

Received: May 2023 Accepted: June 2023

DOI: <https://doi.org/10.58262/ks.v11i02.110>

## The Impact of Packaging Identity Design on Customer's Buying Decision: A Case Study of a Community Enterprise in A Developing Economy

Janyut Srihirun<sup>1\*</sup>

### Abstract

*The objectives of this research were: 1) To study the problems and needs in design of bamboo odor-absorbing charcoal packaging, 2) To design the identity on bamboo odor-absorbing charcoal packaging and, 3) To study the influence of personal factors on packaging identity on the decision to purchase bamboo odor absorbing charcoal, using a sample of 104 people together with research tools including, unstructured interviews and questionnaires. The results showed that bamboo odor absorbing charcoal packaging was not suitable for distribution and transportation. Therefore, in this research it was designed in 4 different forms based on its intended usage and characteristics. The aim was to create a structure packaging that is functional, appropriately sized, and easy to arrange for distribution and transportation. The graphic pattern used in the packaging design was the Bunnak flower woven fabric, a local handicraft from Phichit Province Thailand, to be redesigned as the background on the packaging by using the Bunnak flower, which is the flower of Phichit Provincial tree, combined with illustrations that showing odor-absorbing charcoal. The results reveal that, personal factors on packaging identity such as gender, age, education and income, have a significant influence on purchasing decisions regarding odor-absorbing charcoal, significance at a level of 0.05. However, the personal's occupation factor does not significantly influence purchasing decisions at the 0.05 level. Different personal factors, including gender, age, occupation, education, and income, are prime determinants in driving the purchase of these products.*

**Keywords:** Packaging, Identity Design, Community Enterprise Group, Personal Factors, Purchase Decisions

### Introduction

Thailand's topography and climate are well-suited for the growth of various plants, including bamboo. As such, the country has an abundance of bamboo products, both naturally occurring and cultivated. As a result, some farmers combine bamboo with local wisdom to further for their use, by creating products from bamboo charcoal to absorb odors, which is a local material that is abundant in Phichit Province. Moreover, the Community Enterprise Group aims to increase income for people in the community, which has grouping themselves together of about 20 people. The group was registered in B.E. 2548 with the idea of burning bamboo that is abundant in the community into charcoal that can absorb odors and then packing them into cloth bags to be used for absorbing various odors. It can be multi-functional and available in a variety of sizes, such as odor absorbing in shoes, air-conditioned rooms, wardrobe, car and toilet, etc. The target buyers are housewives and working-age people. In addition, the product was selected as a five-star OTOP (One Tambon One Product) product in B.E. 2562, at the same time, odor-absorbing charcoal products also meet the Community Product Standard or CPS. 180/2560 in B.E. 2562, However, entrepreneur's requirement is to redesign their packaging by using 4 types of odor-absorbing charcoal products which are: 1) The kit that can be used on both women's and men's shoes.

---

<sup>1</sup> Associate Professor, Product and Package Design, Department of Art and Design, Naresuan University  
Faculty of Architecture, Art and Design

\* Corresponding author. Email address: [janyuts@nu.ac.th](mailto:janyuts@nu.ac.th), [kajanyut@hotmail.com](mailto:kajanyut@hotmail.com)

2) Refrigerator appliance kit, wardrobe kits. 3) Car interior kit and, 4) Bathroom kit. In summary, the issues that both researcher and entrepreneur willing to develop on new packaging are as follows:

