

Designing Compact Picnic Support Products with a Modular System

Cynthia Eveline Suryadi

Department of Product Design, Faculty of Design,
Universitas Pelita Harapan, Indonesia
cynthiaeveline22@gmail.com

Olivia Marsha

Department of Product Design, Faculty of Design,
Universitas Pelita Harapan, Indonesia
olivia.marsha@lecturer.uph.edu

ABSTRACT

The Covid-19 pandemic has significantly impacted mental health, increasing feelings of sadness, stress, anxiety, and isolation. Remote work and virtual interactions, though essential, did not fully alleviate these challenges. Trend Watching's 2023 predictions, "Age of Healing" and "Joyning," underscore the search for healing and meaningful connections. According to a survey by the United Nations World Tourism Organization, Indonesians average 2.6 picnics per year, far fewer than Malaysia's 10.3. The logistical challenge of transporting numerous picnic items highlights the need for tools to streamline the picnic experience in Indonesia.

This research employs the Research through Design (RtD) approach, involving iterative cycles of design, prototyping, and testing. Initially, a literature review gathered information about picnics. Observations and staff interviews in the Jabodetabek area identified design opportunities and community preferences. A survey assessed participants' knowledge of picnics, challenges faced, and essential items. An experimental picnic and Focus Group Discussion provided firsthand insights. Data from these activities guided the development of design concepts, which were prototyped, tested, and refined into the final design.

The solution addresses picnickers' challenges with a lightweight picnic bag featuring separate compartments for essentials. It ensures food protection from temperature fluctuations, easy transport for five people, and cleanliness for utensils. This design enhances the practicality of carrying picnic essentials, offering a modular system that allows users to customize according to their needs. Beyond meeting design goals, the product is feature-rich and competitively priced compared to similar market options.

Keywords: Picnic, Compact, Modular, Efficiency, Mobility

INTRODUCTION

The Covid-19 pandemic profoundly impacted mental health, causing stress, anxiety, and isolation. Remote work and interaction increased technical advancements but worsened mental health issues and feelings of isolation.

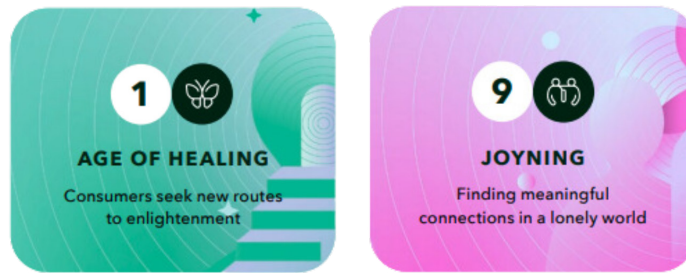


Image 1 2023 Trend. (Source:Trend Watching, 2023)

According to Trend Watching (2023), two themes for 2023 are “Age of Healing” and “Joyning.” “Age of Healing” refers to finding hobbies or methods for enjoyment and healing. “Joyning” reflects people’s loneliness, motivating them to seek deeper, more meaningful relationships.



Image 2 The Lack of Picnics in Indonesia. (Source:Kompas, 2023)

A survey by the United Nations World Tourism Organization shows that Indonesians average 2.6 picnics per year, compared to Malaysia’s 10.3. Some officials in Indonesia’s current administration are promoting picnics as a way to refresh minds (ANTARA, 2023).

LITERATURE REVIEW

Picnic Activity and Equipment

A picnic is an outdoor activity commonly held in parks, beaches, hillsides, or other natural settings. Picnickers use mats to protect clothing from damp or dirty surfaces. The primary focus is sharing easy-to-carry, prepare, and eat foods that are durable and not soupy. Additional supplies like plastic bags, wet and dry tissues, hand sanitizer, cleaning supplies, and bug repellent are typically packed for convenience.



Image 3 Picnic Basket. (Source:Tokopedia)

There are several picnic support products, including picnic baskets or bags designed to facilitate carrying all necessary gear. These items come in various types, such as rattan baskets, which have been popular since the inception of the term “picnic” (see Image 1). These baskets usually feature a single main compartment to hold all picnic essentials, equipped with a central rattan handle and two side coverings.



Image 4 Rattan Picnic Basket Innovation. (Source:Alibaba)

Later, a variant of the rattan basket was introduced with an additional open compartment inside to store silverware (see Image 2). Shaped like a suitcase, it retains a single section for all picnic essentials.



Image 5 Picnic Bag. (Source:Alibaba)

Another innovative example is the picnic bag, featuring a large compartment with an inner aluminum foil layer to maintain food temperature (see Image 3). This bag also includes multiple slim pockets on its front and sides for storing other picnic essentials.

Many picnic products on the market fail to address the need for lightening the load and enhancing mobility.

Modularity

Modular product design involves easily disassembled, assembled, and configured modules, allowing the product to adapt to user needs with simplicity.

