri et al., 2009). Indonesian residents generate waste around 0.7 kg per day and 69% of the total MSW generated is dumped into landfill (Farizal et al., 2018). Furthermore, (State Ministry of Environment and Forestry Republic of Indonesia, 2008) stated that household solid waste generated the most solid waste composition in Indonesia, with 16.7 million tons per year.

In Addition, data from 2019 discussing solid waste produced in West Java, mentioned that about 11% of the solid waste produced is waste paper, making it the third biggest percentage of waste composition (Rosidah & Wicaksono, 2019).

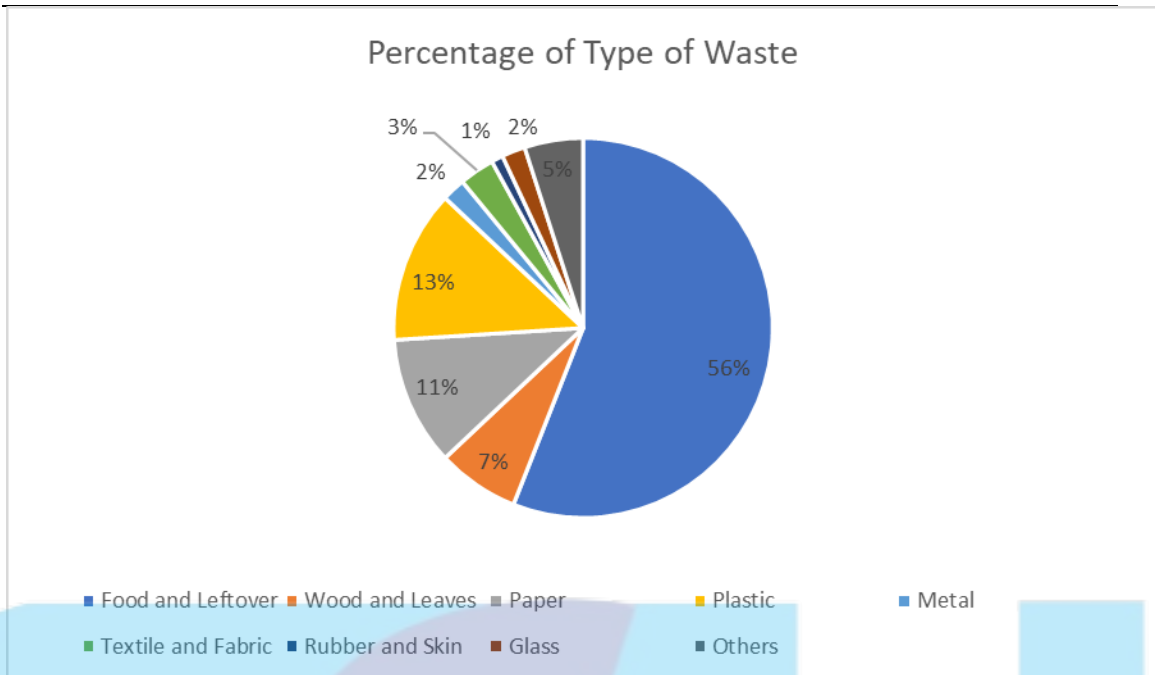


Figure 1. 1 Percentage of Type of Waste
 Source: Study of Municipal Solid Waste in West Java Province, Indonesia (Rosidah & Wicaksono, 2019)

According to Giovano & Ismail (2020), Indonesia has generated solid wastes up to 65,200,000 tons in 2016, with 8.75% of it being waste paper that goes to the landfill. In addition, Indonesian government has enforced the regulation of *UU No. 18/2008*, regarding the management of solid waste, however, most Indonesia Cities has yet to implement this regulation (Raharjo et al., 2017). The World Bank (2017) also stated that the Government of Indonesia had an ambitious plan with the 3R policy (reduce, reuse, recycle), specifically intended to improve solid waste management on a household level. Their target was to achieve 30% reduction of waste collected in 2019, nevertheless, the participation of household activities regarding the 3R policy only reached 1.6%. The cause of this low participation is due to the lack of local leadership, campaign from the government and the awareness from Indonesian households (World Bank Group, 2017).

