Optimizing Product Photo for Effective e-Commerce

Tri C. Kusumandyoko[1], Marsudi Marsudi[1], Muh. A. Islam[1], Muhamad R. Abidin[1]

[1] Universitas Negeri Surabaya, Surabaya, Indonesia
tricahyo@unesa.ac.id

Abstract. The use of images as a powerful tool in digital marketing has gained significant recognition, particularly in the context of online food delivery platforms. The COVID-19 pandemic has accelerated a shift from conventional to digital marketing, compelling marketers to prioritize image-based marketing strategies in e-commerce. This study aims to design a portable photo-light box prototype to enhance the visual appeal of food products marketed online. The research employs the 4D model (Define, Design, Develop, and Disseminate) as outlined by Thiagarajan (1974), providing a systematic approach to prototype development. The Define phase involves identifying the needs and challenges faced by street vendors in capturing high-quality images of their products. During the Design phase, a detailed plan for the photo light box is created, considering portability, affordability, and ease of use. The development phase focuses on constructing and testing the prototype to ensure it meets the desired criteria. Finally, the dissemination phase involves introducing the prototype to the target users, which, in this case, are street vendors in Surabaya, specifically those selling "Ayam Kampus" via online food delivery platforms. Data collection methods include in-depth interviews, observations, documentation, and literature review. The study's findings indicate that the prototype photo light box significantly improves the quality of food images, making them more appealing and marketable, ultimately benefiting street vendors by increasing their sales potential.

Keywords: Image-Based Marketing, Digital Marketing, Photo Light Box, Food Photography.

1 Introduction

Micro, Small, and Medium Enterprises (MSMEs) have become an important pillar of the Indonesian economy. The government through the National Medium-Term Development Plan has planned for the growth of new entrepreneurs to increase by 4% in 2024 [1], [2], [3]. Deputy for Micro Enterprises of the Ministry of Cooperatives and Small and Medium Enterprises Eddy Satriya said that MSME is one of them supporting the Indonesian economy. It was proven that when Indonesia experienced two crises, MSMEs were the most able to survive [2]. He stated this while giving a speech at the Vocational Training activity for MSMEs in the food and beverage sector in Bogor, West Java, which was held on 27-29 May 2021.

The COVID-19 pandemic in recent years has had a direct impact on various aspects of the community's economy, especially MSMEs. Many MSMEs have

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decreased their turnover, however, there are several MSMEs still strong enough to survive including MSMEs in the food and beverage sector [4], [1]. To further increase market penetration, training, and mentoring programs for MSMEs in this sector are also consistently held by various parties that work in synergy with each other. Workshops on business potential, food processing hygiene, digital marketing to the importance of product photos to support digital marketing. Based on a survey from The World Bank IBRD-IDA regarding the impact of the pandemic in Indonesia, it turns out that as many as 42% of MSMEs use digital platforms in anticipation of social distancing policies [2]. The platforms used range from social media, market places to food delivery platforms [1].

Various advances in purchasing and selling activities using internet media or online media must be chosen by companies to offer their products to consumers. One of the buying and selling media online due to the influence of technological advances is e-commerce [1]. Based on figure 1, in Momentum Works' research entitled 'Food Delivery Platforms in Southeast Asia', the gross merchandise/transaction value or GMV of food delivery in Southeast Asia is estimated at US$ 11.9 billion in 2020. Indonesia contributes the most, as seen in the Databoks below (see Fig. 1).

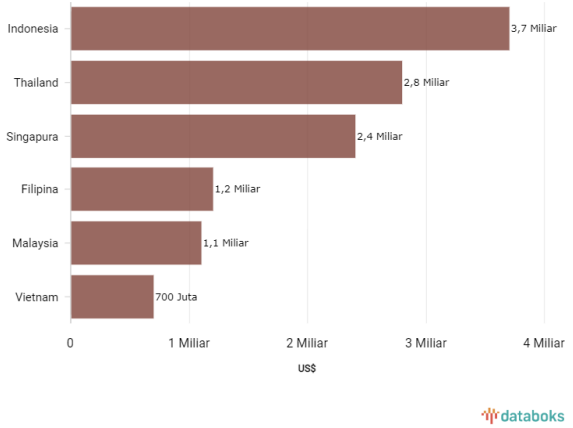

Fig. 1. Comparison of gross transaction values (GMV) in Southeast Asia in 2020.

Servanda et al. researched the photos of the products displayed by sellers have a positive influence on the interest buy male and female consumers on the marketplace Shopee, because more and more nice product photos displayed by the seller on the Shopee marketplace, the more people are interested in buying the product [5]. There has been a lot of research on online consumer preferences for food photos [6], [7], [8], [9]. From this research, not many have chosen MSMEs as research subjects. One of the food and beverage MSMEs that is adapting to the impact of the pandemic is the Ayam Kampus Surabaya. This micro business is managed by Panji Bagas Setiyo Abdi, S.Pd., and has been operating since 2014. Ayam Kampus Surabaya is one of the food and beverage MSMEs that has been able to survive during the COVID-19 pandemic even though they are also feeling the impact of the pandemic and business competition (interview, 2022). The solution implemented by Ayam Kampus Surabaya

is to try selling digitally through the food delivery application, in addition to continuing to run nine outlets spread across the city of Surabaya [10].

