# **Effective Packaging Information Modelling using QR Code**

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Abstract: The real performance faced by most business actors, especially Micro, Small and Medium (MSME) in Indonesia, the most prominent thing is the low level productivity, low added value, and low product quality. Even if the increase in productivity at MSME can be carried out, this will have a broad impact on improving people's welfare because MSME are places where many people depend on their livelihoods. One of the obstacles that hamper the productivity of MSME is the non-marketable packaging design. The problem of packaging is still a weak point for Micro, Small, and Medium Enterprises (MSME) for processed food and beverage products. This problem occurs due to the limited understanding of MSME actors of the importance of image, quality, and appearance of packaging as well as limited packaging service facilities that can increase the competitiveness of MSME products. One of the MSME products that have good product potential but is not supported by a good packaging design is Kopi Celup by Sanshop. This study aims to find a packaging design that can be a solution for Kopi Celup by Sanshop products to improve the image, quality, and appearance of maturity design using the Design Thinking approach and Visual Communication Design scientific studies. Also, the packaging design that is designed has a technological element in the form of a QR Code and the basic principles of environmentally friendly packaging empathize.

# **1** INTRODUCTION

#### **1.1 Fact about MSME**

As Indonesians, of course, our daily views and activities cannot be separated from the various services and goods created by MSME players. Starting with the morning activities at breakfast, we look for porridge or snack cakes that are sold by MSMEs, buy necessities at stalls near the house, to leave children in the closest playgroup which is also the MSME. As for the current digital era, some even do not have a store and only market their products online and do not have a business license. Business actors with these characteristics can be found around us, be it relatives, neighbours, friends, or ourselves. From the name, MSME does have an acronym for Micro, Small, and Medium Enterprises (MSME), but make no mistake this little one has a massive and crucial contribution to our macroeconomy (Haryanti and Hidayah, 2018)

The Indonesian Ministry of Cooperatives and SMEs report that in terms of the number of units, MSMEs have a share of around 99.99% (62.9 million units) of the total business actors in Indonesia (2017),

while large businesses are only 0.01% or around 5400 units. Micro Enterprises absorb around 107.2 million workers (89.2%), Small Enterprises 5.7 million (4.74%), and Medium Enterprises 3.73 million (3.11%); while Big Enterprises absorb around 3.58 million people. This means that collectively, MSMEs absorb around 97% of the national workforce, while large enterprises only absorb about 3% of the total national workforce.

Table 1: MSME and Large Business Criteria Based on Assets and Turnover.

	Criteria		
Business size	Assets (excluding land & business premises)	Turnover (within 1 year)	Business size
Micro	Maximum IDR	Maximum IDR	Micro
business	50 million	300 million	business
Small business	More than IDR 50 million - IDR 500 million	More than IDR 300 million - IDR 2.5 billion	Small business
Medium business	More than IDR 500 million - IDR 10 billion	More than 2.5 billion - IDR 50 billion	Medium business
Big business	More than IDR 10 billion	More than IDR 50 billion	Big business

#### 80



Sumber: Sensus Ekonomi 2016, http://se2016.bps.go.id, diolah penulis

Figure 1: Distribution of non-agricultural MSME business fields.

## **1.2 Development and Weaknesses of MSMEs in Malang City**

The development of MSMEs in Malang itself is increasing from year to year. The Malang City Government (City government) received the "Natamukti" award from the International Council For Smart Business (ICSB). The award in the event entitled Galang MSME Indonesia 2019 Edition 4 at the IPB Convention Centre, Bogor was received directly by the Mayor of Malang, Sutiaji. This award was given because it was considered successful in improving Micro, Small, and Medium Enterprises (MSMEs). This includes marketing aspects. encouraging quality improvement, and building the MSME ecosystem. These efforts are considered to be able to help MSMEs compete at various levels (Apriansyah, 2019).

The Mayor of Malang, Sutiaji, said that currently, the Malang City Government is seriously implementing the MSME graduation program. This effort is part of improving the community's economic sector. According to Sutiaji, this target requires a strategic program including policies that have been implemented. The Malang City Government stated that it has done various things to boost the MSME sector. Some of them provide training to MSME players. Then form a clinic as consultation facilitation for medium, small and micro industry players. Although the Malang City Government has carried out various policies to advance MSMEs, in fact the Head of Malang City Cooperatives and UKM Service Tri Widyani Pangestuti said that MSMEs in Malang still have many shortcomings. Many of the MSME owners are considered not able to be released alone, so that with this assistance, they will grow and develop (Hakim, 2019). One of the things that cause

the weakness of MSMEs in Malang is that they are weak in terms of marketing, weak management, weak solidarity, even from a weak economic perspective.