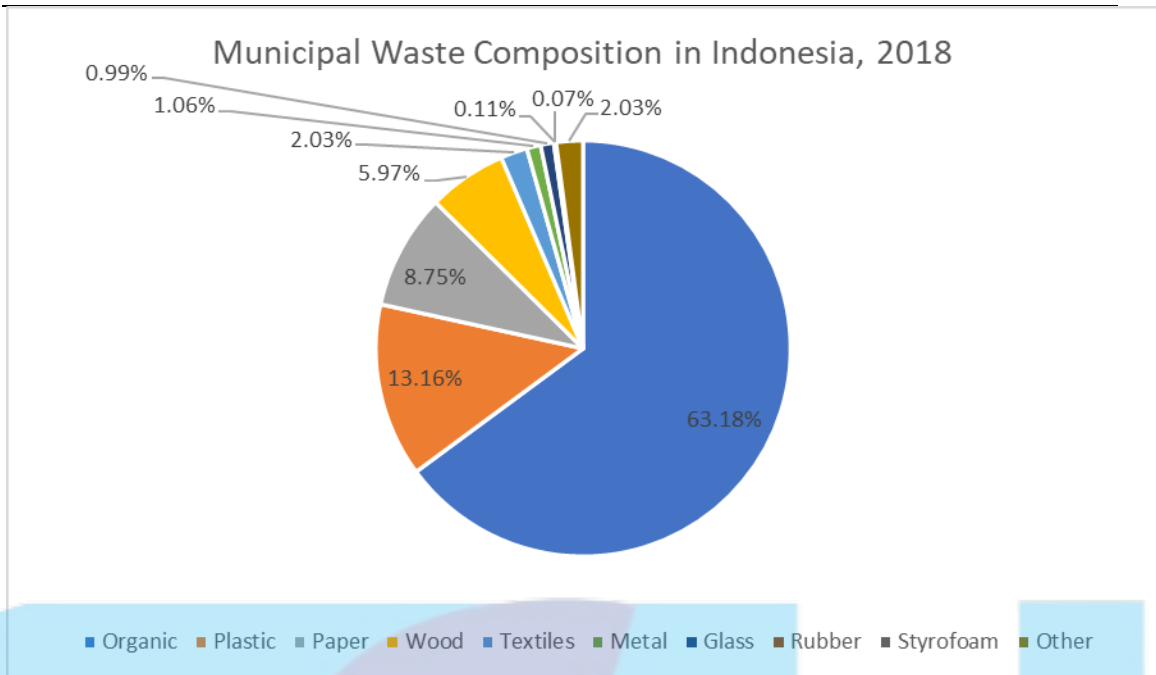
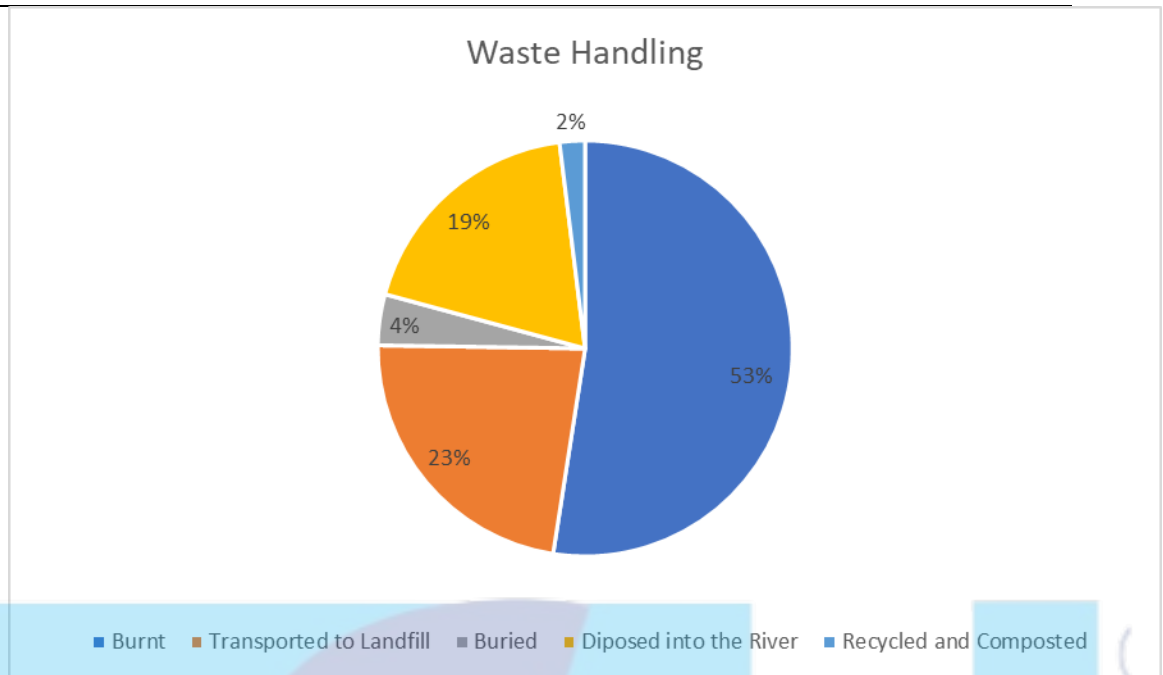