The development of the Ayam Kampus Surabaya marketing system to digital platforms (online food delivery application) creates new challenges because an important factor in digital marketing is visual quality that meets standards. The lack of maximum display of product photos on GoFood makes it difficult for Ayam Kampus Surabaya to compete with competitors. So far, photos of food and drinks are made sober and also taken from the internet so they are not the same as what is being sold. Meanwhile, the key to brand awareness in digital marketing is representative product photos [11]. Therefore the Ayam Kampus Surabaya needs an appropriate solution that can maximize its digital marketing system. Reflecting on the existing problems, the research team proposed a prototype in the form of a portable photo box that was easy to use but effective in producing representative product photos.

2 Methods

To improve food photography for Ayam Kampus, one of the Micro, Small, and Medium Enterprises (MSMEs) in Surabaya, this research used Thiagarajan's (1974) 4D model (Define, Design, Develop, Disseminate) as a guide for the prototype of a portable picture lightbox [12], [13]. The 4D model offers an organized and methodical approach to prototype development and testing. An abridged description of every stage is provided below:

a) Define Phase: In this stage, the primary requirements and obstacles that street sellers must overcome to take excellent food photographs are identified. Through the use of observations and interviews, the research establishes the precise problems—such as inadequate illumination and blurry photos—that the photo light box is intended to solve.
b) Design Phase: During this phase, an accurate model for the lightbox is made. Features that guarantee portability, affordability, and ease of use are the main focus of the design. The researchers take into account the actual requirements of street vendors who might not have a lot of room or money.
c) Develop Phase: In this stage, the design plan is followed to build the prototype. After that, tests are conducted to make sure it achieves the desired outcomes, which include enhancing photo quality and making it easier for non-professional photographers to use.
d) Dissemination Phase: A collection of vendors is presented with the lightbox for practical testing. During this stage, the vendors are instructed on how to operate the lightbox, their input is gathered, and the design is improved in light of their observations. The final step comprises examining the influence of the light box on the quality of food photos and the merchants' sales success.

With the use of these techniques, the lightbox prototype will be built in an iterative and user-centered manner, addressing real-world issues and offering useful solutions for street vendors.

3 Results and Discussion

Several studies have taken the subject of MSMEs and online food delivery services as well as research on the relationship between food photos and consumer preferences [14], [15]. This research has similarities but different objects and research methods.

The 4D paradigm (Define, Design, Develop, and Disseminate) proposed by Thiagarajan (1974) is used in this work to direct the methodical creation of a prototype portable photo light box [12], [13]. Every stage of the model helps to improve the prototype to satisfy the particular requirements of street vendors that sell Ayam Kampus via online food delivery services. The process is meant to improve food photography, which is important for increasing the products' online marketability. In more detail, the development research process can be described as follows. There are several techniques to obtain the data needed in research as follows;

1. Define

The goal of the Define phase is to determine the requirements and difficulties that street sellers encounter while trying to take excellent pictures of their cuisine. This stage includes a comprehensive needs study that makes use of qualitative techniques like:

a) Thorough interviews with Ayam Kampus Surabaya to learn about their present photographic methods, obstacles, and limitations (such as poor lighting and a shortage of equipment).
b) Observations on the usual photography techniques used by sellers, with an emphasis on environmental elements such as lighting and space constraints.
c) Review of the literature on the need for high-quality images for digital marketing in the food business, especially in the wake of COVID-19.

The data acquired in this stage is crucial for developing requirements for the picture lightbox, namely those related to portability, cost, and simplicity of use. These standards guarantee that the finished product is compatible with small-scale suppliers operational environment.

2. Design

The practical and aesthetic components of the portable lightbox are developed during the Design phase, taking into account the precise needs and limits that were determined during the Define phase. Among the steps in the design process are: drawing up and testing the initial design in response to vendor comments on its portability, size, and ease of assembly (see Fig. 2).

a) The use of inexpensive, strong, and lightweight materials—like cardboard or foldable plastic—ensures that the lightbox is both reasonably priced and portable.
b) Lighting solutions are essential for minimizing shadows and guaranteeing uniform light distribution. LED lights are chosen for their portability and energy economy.
c) The application of user-centered design principles guarantees that suppliers with limited technical skills can effortlessly construct and dismantle the lightbox.

Currently, stakeholders can offer input on the prototype through 3D representations made with digital modeling tools, before the start of actual construction.

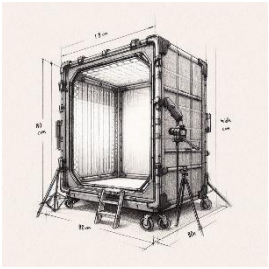

Fig. 2. Sketch and drawing prototype.

3. Development

The lightbox prototype is built and tested during the Development phase. To meet the previously set criteria, the design is iterated and refined throughout this stage. Important actions consist of:

a) Construction of the prototype: Selected materials and design guidelines are used to make the lightbox. The finished product is made to be lightweight, foldable, and user-friendly (see Fig. 3).