1. Develop and design packaging as well as sealing process of odor-absorbing charcoal packaging to be suitable with the functions in 4 forms and, 2. Design the structure and graphics on the packaging to be beautiful and accurate according to the standards of CPS. Local materials are combined into packaging in a new way to have the identity of Phichit Province, such as: The use of Bunnak flower pattern and water hyacinth rope in the box structure and graphics on the packaging. However, the existing bamboo odor-absorbing charcoal packaging structure is inconvenient to use. Due to charcoal leakage during use can cause odors to slip out from the original packaging, inability to maintain the extracted odor because the preventing limitations of the packaging itself. Furthermore, the original packaging lacks aesthetics design including less variety of functional use, such as, charcoal bags cannot fit in shoes, lacks attractive graphics and uniqueness style, so when it comes to selling then it will affect the income for community enterprises according to product data analysis by researcher. Therefore, the researcher foresees to solve the problem of product use by designing the packaging structure as a foldable carton box. The product is assembled utilizing an internal bag that includes a small aperture to impede charcoal dislodgement from the bag. However, it still has good odor absorption, as well as the folding box layout also makes it convenient to distribute, transport and to use products, especially selling products through online channels, which have a wide customer base and are easily accessible in the era of the coronavirus 2019 pandemic (COVID-19). Consumers are increasingly demanding to purchase goods and services online, which has become an important purchase channel for nowadays consumers. This research aims to redesign the identity on the packaging to meet the needs of working age groups, both males and females, who are interested and into natural products, leading to purchasing decisions. According to Polyakova (2013) said that, social, personal, cultural, and psychological factors, have a significant influence on consumers' brand perceptions purchasing decisions, with researcher interested in personal factors including, gender, age, education level, occupation, and income. Identity on bamboo odor-absorbing charcoal packaging like, how it is influences the purchasing decisions of the target audience, in order to be used as a guideline for packaging design in accordance with the needs of the target group. This research has designed the identity on the packaging to recognize the culture by connecting local identities, to create a different image for bamboo odor absorbing charcoal that can show the identity of the product in a unique local form and show the source, as well as not have to compete directly with industrial products. How does it influence the purchasing decisions of the target audience? In order to be used as a guideline for packaging design in accordance with the needs of the target group. The research has designed the identity on the packaging to recognize the culture by connecting local identities. To create a different image for bamboo odor absorbing charcoal that can show the identity of the product in a unique local form and show the source, as well as not have to compete directly with industrial products Steenis et al. (2017) found that, graphic design on packaging influences consumers' perception of sustainability and other aspects such as, product quality, health, comfort, naturalness, etc. In addition, Srivastava et al. (2022) research found that, packaging design is critical to branding, especially in the cosmetic industry, and can also help express a brand's identity when packaging must be displayed on retail shelves. Different designs, shapes and packaging applications can help differentiate the market. Furthermore, Malešević & Stančić (2021) found that, consumers satisfied of packaging with novel shapes and simple graphics that can add value, research has shown that packaging aesthetics influence consumers' perceptions of products, highlighting the critical role of packaging in marketing.

For this research, the researcher will study the identity of Phichit Province, whether it is use of green color and the Bunnak flower, which is the flower of Phichit Provincial tree. Together when the local materials appear on the packaging, the product has an identity that can expresses itself, as

well as the structural design of the box that is different in shape from the market, and also indicates different functional characteristics, making it easy to distinguish each type of product. This is expected to create added value and make consumers more interested and remember both the brand and the product. As mentioned above. Therefore, the researcher carried out the work with the objective of studying the problems and needs of designing bamboo odor-absorbing charcoal packaging, to design the identity on bamboo odor absorbing charcoal packaging and to study the influence of personal factors on packaging identity on the decision to buy bamboo odor absorbing charcoal. The researcher selected charcoal products from bamboo scent extractor from Chanhom Herb Group community enterprises in Phichit Province as a case study. The concentration is on designing packaging to suit the target group of working people, both males and females, who prefer natural products to be modern. It is easy to use and represents the identity of the province as well as adding value to the product by presenting illustrations of odor absorbing charcoal. Green color and Bunnak flowers are combined with local materials. This is another way to increase the value of the product and is one of the channels that will help raise the standard of Thai packaging design to be accepted by both domestic and international markets. This research was conducted under the hypothesis of personal factors consist of; gender, age, education level, occupation and income, including the identity design on the packaging that influences consumers' decision to buy bamboo odor-absorbing charcoal.