Figure 1. 2 Municipal Waste Composition in Indonesia, 2018
Source: Housewives Environmental Awareness in Household Solid Waste Management (Givano & Ismail, 2020)

With lack of participation of household waste management in Indonesia, there is a low collection rate of waste paper from household that can be used as raw materials of corrugated box, thus, it impacted the corrugated box industry, since they are greatly dependent with the collection of waste paper (Stoykova & Marinova, 2014). Therefore, exploring the factors behind households' intention towards waste sorting need to be examined.

Moreover, most of the Indonesian households are still lacking with waste management knowledge, with only 9% of the households implemented and educated regarding waste separation; as a result most Indonesians still do not have the behaviour of separating wastes (Sabarinah, 2017).



*Figure 1. 3 Waste handling in Indonesian household
Source: International Journal of Waste Resources (Sabarinah, 2017)*

Figure 1.3. shows that only 2% of Indonesian households recycled and compost their waste. The journal mentioned that there was a correlation between the education level and income level with waste sorting behaviour. The author stated that respondents with lower educational level and income are more likely to implement waste sorting as they can gain money from collecting waste. The communities with lower income also have more time to sort their waste compared to those with middle to high income as they do not have the time to sort their waste (Sabarinah, 2017). Thus, there are still uncertainties on the factors that can influence households in urban or municipality areas to sort their waste in Indonesia.

There have been studies regarding factors that affect households' behavioural intention toward waste sorting behaviour and recycling. For example, a research result from Matthies et al (2012) that established a personal norm of individuals, which refers to a person's moral duty to sort garbage and recycle at home, as an internal driving force. Furthermore, extrinsic elements that influence household garbage sorting include subjective standards that highlight the effect of people who are important to persons (Park & Ha, 2014). Moreover, a pro-environment attitude is one of the major-contributing factors that can lead to the participation of waste recycling

(Tonglet, Phillips, & Bates, 2004). However, the case studies that have been mentioned above, do not correlate between the behavioural intention with the actual waste sorting behaviour. Rather, when conducting a survey, it is often to record the willingness of the people, in a household level, to sort their waste as an initial behaviour intention (Czajkowski et al., 2014).

1.2. Research Problem

There are several problems that the corrugated box industry is currently facing. First, after conducting face-to-face interview with one of the members of *Perhimpunan Industri Corrugated Cardboard Indonesia* (Indonesian Corrugated Cardboard Industry Association / ICCIA) and the General Manager in PT. Harpackindo Ottoflexi, Tustus Sukarya, it seems that there is a problem that affects the corrugated box industry as a whole, which is the low return rate of waste papers.

The output of the product that has been delivered to the end-consumers (households), only 40% returned to the original manufacturers (Sukarya, 2021). This makes the whole industry rely on imported waste paper to balance the supply and demand of corrugated box. Sukarya (2021) also stated that with low return of waste paper to the manufacturer, the cost of buying waste paper increased, which also resulted in the increase of selling price of the corrugated box. Second, the corrugated box industry as well as Indonesian Corrugated Cardboard Industry Association noticed that there is a low waste sorting behaviour in Indonesia, however, they do not have the understanding of the factors influencing households' intention toward waste sorting. Therefore, it is suspected that there is low intention on sorting waste, that resulting in a drop-in collection rate of waste paper that can be used as a raw material to produce corrugated boxes. Moreover, with lack of intentions to sort waste, waste paper could get mixed with other kinds of waste from organic or hazardous waste materials that can damage the waste paper itself. Third, unfortunately, there seems to be limited studies that have been done to investigate household waste sorting that directly influence corrugated box industry.

Recycled paper materials to make corrugated boxes are collected from disposed garbage, mainly found from households, offices, public facilities and manufacturers.