### 1.3 Novelties and Technological Breakthroughs

The dream of every business actor is to have a good image or brand awareness in the eyes of his consumers. A good image is a key to the success of a business to reach as many customers and potential customers as possible, then foster deep-rooted trust to buy the products sold, and that leads to increased company profitability. The next question that arises is: What is the best way for a business to be able to have a good image for its customers? Apart from vigorous public relations activity, businesses must also build an image from the appearance of the products they sell. One of the factors that must be considered carefully is product packaging that can attract customers' hearts.

Packaging continues to develop its main functions ranging from simply a place to store products into several other functions such as preventing product damage and quality degradation, extending shelf life and serving as a product information medium. One of the technological developments in the packaging sector is the emergence of environmentally friendly packaging. Eco-friendly packaging is packaging that uses materials that are easily biodegradable, can be recycled, and are not harmful to the environment or humans. The characteristics are that it has no (or little) bad impact on the environment, it is made of naturally biodegradable materials, and is safe for humans and the environment (Widayati, 2017).

In addition, currently, many products also use QR Code technology in their packaging. If the use of environmentally friendly packaging materials can increase the image of the product, this QR Code provides convenience in the field of sales and can even become a marketing communication medium for the product. The main purpose of using a QR code is to provide important information about a product with a simpler appearance (Wijayanti, 2019). Many products still incorporate all the information at once into their packaging designs. This will confuse consumers. In addition, consumers usually want to read information more casually. Therefore, including a QR code that is directed directly to the product's website and social media pages can make product engagement with consumers much better.

## **2 PRODUCT POTENTIAL**

Kopi Celup by Sanshop is one of the MSME products in the Food and Beverage business center. Sanshop provides brewed coffee products with a dipping system like tea. This dyed coffee product is relatively new and has the potential to be developed into the superior product of MSME in Malang. Unfortunately, the owner of MSME Kopi Celup by Sanshop does not understand the potential of his product. So that the packaging and product image is not well designed.

In terms of function, the form of packaging they currently have is arguably ineffective for coffee products. Packaging in the form of an envelope with an opening on the side, and only closed using adhesive/tape. This of course can reduce the quality of the coffee in it. Good packaging should be able to protect the contents of the product safely, because the purpose of packaging is to keep the material being wrapped/covered, especially this is the product that is consumed. The shape of the packaging is also unattractive. Coffee product packaging (both beans and powder) has undergone many innovations recently and displays an aesthetic and attractive form / visual. It is difficult if you want to compete with other coffee products if the visuals offered do not leave a unique impression that attracts the attention of potential buyers. Packaging is the first known value, so the shape of the packaging should make an attractive appearance at first glance and be easy for people to remember.



Figure 2: Distribution of non-agricultural MSME business fields.

The packaging design is also less attractive than the packaging for various coffee products today. It has developed and experienced many advances in terms of originality and visual stand-out. The packaging design for this dipped coffee product does not provide anything special about this product nor does it highlight the added value of the product. The selection of packaging materials is also less effective. This coffee packaging is only made of glossy cardboard-like thick art paper. Maybe this is calculated to save production costs, but the consequence is that the quality The packaging design is also less attractive than the packaging for various coffee products today. It has developed and experienced many advances in terms of originality and visual stand-out. The packaging design for this dipped coffee product does not provide anything special about this product nor does it highlight the added value of the product. The selection of packaging materials is also less effective. This coffee packaging is only made of glossy cardboard-like thick art paper. Maybe this is calculated to save production costs, but the consequence is that the quality.

### **3 METHODOLOGY**

#### 3.1 **Previous Research Studies**

Research in the field of packaging design for MSME business people has often been done before. In 2019 this theme was used as a Community Service Activity with the title Designing Eco-Friendly Packaging Made from Corrugated and Application of Online Marketing Systems to Kiringan Traditional Herbal Products (Wijayanti, 2019). In this service activity, the MSME which is used as a case study is one of the MSMEs in the city of Bantul - Jogja. This dedication aims to: (1) Provide socialization on the design of environmentally friendly packaging made from corrugated traditional herbal products, (2) Provide socialization on the application of online marketing systems for traditional herbal products, (3) Provide the motivation to increase regeneration of herbal medicine sellers so that the image is as an image. The "central herbal medicine center" can be maintained, and at the same time can become a tourist village.