### **Objectives**

1. To study the problems and needs of bamboo odor-absorbing charcoal packaging design.
2. To design the identity on bamboo odor-absorbing charcoal packaging.
3. To study the influence of personal factors on packaging identity on the decision to purchase bamboo odor absorbing charcoal.

### **Methodology**

#### **Population and Sample**

The research population included bamboo odor absorbing charcoal producers of Chanhom Herb Group community enterprises, Taphan Hin District, Phichit Province, Thailand, consumers interested in bamboo odor-absorbing charcoal products in Phichit Province and nearby areas, and packaging experts in the public sector. The sample used in the research totaled 104 persons, including the head of the bamboo odor absorbing charcoal manufacturer from Chanhom Herb Community Enterprise group, Taphan Hin District, Phichit Province, 1 person, consumers in Phichit Province and nearby areas 100 persons, government packaging specialist 3 person, the selection of a sample of the population and related experts used a Purposive Sampling Method, in which the researcher set criteria for selecting consumer groups and groups of experts to share opinions and answer questionnaires. The consumer group is women or working men who have purchased or used bamboo odor absorbing charcoal products before, and the expert group is 2 people who have experience and expertise in designing identity on packaging for at least 5 years, and 1 expert in odorizing charcoal must have expertise in the production of odorizing charcoal for at least 5 years.

#### **Research Tools and Data Collection**

The research tools consist of unstructured interviews and questionnaires created by the researcher to collect data for the purpose as follows: Step 1) The researcher conducted an unstructured interview to interview the manufacturer about the problems and needs of bamboo odor-absorbing charcoal packaging as shown in Figure 1, an example of an unstructured question is: 1) What do you think about

existing packaging? 2) What kind of packaging do you need? and why? etc.

**Figure 1:** Interview about the problems and needs of bamboo odor-absorbing charcoal packaging.



And the Check List questionnaire is used to inquire about the problems and needs of consumers to guide the design of identity on bamboo odor-absorbing charcoal packaging, then analyze the results and record the data in the packaging design. Examples of multiple-choice questions include: When people think of Phichit Province, what would they think of, if it had to appear first on the packaging of odorizing charcoal? ( ) Bunnak flower ( ) Bunnak flower weaving cloth ( ) Wat Tha Luang Phra Monastery Luang Phichit (Wat Tha Luang) ( ) Crocodile (Chalawan) ( ) Luang Por Ngern Wat Bang Khlan ( ) Bueng Si Fai ( ) Tha-Khoi Pomelo etc.

Step 2) The researcher used a questionnaire to ask for the opinions of a group of experts on the packaging forms of bamboo odor-absorbing charcoal consisting of packaging structure and graphic patterns that represent the identity on the packaging, divided into 3 part which are: Part 1. It is a multiple-choice questionnaire (Check list), ask about the status of the respondent. Part 2. It is a questionnaire of the opinions of the Packaging Expert Group about the shape of the structure and graphic patterns that represent the identity on the packaging in 3 forms. Part 3. Suggestions. Step 3) The researcher used questionnaires to study the influence of personal factors on packaging identity on the decision to purchase bamboo odor absorbing charcoal along with a structural prototype with graphics on the packaging, can divided it into 3 parts which are: Part 1. It is a questionnaire about the status of the respondent as a multiple-choice questionnaire (Check list). Part 2. It is a questionnaire to study the influence of personal factors on packaging identity on the decision to buy bamboo odor absorbing charcoal. Part 3 Suggestions.