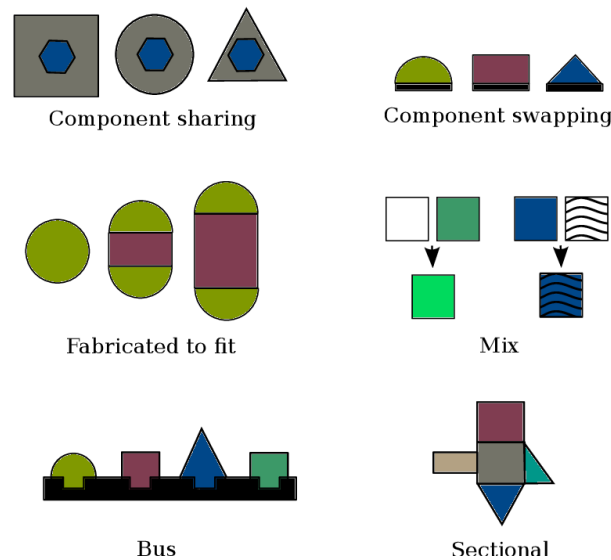


Image 6 Types of Product Design Modularity. (Source:Abernathy and Utterback, 1978)

There are several types of modular systems used in product design (see Image 4). Component-sharing modularity uses a core module to construct various products. Component-swapping modularity allows for selecting different characteristic modules to create variant products within a product family. Cut-to-fit modularity adjusts module dimensions to suit customer needs. Mix modularity combines components with different characteristics to create unique blends. Bus modularity matches components from a set to create product variants. Sectional modularity enables mixing and matching components from a set to configure product variants in various ways.

From our literature review, the question arises: How can we design modular picnic support products to alleviate transportation and logistics challenges?

METHODOLOGY

Research through Design (RtD) involves designers creating and using artifacts to generate knowledge and understanding (Godin & Zahedi, 2014). Through designing, prototyping, and gathering user feedback, researchers gain insights,

especially in areas where traditional research methods are limited and design plays a crucial role in problem-solving.

Several steps were taken during the product's design process to understand customers' picnic-related issues and challenges. Initially, general picnic information was gathered from literature sources, followed by observations at picnic sites to gauge public interest, location specifics, needs, and barriers. Interviews with picnic venue staff provided insights into attendee customs and preferences. Surveys were conducted to gather public knowledge, customs, challenges, and concerns. A focus group discussion and an experimental picnic further explored emotional and practical challenges. Data from these methods were analyzed to pinpoint issues and guide the development of design concepts and product requirements. Prototyping followed to create an initial product model, refined to meet market needs and expectations.

Observation and Interviews

These observations and interviews were conducted at various locations such as Scientia Square Park in Tangerang Regency, Tebet Eco Park in South Jakarta, and GBK City Forest in Central Jakarta.



Image 7 Picnic Observations. (Source: Private Document, 2023)

These observations and interviews aimed to assess the popularity of picnicking in Jakarta, the condition of picnic sites, typical picnic essentials, and related information. Insights were gathered from staff members at these locations.

Focus Group Discussion

Following a picnic attempt in a park near a friend's apartment, a focus group discussion was conducted with the author and four other friends.



Image 8 Picnic Experiment. (Source: Private Document, 2023)

During experimental picnicking activities, the author used a rattan picnic basket, brought easy-to-consume foods, and packed eating utensils like plates, glasses, and forks. Additionally, a picnic mat and 1.5-liter bottles of drinks were brought along. However, a common challenge identified was the efficient transportation of picnic essentials, underscoring the need for more streamlined carrying solutions.

Questionnaire

The questionnaire was distributed multiple times to respondents of various ages and backgrounds in the Jabodetabek area and surrounding regions. The first round focused on interest in picnics, awareness of picnic locations, and picnic activities. The second round identified challenges and obstacles experienced during picnics. The third round gathered details about typical picnic necessities and community priorities for solutions. Below are the summarized results from the questionnaires.

Table 1 Problems that Arise from the Results of the Questionnaire and The Results of the Analysis. (Source: Private Document, 2023)

No.	Problems	Analysis Results
1.	The bag cannot accommodate all picnic needs	Bag is too small
2.	The lunch box is too big / takes up space	
3.	The items in the basket are messy	The bag only has 1 compartment
4.	Difficulty finding items in the basket	
5.	Spilled food	
6.	Food is no longer enjoyable to consume	There are extreme temperature changes in food
7.	Cutlery is less hygienic	There is no special place to put cutlery
8.	Used cutlery contaminates other items	

The table summarizes challenges faced by picnickers and their analysis results (see Table 1). Using the “5 Whys Method,” it was determined that the primary issue was the bag’s small size and single compartment design. This led to mixed-up items, difficulty in organizing and accessing items, temperature fluctuations affecting food quality, and hygiene concerns due to cutlery contaminating other items.