Fig. 3. Portable photo box assembly process.

b) Testing of prototypes: Vendors are welcome to test the lightbox by submitting images of their culinary items for testing. These tests concentrate on the lighting setup's efficacy, mobility, and convenience of use.

c) User feedback: Vendors offer their qualitative assessments of the functioning of the prototype; any problems or difficulties they face are resolved through design changes.

d) Quantitative evaluation: By contrasting food photos taken with and without a light box, the brightness, clarity, and overall visual appeal of the former are assessed.

4. Dissemination

In the dissemination phase, the focus shifts to the real-world testing and introduction of the portable photo light box to the target audience, street vendors selling Ayam Kampus in Surabaya through online food delivery platforms. This phase is crucial as

it determines the practical viability, effectiveness, and user satisfaction with the prototype. Several specific actions are involved in the Disseminate phase:

a) Choosing Vendors

The selection of the Ayam Kampus suppliers who will take part in the pilot test is the first stage in this phase. Included in the selection criteria for vendors are; vendors whose main source of revenue is meal delivery platforms, vendors that presently struggle with food photography (e.g., dim lighting, hazy photos), willingness to engage in a test and provide comments. To ascertain the requirements of vendors and validate their interest in taking part, an initial questionnaire or interview may be carried out. By taking this step, the pilot test's participating vendors will be represented as a representative sample.

b) Instruction and Exhibit

Once the vendors have been selected, they undergo a training session to familiarize them with the use of the portable light box. The training includes:

1. Demonstrating how to put the light box together and operate it while making sure that it adheres to the ease-of-use criterion.
2. Giving them pointers on how to take the greatest possible pictures of their food products by maximizing lighting and angles.
3. Providing advice on how to give their products a unified appearance, which improves customer trust and brand awareness on digital platforms.

Hands-on demos are vital at this step, allowing vendors to try out the light box with their culinary items under supervision. This phase guarantees that vendors can successfully incorporate the light box into their regular business processes.

c) Pilot Testing

Following the training session, merchants use the portable photo light box to take pictures of their Ayam Kampus products for online food delivery services like ShopeeFood, GrabFood, and GoFood for a predetermined amount of time, such as one to two weeks (see Fig. 4). Included in this pilot test is:

1. Vendors can directly compare the quality of their photos by taking pictures of their products both with and without the lightbox.
2. Gathering input from the vendors over this time frame via questionnaires, in-person or online interviews, and observation of their uploads of photos to delivery platforms.
3. Researchers can obtain important information at this point on the light box's performance in actual settings and how quickly suppliers can adjust to using it.

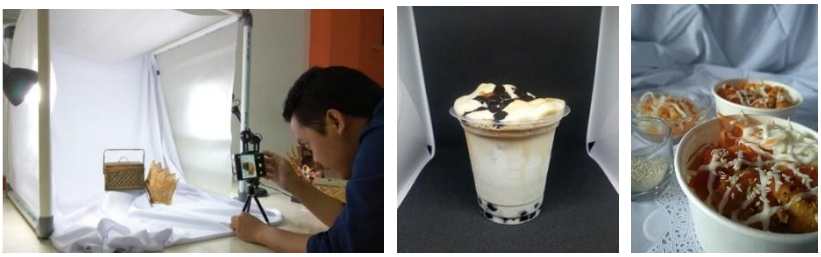

Fig. 4. Pilot testing phase with beverage product objects.

d) Gathering Information and Input
To determine how well the lightbox enhances product photos, both qualitative and quantitative data are gathered both during and after the pilot test. Methods for gathering data include:
1. Interviews: After the test, speak with suppliers to get their opinions on the light box's portability, usefulness, and effect on their photos.
2. Analysis of photo comparisons: evaluating the food photos that were shot both with and without the lightbox, paying particular attention to enhancements in visual appeal, brightness, and clarity. The impact can be measured using metrics like customer interaction (clicks, orders) on food delivery systems.
3. Surveys: Use Likert-scale questionnaires to gauge how satisfied vendors are with the lightbox. Include questions about features like portability, simplicity of usage, and perceived image quality increase.

4 Conclusion

The development of a portable photo light box prototype for street vendors selling Ayam Kampus in Surabaya successfully addressed the challenges of capturing high-quality product images for online platforms. Using the 4D model, the research identified vendors' needs, designed a solution tailored to their constraints, and tested the prototype in real-world conditions. The results showed significant improvements in image quality, resulting in better online visibility and increased sales potential. Key benefits included improved visual appeal, consistent lighting, and enhanced ease of use, all of which helped vendors showcase their products more effectively. While minor challenges, such as material durability and instruction clarity, were identified, the overall user experience was positive. The light box’s portability and affordability empower small vendors (MSMEs), allowing them to compete more effectively in the digital marketplace. This study demonstrates the vital role that affordable, practical tools can play in enhancing digital marketing for small businesses, with broader implications for scaling similar solutions across different regions.

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