### **Data Analysis Has 3 Steps as Follows**

**Step 1)** The researcher takes information from the content of the interview and transform it into a lecture and present it in an essay. The surveyed questionnaire is then analyzed as a percentage. **Step 2)** The researcher used the data obtained from a questionnaire of packaging experts on the packaging structure and graphic pattern that represents the identity on the packaging of odor-absorbing charcoal packaging to analyze the arithmetic Means and Standard Deviation, to summarize, analyze data and transform results by lecturing and presenting them in essay form. **Step**

**3)** The researcher used the questionnaire to study the influence of personal factors on packaging identities about purchasing decisions, which were analyzed using Descriptive Statistics, Mean and Standard Deviation, as well as Inferential Statistical Analysis, consist of: Independent Sample t-test, One Way ANOVA and Least-significant Difference analysis, then summarize the data and transform the results by lecturing and presenting them in essay form. Respondents were asked to choose from 5 levels of need which are: highest, high, moderate, low and lowest. The interpretation of the arithmetic mean score of the Likert Scale Questionnaire are as follows: (Weigel & Newman, 1976).

4.50-5.00 means that the level of satisfaction or influence on the purchase decision is at the highest level.

3.50-4.49 means that there is a high level of satisfaction or influence on purchasing decisions.

2.50-3.49 means that there is a moderate level of satisfaction or influence on purchasing decisions.

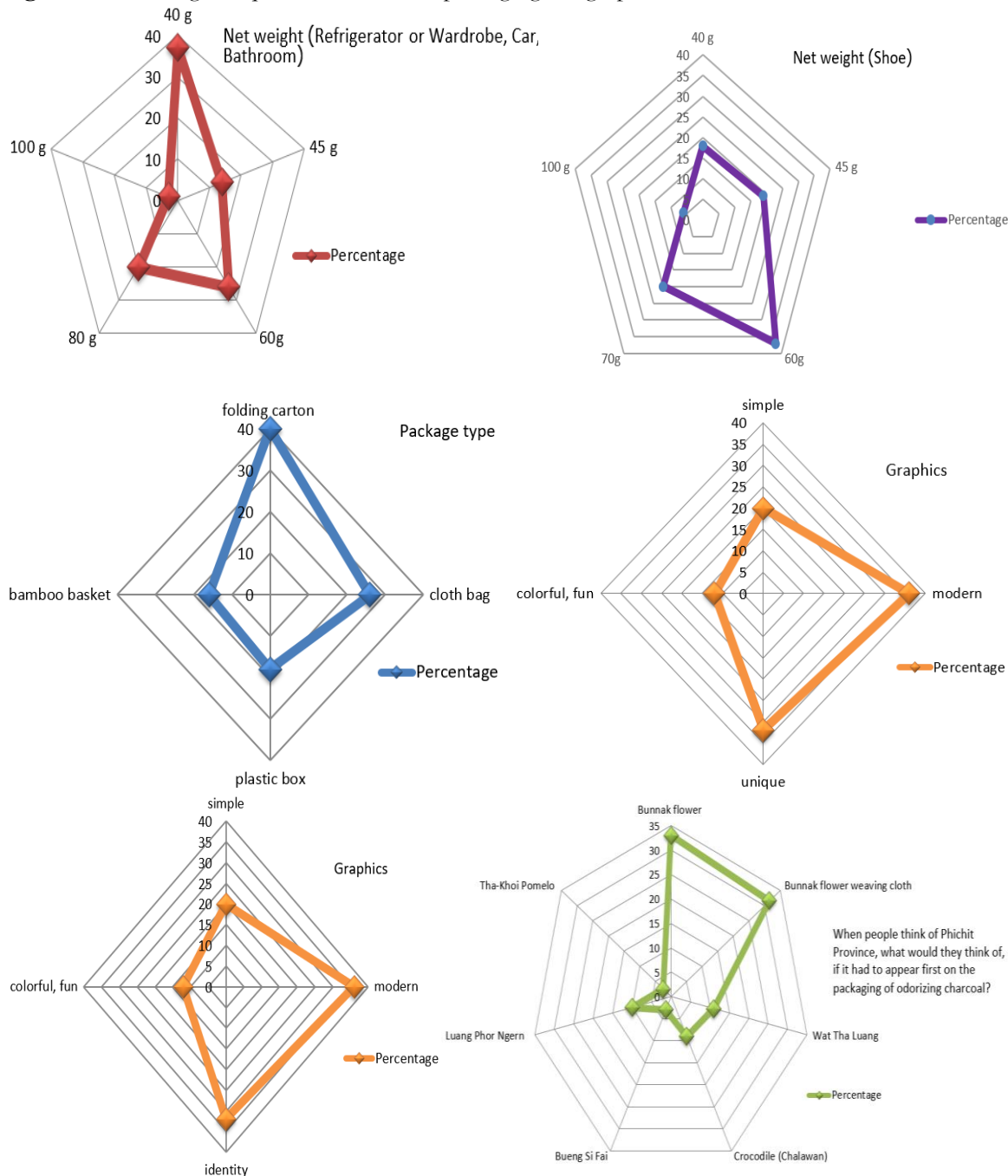
1.50-2.49 means that there is a level of low satisfaction or influence on purchasing decisions.