Thus, their disposal management towards paper waste plays an important role in the corrugated box industry. However, the characteristics of each household might differ from one to another. A study by Handayani et al (2018) stated that Indonesian households have low waste management; also, compared to urban areas, rural areas are still disposing of their waste in a traditional manner, such as bury them, burn it, or even throw it into the river.

A study by Shen et al (2019), however, suggested that there are a number of factors that influence individual's intention towards waste sorting including: attitude, subjective norms, perceived behavioural control, environmental concern and personal moral obligation (Shen et al., 2019). McEachan et al (2011) refers to an individual's positive or negative attitude when performing a specific behaviour. As attitude is relatively based on a psychological construct of the individuals, many researchers have affirmed the influence of attitude on behavioural intention (Wallén Warner & Åberg, 2008; Yazdanpanah & Forouzani, 2015).

Moreover, people who have a favourable attitude on a particular behaviour, are more willing or have the intention to engage (Y. Zhang et al., 2014). Subjective norm is also defined as the impact of external social pressures on an individual's specific behaviour (McEachan et al., 2011). These external social pressures that come from the subject's neighbours, family members, and friends, are important references and examples for an individual when making a decision (Shen et al., 2019). Therefore, it is believed that with a greater external social pressure it will lead to stronger willingness to participate (Matthies et al., 2012).

Perceived behavioural control, on the other hand, refers to the view of individuals on how simple or complex it is to execute the desired behaviour (Ajzen, 1991). Perceived behavioural control includes, control belief and perceived intensity. Control belief comes from factors that includes time, energy and other resource constraint to increase the engagement in waste sorting, while, perceives intensity is defined as the self-efficacy that individuals observe from solid waste sorting, or their self-confidence in their capability to do solid waste sorting (Ma et al., 2018). Furthermore, based from previous researches, it was shown that people with environmental concern will respond more to environmental issues, since they realised that their actions will have

an impact towards the environment and are more willing to take pro-environmental actions (Rex & Baumann, 2007; P. Wang et al., 2014). Lastly, according to Ru et al (2019) and Wan et al (2006) personal moral obligation has a significant positive impact on pro-environmental behavioural intention, also, in contrast to subjective norms which primarily influenced by external social pressure, personal moral obligation mainly comes from internal pressure, such as being responsible and have the obligation to sort waste.

This research paper analyses on how attitude, subjective norms, perceived behavioural control, environmental concern and personal moral obligation impacts the behavioural intention of waste sorting in Jabodetabek, since some of the waste paper will be used as raw material in making recycled paper to produce corrugated box, the collection rate of the waste paper will affect the selling price of paper roll to produce corrugated box. Therefore, it is crucial to understand the factors influencing a household's intention towards waste sorting in the Jabodetabek region.

1.3. Research Questions

These are the questions this research paper will address:

1. Does Attitude positively influence Behavioural Intention?
2. Does Subjective Norms positively influence Behavioural Intention?
3. Does Perceived Behavioural Control positively influence Behavioural Intention?
4. Does Environmental Concern positively influence Behavioural Intention?
5. Does Personal Moral Obligation positively influence Behavioural Intention?

1.4. Research Objectives

The objectives of this research paper are:

1. To investigate whether Attitude does positively influence Behavioural Intention.

2. To investigate whether Subjective Norms does positively influence Behavioural Intention.
3. To investigate whether Perceived Behavioural Control does positively influence Behavioural Intention.
4. To investigate whether Environmental Concern does positively influence Behavioural Intention.
5. To investigate whether Personal Moral Obligation does positively influence Behavioural Intention.

1.5. Scope and Limitations

Below are the limitations for doing this research paper, there are:

1. This research is limited with the variables such as attitude, subjective norms, perceived behavioural control, environmental concern, personal moral obligation, behavioural intention and waste sorting behaviour.
2. This research is conducted between the period of February and June 2021.
3. The unit observation in this research is Indonesian adults (18 above) who have a form of household in Jabodetabek.
4. The number of respondents that this research will study is a minimum of 130 people.

1.6. Significance of Studies

1. Notify and provide understanding to the Indonesian Corrugated Cardboard Indonesia Association (ICCIA) on how behaviour intention can affect the waste sorting behaviour.
2. Notify and provide understanding to the Indonesian Government on the urgency to improve the regulations on waste sorting in a household level.
3. Improve campaign to the Indonesians household to sort their waste for the benefit of the environment and corrugated box industry.
4. Provide initial or additional information to guide future researchers in conducting further studies of waste sorting behaviour.