

THE WASTE MANAGEMENT OF CLOTHING HOME INDUSTRIES IN MAKASSAR CITY, INDONESIA

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ABSTRACT

Waste management of the clothing confection business brings many advantages. It not only reduces environmental impact but the waste can also be reused in the field of household linen craft. The waste of ready-made clothes industries, when recycled, will produce quilted fabric waste that can be used by craftsmen and others who need it. This study aims to determine the characteristic feature of the garment waste in Makassar and how the waste will be managed by reduce, reuse and recycle (3R) approaches. This research is qualitative descriptive research. The sources of data in this study were sampled by snowball sampling method. Data were collected through interviews and observations. Finally, data were analyzed by using descriptive qualitative analysis. The results of this study indicate that: (1) Characteristics of waste (patchwork fabric) of 50 ready-made clothes business in Makassar is as much as 1454.53 kg. This type of cloth waste is mostly produced by the T-shirt garments such as TC 28, Cotton, Diadora, and Lotto. Furthermore, school uniforms confection produced many types of waste, namely smooth and rough cotton cloth. The confection of negligee dress generates the kind of waste confection in the form of batik cotton batik. The size of the cloth is determined by how to put the pattern and to cut the fabric (2) Waste confection has not significantly contaminated to the environment because most of the waste is reused with the 3R (reduce, reuse and recycle) concept as follows: a. process management includes fabric sorting which some of the confection industries especially those from negligee shirt have already started separating their waste based on type and cloth size, while those of medical and school uniforms did not perform it. b. Selling phase followed by waste collectors and managed by craftsmen to be doormats and heat holders. c. The added value of waste management confection is still very small.

KEY WORDS : Management, Waste, Confections industries

INTRODUCTION

The growth of waste dump has been triggered by population growth and rapid urbanization to urban areas, especially with the changing patterns of people life and behavior. Many people still have lack appreciate to the beauty of their area and sustainability of resources by throwing their waste in random place. Furthermore, solid waste infrastructure such as transport vehicles both in the number and the condition becomes inadequate due to lack of maintenance performed by local governments. Dumpster management system and landfills are less precise and not environmentally friendly and have not implemented the approaches

of reduce, reuse and recycle (3R) on waste management. These problems raise very fundamental issues in waste management, especially in the areas that are still growing in urban areas.

Based on existing data (Wardhana, 2004), there are several types of waste (solid waste) discharge in large cities. The percentage of the mainland pollutants sequence are as follows; paper waste 41%, foodstuff waste 21%, glass 12%, metals 10%, wood and rubber 5%, and fabrics waste mostly from business clothing consisting of exclusive dressmaker business, atelier fashion venture, and garment businesses. These industries have given the percentage of the waste by 2%. Fabrics sewage comes mostly from the fashion business, although still small, but if not

managed properly, will gradually lead to a buildup and can lead to greater problems in the future.

Among of exclusive dressmaker business, fashion venture, and confection/ ready-made clothes business, that generate the most waste cloth based on the type of business, is confection. It is a business that produces ready to wear the outfit and besides that they also deal with orders in very significant amounts (Riyanto, 2003).

According to Hamiyati (2005), the problem of waste or garbage in large city is a very complicated and disturb the environment because it is one of the causes of flooding. The sewage from confection and couturier in Jakarta is very high. Every day, confection business spends a high number of residual patchwork fabrics waste which was thrown away. It is even a complaint among employers confection that is very difficult to dispose of quilted textile fabrics.

One effort to reduce the negative impacts of the waste is to use the approach of reduce, reuse and recycle (3R). Reduce is to reduce waste generation at source, Reuse is the utilization of existing waste, either by changing its shape or remain as they are, and Recycle is a waste treatment process that can reproduce useful products (Bebasari, 2000 and Ristiyanti, 2005).

By the management of waste in the form of fabric patchwork from confection businesses not only reduce environmental impact but also can be reused to be linen craft in the field of the household. The waste of confection industries, when recycled, will produce quilted fabric waste that can be used by craftsmen and others who need it. Based on the descriptions in the above background, the authors are very keen to examine the garment waste management, especially in the city of Makassar.

Research Method

This research is a qualitative descriptive research. Descriptive qualitative is a research that seeks to describe a phenomenon, events, events that occur at the present time and as detailed as possible. This research has the aim to obtain a complete picture of the research object. The object to be examined in this study were (1) the characteristics of the confection waste in Makassar, (2) description of the garment waste management that uses reduce, reuse and recycle (3R) approach in Makassar.