1.00-1.49 means that there is the lowest level of satisfaction or influence on purchasing decisions.

## **Results and Discussion of the Research**

1. The study findings revealed some problems and needs in the design of bamboo odor-absorbing charcoal packaging. Found that, the structure of the existing packaging was deemed inconvenient to use due to the leakage of charcoal powder during use, as well as its inability to maintain the odor absorbing condition for a long time. This was because the original packaging could not prevent odor extraction from production to distribution. Also, the original packaging lacked aesthetic appeal and could not be used for a variety of functions. For instance, the size of charcoal bags could not fit into shoes, which negatively impacted community enterprises. As well as, the original packaging lacked attractive graphics and uniqueness. Thus, manufacturers of charcoal absorb odors from bamboo require a foldable paper box packaging that is convenient for transport and distribution through online channels. Furthermore, the study aims to design packaging in 4 forms of use: 1) Kits to be used on shoes for both women and men. 2) Kits to be used inside refrigerators and wardrobes. 3) Car interior kits. And 4) Kits as bathroom accessories, suitable for working age target groups, both males and females, who love natural products. The packaging design should be modern, natural, and easy to use with various functional features, and be able to representing the identity of the province and adding value to the product. According to the survey results of consumer demand in terms of both structure and graphics on bamboo odor-absorbing charcoal packaging, as shown in Figure 2, it was found that, consumers prefer folding paper boxes and can show the products contained inside. It is easy to use and convenient to move and transport, easy to dispose the packaging after used, and the shapes of the product inside the package can be seen. For the size of the package, the charcoal absorbs the odors from the refrigerator, wardrobes, cars, and bathrooms, the consumers propose that it should be 40 grams and 60 grams in each shoe or 120 grams in pair. The structural packaging survey results are in line with the needs of manufacturers and also with Veerana Napakorn (B.E.2561) that conducted the research on packaging forms that affect consumers' decision to buy dried fruits from supermarkets in Bangkok, it was found that, the packaging shapes of dried fruits that consumers satisfied, the distinctive feature of the packaging that most of the sample considered was the material used, followed by the product certification symbol, famous satisfied shape is cylindrical because it is easy to carry.



**Figure 2:** Percentage of questions related to packaging design problems and needs.

The packaging must be able to show even part of the products contained inside. In terms of packaging materials, most prefer paper boxes with handles, followed by cardboard boxes with windows, because the products inside can be clearly seen. In addition, the results are consistent with the research of Wang, Haiying & Gani, Muhamad & Liu, Chang (2023) which studied of the influence of snack packaging design peculiarity on consumer purchasing decisions found that, colors, shapes, images, lines and

lettering had the greatest influence on consumers' decisions, while materials and technologies have little influence on it. Furthermore, according to the surveys, consumers expressed a preference for packaging graphics that conveyed a modern and feel the identity of the package. Therefore, these preferences were used as a basis for designing the packaging graphics.