A similar theme has also been researched in 2020. The research entitled Consumer Perceptions of the Environmentally Friendly Material and Design of Crystal Guava Packaging (Psidium guajava). The purpose of this study is to determine consumer perceptions of packaging quality, and determine consumer perceptions of packaging design. determine consumer perceptions of primary and secondary packaging prices, and also determine consumer perceptions of satisfaction with packaging. The research was conducted in the Badung market and Sukawati market (Bali) (Mayura, 2020).

In Bandung, in 2014 a similar study was also conducted under the title The Potential of Making

Ecofriendly Packaging Products Case Studies in Bandung City. The research is looking for ways to reduce plastic waste and create alternative methods of making and implementing food packaging. This includes conducting research for new materials, alternative packaging methods, and implementing new designs in the food packaging industry (Wardhani, 2014).

From the tracing activities of previous research studies, it can be concluded that many research themes in the field of environmentally friendly packaging design have been carried out, but those that add technological variables, especially the use of QR Code, are still rare. In addition, research activities by taking the MSME case study in Malang City, especially the product of dyed coffee, have never been done before. Seeing this fact, we took the initiative to take the topic of designing environmentally friendly packaging designs and using QR Code technology for MSME products in Malang City.

### **3.2 Previous Research Studies**

In this design, a design method called "Design Thinking" is used. The purpose of using this method is so that a design process can occur that can solve problems accurately. All processes contained in this method are used starting from the phenomenon analysis process to the playtesting process. The Design Thinking method is described in a book written by Tim Brown and Barry Katz (2009) entitled Change By Design: How to Design Thinking Transforms Organizations and Inspires Innovations; and the Harvard Business Review journal entitled Design Thinking which was also written by Tim Brown (2008). Brown's team began by illustrating that comprehensive, human-centered thinking towards sustainable innovation is what is needed today. He said that this way of thinking is called design thinking. A Design Thinker must have empathy, integrative thinking, optimism (as value), experimentalism (in the heart), and (love) collaboration (Brown, 2008; Brown and Barry, 2009).

Brown then mapped 3 basic spaces for innovation to run or occur, namely: inspiration, ideation, and implementation, designing a production scheme so that it is used by the wider community. Brown provides 3 limitations that a person can use when in 3 innovation spaces, namely consideration of desirability (the factors that make something desirable), viability (the lifecycle of something), and feasibility (the possibility or rationality of something). The three processes of design thinking as proposed by Brown have now been developed and are retranslated into 5 processes of design thinking, here are the processes.

### 3.2.1 Empathise

Empathy is the focal point of the human-centered design process. The main aim of this process is to understand humans, in context with design goals. In this process, we are invited to understand how people do things and why they do them, what are the physical and emotional needs of people, how they think about the world, and what it means to them.

### 3.2.2 Define

After making observations in the empathy process, we have obtained some important information needed to carry out the design process. At this stage the designer is invited to think and interpret what things happen, the final goal is for the designer to gain insight from these phenomena. The main purpose of this process is for the designer to have a point of view on the issue.

## 3.2.3 Ideate

Ideate is a design process where the designer focuses on developing various kinds of ideas. This process is very important because at this stage various kinds of possible solutions to solve the problem will emerge, the designer must think "wildly" and not be limited to get various ideas to solve a problem.

## 3.2.4 Prototype

The prototype is a process where the ideas that have been obtained are built into a smaller scale design form. The purpose of this process is so that users can directly imagine the design solution they will receive because it will be easier for designers to explain their ideas in prototype form rather than in words.

### 3.2.5 Test

In this process, the designer tries out the design and gets feedback from both the user and other people who use it. The way to do this process is to invite the user to use the design process and use it in everyday life.



Figure 3: Flow map of the design thinking method.