Data Source of Research

Sources of data in this study are divided into two,

namely:

1. Confection business owners in the city of Makassar);
2. Patchwork fabric waste collector, cloth waste artisans and those who also work as craftsmen.

The research will be conducted using research instruments as follows:

1. Guidelines for the interview, the guidelines prepared by putting the main points of the question that will be asked to the informant. The guidelines were developed in accordance with the examined problems. Forms of questions are in the form of unstructured (open) questions, where the informants are free to answer questions;
2. Sheets observation guide, a record, a list of everything that becomes the object of observation in the field, and the results of the activities that have been carried out. Sheets observations made in the form checklist which is a list that contains the names of the subject or factors that were observed and arranged systematically.

Data Collection Technique

Data collection techniques are used based on the type of data to be taken and can be carried out with the following steps:

a. Interview

Interviews were conducted to obtain data from informants. These data can give a general overview of garment business, their garment waste characteristics, confection waste management mechanism with a 3R approach and the marketing of products from confection waste management. Interview techniques used is an unstructured interview. This is done to obtain data / information from the garment business owners, collectors, and craftsmen who perform confection waste management.

b. Observation techniques

Observation conducted to examine the garment waste management model in the field. Instrument sheets from observations were compiled, used and developed based on the problem to be assessed. They are composed of three parts, namely: (1) the characteristics of confection waste, (2) the waste management from confection in the form of cloth by the 3R approach, and (3) the marketing of products

from confection waste management.

Data Analysis Techniques

The technique of data analysis in this research is a qualitative descriptive analysis which can be divided into several parts as follows:

1. Data reduction; there are many data were obtained from the field so that it is necessary to note them carefully and in detail. Data reduction means summarizing, selecting subject matter, focusing on the important things, and looking for themes and patterns.
2. Presentation of data (data display) is the phase to present the data with narrative text.
3. Verification is a phase to discard data which were considered not too important
4. Triangulation is a phase to check the validity of data that utilizing something else beyond the data for the purposes of checking or as a comparison to the data (Moleong, 2006);
5. Member check is a repeated check of the obtained data
6. Withdrawal conclusion of the data is a way, to sum up the data and then draw conclusions as detailed as possible.

RESULTS AND DISCUSSION

This research was conducted on 50 confection businesses which consist of 20 t-shirt business, 14 school uniform businesses, and 16 convection negligee), 3 collector, 14 craftsmen, and three people who work as collectors and artisans in the city of Makassar.

The characteristic feature of the confection waste

Based on research in the field, it is known that the production system in the confection in Makassar still be the order and has not been at the level of producing itself. Therefore, the products were

varied and the use of materials and model or clothes design that are produced depends on the buyer. It is very influential in the characteristic of generated waste. Thus, in this study to calculate the characteristics of the garment waste, researchers only count on the main production in the garment and how many are produced in 7 days or a week at the time of the study.

The amount of waste cloth is per week.

From the results of research and observation at 50 confection business, the characteristic of cloth waste is shown in Table 1.

Based on the above data, it can be concluded that 50 confection businesses in Makassar in a week produced a total of 12190 thousand clothes. This will produce patchwork waste as much as 1454.53 kg of waste.

The type of cloth

a) Confections T-shirt

Based on the research data showed that some types of materials widely used to make shirts namely TC 28, Lotto, Cotton, and Diadora.

b). School uniform confections

Based on the results of a study at 14 confections which produce school uniforms, the most common material used is cotton material using coarse and fine cotton.

c) Negligee shirt

Types of cloth waste on this negligee confection business are highly dependent on the material carried by the confection. The main ingredient is set directly from the store that sends the material. Based on the results found in this study, data showed that the type of material that is widely used by the garment negligee shirt is cotton batik.

Table 1. Total production of a garment and the patchwork fabrics waste in per week.

Types of Confection business	The amount of Confection	The amount of production in a week	The amount of patchwork waste in a week (Kg)
T-shirt	20	5.210	1107.12
School Uniform	14	3.780	123.43
convection negligee	16	3.200	224
Total	50	12.190	1454.53 kg

Source : Field Survey, 2008.