The study also conducted a survey to determine the identity of the bamboo odor-absorbing charcoal packaging, as perceived by consumers in Phichit Province. Participants were asked what they would associate with the province if it were to appear on the packaging. Results indicated that the Bunnak flower, which is the Phichit Provincial tree's flower, and the Bunnak woven pattern, a famous woven pattern unique to the province, received similar percentages of votes. As such, both designs were chosen to represent the provincial identity in a joint design. This may be because both the Bunnak flower and the Bunnak woven pattern are the identity of Phichit Province, which makes most people remember the image, realize those patterns and contribute to marketing effectiveness. This finding aligns with research conducted by Tinawong Rakissarakul and Thanyathorn Inthachang (B.E. 2556), which suggests that packaging identity in the Lower Northern Thailand should represent religious attractions, such as temples, cathedrals, national parks, historical sites, festivals, spoken language, dress, catchwords, and local souvenirs. These conclusions will guide the design of both the packaging structure and graphics, ensuring they meet the needs of both manufacturers and target consumer groups.

2. Identity design effect on bamboo odor-absorbing charcoal packaging can be divided into 2 parts which are:

1) The study analyzed 3 different structural designs for the packaging, as depicted in Figure 3. Results indicate that the expert group preferred the folding paper boxes, with Type 2 (DS2) receiving the high level ( $\bar{x} = 4.09$ ) (S.D. = 0.34). Therefore, the foldable paper box weighs 310 grams and uses black spunbonded material for the primary package, which is suitable for absorbing odors and is depicted in Figure 4. This material is then packed into Polypropylene bags, a commonly used material for producing packaging for cosmetics, household products, and more. The material has a low density of 0.90-0.91 and a melting point of 160-170 degrees Celsius, making it highly effective at blocking moisture and prolonging the retention of odor absorption. Additionally, the packaging is designed to be the appropriate size for comfortable handling, such as in cars, where it can be hung or used in various places. The box structure features perforated windows that highlight its various functions and uses environmentally friendly materials. The packaging is easily sorted for sale and transport and can be reused, as well. Overall, these results are highly satisfactory and align with Prachid Thinbutr (B.E. 2531) which belief that packaging structures should be designed with shape preferences, size, volume, and other material considerations in mind to create functional containers that protect the product during production, packaging, storage, and transportation, it is in accordance with Steenis et al. (2017), who discovered that, sustainable packaging design, both in terms of eco-conscious packaging material selection and graphic design on packaging, influences consumers' perception of sustainability and other aspects such as, product quality, health, comfort and naturalness, etc. However, experts recommended that, the deodorizing charcoal packaging to use in the shoe should use a drawstring made from locally available natural materials instead of a foldable paper hanger, as there is limited space inside the shoes.

2) Graphic design results on packaging, the experts have considered graphic forms on packaging in 3 types (Figure 3) found that, overall, experts are very satisfied with Type 2 (DS2) ( $\bar{x} = 4.28$ ) (S.D. = 0.42). The researcher therefore, adopted the design guidelines based on the results of the study of problems and needs in the design of odor-absorbing charcoal packaging as a concept to design graphic patterns from Bunnak flower woven fabric, which is a locally woven fabric of Phichit Province, by using the prototype pattern to redesign as the background of the packaging (Figure 5).

**Figure 3:** Structure and graphics of 4 forms of bamboo odor-absorbing charcoal packaging.**Figure 4:** The Primary Packaging.

And use Bunnak flower, which is the flower of Phichit Provincial tree, together with illustrations that show charcoal absorbing odors. While the brand name "Chanhom" is derived from the name of Chanhom Community Enterprise Group, which is the original brand image and unique of this community enterprise group (Figure 6). The product logo uses invented letters (JH). Using branded fonts in both Thai and English as Prompt SemiBold. The text on the box in both Thai and English uses the Prompt Regular font, but the use of background colors and lettering means to convey the color of Phichit Province and the color of the interior odor absorbing charcoal, such as green color represents the color of Phichit Province. The text on the packaging is displayed in both Thai and English to communicate to tourists to buy as souvenirs and provide details on the packaging, including illustrations