## 4 RESULTS AND DISCUSSION

#### 4.1 Sustainable Packaging Design

Many traditional printing companies use chlorine bleach for certain types of printing. Toxic chemi- cals that store these bleached papers are released into water, soil and air. More specifically, paper emits methane gas when it breaks down. It is 25 times more toxic than CO2. In addition to harmful bleaching practices, many printing companies use technologies that release potentially dangerous amounts of ozone. For reference, ozone (O3) can cause fatal side effects on the human body in the form of highly unstable and reactive oxygen. In response, several printing companies have introduced sustainable printing processes. For more information on eco-friendly printing, continue reading for more information on how the Print Authority sets up examples of optimal environmentfriendly printing practices. Green printing is a method of using renewable energy resources to reduce energy use and greenhouse gas emissions, and to use recycled materials.

### 4.2 LED UV Printing

From the point of view of the environmental survivability of LED UV, it is a very "green" printing method. First, using far less power than traditional print-drying technology, the instant on / off feature reduces standby power between jobs and reduces overall CO2 emissions. Second, the instant drying process means that no anti-set-off powder spray or sealing coating is required.

QR code is a type of matrix code or twodimensional barcode developed by Denso Wave, a QR code is a form of barcode evolution from one dimension to two dimensions (Widayati, 2017). It is an advanced-level barcode and helps you store information. In contrast to the barcode, which only stores information horizontally, QR codes are capable of storing information horizontally and vertically, therefore QR codes can automatically accommodate more information than barcodes. (Wave, ) And besides textual content, it even allows you to add URLs, videos, documents, and images to it. This creates a room for enormous possibilities.

#### 4.2.1 To Reduce Paper Consumption

The QR code allows you to encode as much information as you need. This means you can switch from printed documents to digital copies using QR codes. For example, each product provides a printed user manual that explains how to assemble and use the product.

#### 4.2.2 To Reduce Printing and Setup Costs

You can use the Dynamic QR Code to edit the data even after you create it, but the QR code is retained. This means that there is no need to reprint. The QR code remains scannable even if it is damaged by up to 30.

#### 4.2.3 To Ensure a Sustainable Marketing Strategy

Consumers today are always worried about what goes into their purchased products. They are attracted to more sustainable and "environmentally friendly" products than non-environmentally friendly products. Consumers today demand transparency and visible evidence from the companies they believe in.

# **5** CONCLUSION

As a result of the analysis, it was concluded that there are two eco-friendly packaging materials that can be used. The two materials are divided into primary packaging materials or primary packaging materials and secondary packaging materials and secondary packaging materials. This eco-primary packaging will be used for the outer packaging of products, that is, the packaging of the main packaging box, and the secondary packaging is the packaging material for the dyed coffee products inside. The ecofriendly material classification is based on the fact that each floor of the packaging has different product functions, so the need for the packaging material type is also different.

### 5.1 Primary Packaging

Originally, the idea of using eco-friendly packages was born among foreigners. Green packaging for MSMEs as an opportunity to develop this trend and follow it to keep pace with global competition. Considering that the problem of product waste, especially the risk of waste from plastic waste, is rapidly growing in the world today, the use of ecofriendly packaging is a must-have for all industry players in Indonesia.

Available as the main packaging material for this stain coffee product, this environmentally friendly packaging material is recycled corrugated cardboard covered with biodegradable plastic. Corrugated cardboard is chosen because of its tough and durable properties to more optimally hold the product inside. On the other hand, this biodegradable layer is a layer that prevents the package from peeling or tearing easily when exposed to water or humid air.

The price of still expensive biodegradable plastic packaging needs encouragement from both consumers and governments. For example, with govern- ment support, we are changing the use of green packaging by creating regulations that encourage the use of packaging in businesses. On the other hand, it is necessary for consumers to pay attention to the purchase of products using these ecofriendly packages.

#### 5.2 Secondary Packaging

There are many types of packaging materials from natural fibers that can be used, such as corn fiber, coconut fiber, sugar cane fiber, banana stem fiber, water hyacinth leaf fiber, and also corn husk fiber. However, based on the researchers' observations, the material that best fits the characteristics and needs of the coffee-dip packaging is to use corn kernels. The use of corn kernels fiber as tea bags is very popular. Many packaging companies have also produced this environmentally friendly material so that the price is no longer expensive. In addition, the bag material with corn kernels can also use heat sealing or the heat lock method, so you no longer need to use staples, which of course becomes more environmentally friendly. The corn kernels have also been tested for heat resistance and can lock the product inside, so they do not slip out.

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