RESULT & DISCUSSION

Several issues identified prompted the exploration of multiple potential solutions for this product. One solution is to enhance the versatility of the picnic pack. Various sizes and weights were considered to ensure the bag meets diverse needs.

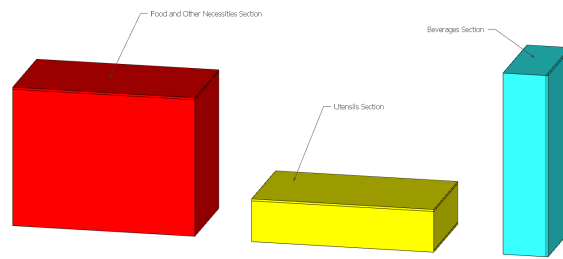


Image 9 Bag Sections According to the Categories. (Source: Private Document, 2024)

To address disorganization and improve item accessibility, another option is to design picnic bags with multiple compartments categorized by needs. These bags could include sections for food, utensils, beverages, and other essentials.



Image 10 Food Storage Bag with Aluminum Foil Foam. (Source: Private Document, 2024)

Another option is a food storage bag that maintains optimal food temperature during transportation. Research identified the best materials for thermal insulation, including polyurethane, aluminum foil with foam layers, and aluminum insulation with air bubbles. Aluminum foil with a foam layer was chosen for its accessibility, ease of shaping, and robust foam layer.



Image 11 Utensils Compartment. (Source: Private Document, 2024)

The fourth option includes an additional compartment for storing silverware, such as plates, spoons, forks, and glasses, ensuring they remain clean and uncontaminated. This design allows users to carry only what they need, with compartments made

from water-resistant, easy-to-clean polypropylene (PP) plastic, chosen for its strength, light weight, and heat resistance. A cover with a sliding mechanism and lock maintains cleanliness and prevents accidental opening.

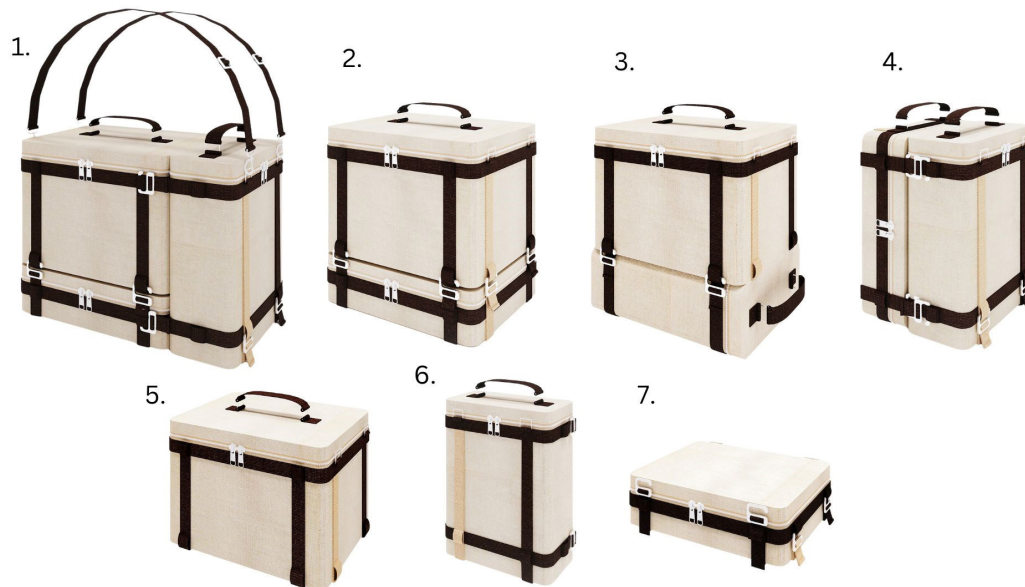


Image 12 Picnic Bag Modular and How to Carry. (Source: Private Document, 2024)

Adopting a modular approach is the solution. Research into the bulky and heavy burden of picnic necessities, especially for groups of five, led to this system's development. These three picnic bags offer four adjustable configurations for one to three people. Options include using one bag individually, connecting two bags, or connecting all three bags together.

In the initial configuration, all picnic bags are combined into one unit for storing food, beverages, and cutlery, with straps on both sides. The second configuration has two bags for food and cutlery. The third configuration includes a bag for food and drinks. The fourth configuration is for drinks and cutlery. Each bag can also be used individually: one for food (number 5), one for drinks (number 6), and one for cutlery (number 7).

CONCLUSION

The product consolidates various picnic needs into a versatile series, addressing barriers to picnicking. Its modular design supports customization based on carried items and can serve up to three individuals. The bag also maintains food temperature and cleanliness. However, scaling production cost-effectively remains a challenge due to technology and resource needs.

In conclusion, the modular picnic bag aims to increase picnicking in Indonesia by addressing logistical and transportation challenges. This encourages more individuals and families to enjoy outdoor spaces, fostering a greater appreciation for nature and leisure.

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