The size of the patchwork fabricswastes

a. T-shirt Confections

The size of cloth depends on how to put patterns and how to cut it. On T-shirts shearing procedures, patchwork fabrics have a size of approximately less than 2 x 8 cm and about less than 8 x 10 cm. This is the result of clipping derived from the curve of the neck and the hollow sleeve shirt. Most of the patchworks come from the cutout circumference on training suit approximately less than 20 x 10 cm.

b. School uniforms confection

Shearing procedures on shirt produce patchwork that has a size of approximately less than 4 x 6 cm and approximately less than 10 x 15 cm. This is the result of clipping from the concave curve of the neck and sleeves. Likewise, the waste from hemming process as a part of sewing a shirt does not produce much waste because of the width of the hem has been calculated precisely by the limit for seaming.

c. Negligee shirt confection

Based on the results of field observations, it was found that the size of negligee shirt waste composed of a size of approximately 15 x 10 cm, 2 x 8 cm and so on. In addition, there is also a powder or chunks of hemming results.

a. Overview of confection waste management using reduce, reuse and recycle (3R) approaches in Makassar

1. Confections

When the shearing process and sewing clothes have been completed, it will generate waste in the form of patchwork fabrics ranging from the smallest to the

largest. The collection of the smallest patchwork is by putting the garment in a container in the form of plastic bags, cardboard boxes, and sacks. Processing of this type of waste by the craftsmen can vary. The small size of waste is processed by either to be burned or thrown in the trash, and some are sold. The medium-sized and large ones are generally processed by selling them to another user, and then will be used as a cloth or cotton waste in workshops car or motorcycle, mat and heat holders.

In addition, there is also cloth stored by the artisan of confection to be used again by the garment. The results of field observation found that the garment of T-shirts and school uniforms have not carried out waste segregation system of patchwork fabric, but they only collect them in a container with no regard to their type, size, and material of the cloth. The patchwork sorting system can be done by looking at the type of material, patchwork motif, and their sizes. Waste is put into sacks without any sorting process. The sorting process by motifs and the size is done by negligee confection. Prices of the waste are set by the garment usually varies, ranging between IDR 20,000 (twenty thousand rupiahs) up to IDR 30,000 (thirty thousand rupiahs), depending on the price agreement between the owner of the garment and the collector.

1. Collectors, Craftsmen and artisans

a) Collector

Patchwork collector is a person who collects waste from patchwork fabric confection businesses. Based on the interview, it was found similarities motivation of collectors in collecting patchwork fabric waste, because it is supported by the activity of residents in the neighborhood collector.

Table 2. The sales system and prices of patchwork waste from confection

No	Types of Patchwork	Types of Selling	Price (IDR)
1	Coarse and fine cotton from school uniform confection	per sack	15.000,- up to 30,000,-
2	Batik cotton from negligee shirt confection	Per kilo	1,000,- up to 2,000,-

Source : Field Survey, 2008.

Table 3. Sales system and price of collecting waste cloth by collector

No	Type of patchwork	Types of selling	Price (IDR)
1	Coarse and fine cotton from school uniform home industries	Per sack	30,000 to 55,000
2	Batik cotton from negligee shirt home industries	Per kilo	5,000 to 6,000

Source: Field Survey, 2008

There are two systems of waste cloth sales from the garment to the collector which are the sales system per sack and sales by weighed. The sales price of one sack per cloth sold at around IDR. 15,000 (fifteen thousand rupiahs) up to IDR 30,000 (thirty thousand rupiahs) especially for the patchwork that are taken from the school uniforms confection waste. It consists of white cloth, batik uniforms, and scouts uniform. Sales of the waste by weight were done by negligee shirt confection. For one kilo of cloth are sold for IDR 1,000 (one thousand rupiahs) up to IDR 2,000 (two thousand rupiahs).

Waste retrieval time from confection carried on at night. All informants of collectors said that the process of purchasing the readymade cloth are done at night. Based on the research there are two Assumptions why collectors take or buy cloth at night time, namely:

1. The activity of making clothes began in the morning until late in the evening. The cleaning of patchwork of cloth from shearing process until sewing is done at night;
2. To avoid the attention that in this place there are a confection business activities which are commonly in the ordinary house did not reveal the existence of the garment business activities inside.

Based on the results of interviews with collectors, the price of clothes which are sold by collectors to craftsmen is varied .

Their price variations arise because the number of collectors cloth are increased so the high rivalry between collectors in taking patchwork on the garment occurs. From the interview, it can be said that people already see that the recycling job of home industries waste becomes a potential job to increase revenue because there is already a business competition in acquiring the cloth rag waste.

b). Craftsmen

The subjects in this study were 14 craftsmen of

patchwork. The craftsmen of patchwork fabrics are those that produce handmade products from the waste of clothing home industries.

1) Price of patchwork fabrics

From the field interviews it was known that there are several type of clothing waste which were purchased by craftsmen from the collector namely patchwork from school uniforms (range from IDR 35,000 up to IDR 40,000 per sack, and for materials such as patterned fabrics patchwork of cotton batik from negligee shirt home industries purchased by artisans around IDR 50,000 up to IDR 70,000 per sack.

2) The processing technique of craft patchworks fabric

Based on the interview, there are two products produced by craftsmen of clothing. They are doormat and heat holders. Before making doormats and heat holders, sorting the patchwork fabric, based on their pattern, color, and size should be done. The process of making doormats almost the same as the manufacture heat holders. The difference is only that the size of the mat is larger than the size of heat holders. For the size of doormats, it requires fabrics that length of 70 cm and a width of 40 cm, and as the base bottom of the mat required Hessian sacks with a length of 70 cm and a width of 40 cm. As for heat holders, it needs fabric size 10 cm long and 15 cm wide.

After that, the cloth was folded into a triangle sewn on fabric width concatenated. For the middle of the mat and heat holders, a smaller patchwork that no longer can be formed into a triangle or a patchwork from an overcast stitching were used. Heat holders and doormat can be shaped into oval, square, triangle, round, and others. From interviews with the artisans, the data showed that in a day craftsmen could make doormats for three (3) to five (5) pieces, while for heat holders 5 (five) to 10 (ten) pairs in a day. The price of doormat sold by

Table 4. The time span of Profession as A Patchwork craftsmen

No	Time Span	Craftsmen	Craftsmen and Collector	Frequency	Percentage
1	£ 5	3	-	3	18
2	6-10	2	-	2	12
3	11-15	5	2	7	41
4	16-20	2	1	3	17
5	³ 20	2	-	2	12
	Total	14	3	17	100

craftsmen for about IDR 3,500 whereas the price of heat holders for IDR. 750.

3) Revenues and profits

Based on the interview, it showed that the craftsmen cannot calculate revenues and profits which obtained during the manufacture of mat and heat holders. Based on the interview that in a sack of cloth can be made about 200 pieces doormats and 50 pieces heat holders. Based on a rough calculation result prove that the waste is managed by artisans contributed to the revenue of craftsmen although it gains very little that's one sheet heat holders benefit only IDR 5 (five rupiahs) whereas 1 doormats sheet profits of IDR 2,700 (two thousand seven hundred rupiahs).

4) Working Time

For someone who worked long enough in producing a craft product, it can be assumed that the person has the higher level of ability and creativity in producing a craftwork.

From the interview, it shows that the type of products produced by artisans over the years has not changed that craftsmen only produce doormat and heat holders. According to Tjahjadi (2007), that in each year craft in the form of patchwork fabric have increased in the number that can be created and sold. Patchwork is already applicable for making bags, wall hangings, jackets, children's clothing, and other household trinkets.

Collectors and craftsmen

Based on interviews, the benefits in making heat holders is IDR 275 and for doormat IDR 3,000. Informants who work as collectors and craftsmen already have an employee that on average amounted to about 2-5 people.

CONCLUSION

This section will describe conclusions about the results of research on waste management of the garment that covers the characteristics of the waste, waste management done by home industries with reducing, reuse and recycle (3R) approach and the marketing of products from waste management in Makassar.

1. Characteristics of waste in the form of patchwork fabric from 50 home industries in Makassar as follows.
 - a. The amount of waste cloth are as much as

1454.53 kg;

- b. Types of cloth are the most widely produced by the T-shirt garment is brand TC 28, cotton, Diadora and lotto. For the school uniforms home industries, they produce a high number of patchwork waste types such as cotton smooth and rough cotton, and for readymade, negligee clothes produce the kind of patchwork in the form of cotton batik;
 - c. The size of the cloth determined from how to put the pattern and how to cut fabric.
2. Waste confection has not significantly contaminated the environment because most of the waste is reused by managing the 3R (reduce, reuse and recycle) approach as follows.
 - a. Processing procedures include sorting fabric. Several home industries have already started to separate the waste by type, size and special cloth from negligee shirt home industries, while for medical uniform clothes and school uniforms did not perform any sorting and types of fabrics;
 - b. Selling phase was conducting by waste collectors and managed by craftsmen to be doormats and heat holders products;
 - c. The added value of waste management from home industries is still very small.
 3. Marketing of waste cloth products are as follows:
 - a. In terms of product design, it did not develop the design from year to year only producing doormats and heat holders;
 - b. In determining the price, calculations of how a number of raw materials used have not been made yet and it does not take into account labor costs. The price was only made based on an agreement between the seller and buyer;
 - c. Distribution was conducting by a wholesale sales system. Craftsmen do not sell direct production into the hands of the end consumer.

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