that can convey the product inside, as well as putting standard marks showing correct registration and appropriate symbols, and presenting the information of the manufacturer and the product, which is in accordance with the concept of Pun Kongcharoenkiat and Somporn Kongcharoenkiat (B.E. 2541) said, the graphics on the packaging must reflect the local identity and display the characters in both Thai and English to communicate to tourists to take home as souvenirs, can provide details on the packaging that describe the product inside. Standard marks and symbols listed, it is properly positioned and the manufacturers and product information are presented and is in line with the findings of Kanchanok Sia (B.E. 2560) who conducted research on The influence of product packaging on the decision to buy herbs for the health of consumers in Si-Phum, it was found that, factors influencing overall packaging design, including packaging type, safety, packaging protection, promotion, and convenience, influenced consumers' decision to purchase herbs for health, as well as in line with Steenis et al. (2017), which found that, graphic design on packaging influences consumers' perceptions of sustainability and other aspects such as product quality, health, comfort and naturalness, among others, it is also in line with Srivastava et al. (2022) who have found that, packaging design is particularly important for branding, especially in the cosmetic industry and can also help show brand identity when packaging must be displayed on retail shelves, by design, shape and application of different packaging, it can make a marketing difference, and according to Malešević & Stančić (2021) which found that, consumers satisfied of packaging with novel shapes and simple graphics that can add value. The study findings indicate that the aesthetics of packaging have a significant influence on consumers' perceptions of products, making packaging a critical element in marketing. These observations align with the research conducted by Wang, Haiying & Gani, Muhamad & Liu, Chang (2023), who investigated the impact of snack packaging design characteristics on consumer purchasing decisions. Results indicated that colors, shapes, pictures, strokes, and lettering were significantly influenced consumer purchasing decisions, whereas materials and technologies had lighter or no effect. Experts recommended to increasing font size on packaging so that visually impaired individuals can easily read the text, as depicted in Figure 7, which shows the structure and graphics of the odor-absorbing charcoal packaging designed based on expert instructions

**Figure 5:** Graphic pattern on redesigned packaging.



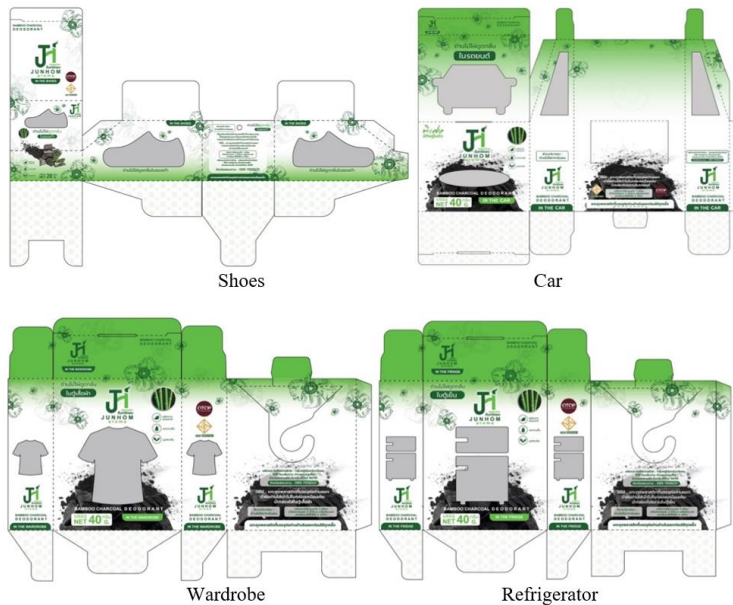
Phichit Provincial Flower

Bunnak flower pattern woven fabric

**Figure 6:** Brand Logo JUNHOM.



**Figure 7:** Structure and graphics of odor-absorbing charcoal packaging in 4 forms.



3. The effects of personal influence factors on packaging identity and their impact on consumers' decisions to purchase bamboo odor-absorbing charcoal. This involved 5 components, as follows:

1) The consequences of personal factors such as gender as shown in Table 1, on packaging identity using packaging prototypes depicted in Figure 8. Furthermore, to facilitate data computation, researcher coded questions in the questionnaires (Table 2). Findings suggest that personal factors, such as gender, have an influence on packaging identity that ultimately impacts consumers' purchasing decisions. When packaging can convey meaning through graphics that make the product recognizable, the effects are significant at a level of 0.05. Males decide to buy products from packaging that can convey the meaning of the graphics to recognize the product more than females. This observation is consistent with Vyas (2015) research, which highlights the various packaging design elements, including size, shape, material, graphic design, typography, illustrations, consumer perception (interests, purchases, repeat purchases) and consumer experience (feelings, repurchases, etc.) that can influence consumers' purchasing decisions. The importance of these elements may vary according to consumers' professional status and age, influencing their responses to packaging.

**Figure 8:** Prototype of bamboo odor-absorbing charcoal packaging in research.



**Table 1:** The effects of gender influence on packaging identity and the resulting impact on consumer purchasing decisions.

Evaluation list	Gender	Number	$\bar{x}$	S.D.	Sig. (2-tailed)
a1	M	20	4.50	0.51	0.08
	F	80	4.24	0.62	
a2	M	20	4.15	0.67	0.44
	F	80	4.01	0.72	
a3	M	20	3.95	0.51	0.23
	F	80	4.14	0.65	
a4	M	20	3.70	0.66	0.07
	F	80	4.06	0.83	
b1	M	20	4.00	0.56	0.94
	F	80	3.98	0.75	
b2	M	20	4.25	0.72	0.59
	F	80	4.15	0.75	
b3	M	20	4.10	0.91	0.59
	F	80	3.98	0.82	
b4	M	20	4.30	0.73	0.06
	F	80	3.92	0.79	
b5	M	20	4.00	0.72	0.53
	F	80	4.12	0.80	
p1	M	20	4.45	0.76	0.06
	F	80	4.10	0.72	
p2	M	20	4.55	0.69	0.003*
	F	80	4.00	0.73	
p3	M	20	4.10	0.31	0.84
	F	80	4.06	0.80	
p4	M	20	3.80	0.61	0.12
	F	80	4.10	0.80	
p5	M	20	3.75	0.55	0.63
	F	80	3.83	0.77	

\* Statistically significant at the level of 0.05

**Table 2:** Coding of Questions in the Questionnaires.

021]	Evaluation List
1. Functional factors of packaging to purchase decision.	
1.1 You decided to purchase this product based on the ease of use of the product.	a1
1.2 You decide to purchase this product from packaging materials that have the ability to retain odors and prevent product leakage.	a2
1.3 You decide to buy this product from the appropriate size and shape for the application.	a3
1.4 You decided to buy this product because it is portable.	a4
2. Marketing application factors and product packaging aesthetics for the purchase decision.	
2.1 You decide to purchase this product because of the graphic on the packaging that can clearly communicate information to consumers about the product.	b1
2.2 You decided to purchase this product based on the graphic elements on the packaging.	b2
2.3 You decide to buy this product because of the graphic with an incentive to purchase the product.	b3
2.4 You decided to purchase this product due to the graphic on the packaging that provides opportunities to sell and expand the market.	b4
2.5 You decided to purchase this product by using color in the packaging design.	b5
3. Perceptual factors towards purchasing decisions.	
3.1 You decide to purchase this product from packaging that indicates the origin and background of the product.	p1
3.2 You decide to purchase this product from packaging that can convey meaning from graphics to recognize the product.	p2
3.3 You decide to purchase this product based on your awareness of how the product works.	p3
3.4 You decide to purchase this product based on the perception of using colors or shapes to represent the product.	p4
3.5 You decide to purchase this product by differentiating the product in each form.	p5

2) As indicated in Table 3, personal factors such as age can influence consumers' purchasing decisions depending on the identity of products' packaging. Appropriately sized and shaped packaging can convey the product's origin and background, while graphics-based packaging can convey meaning to recognize the product. Significant effects were observed between consumers' age groups in relation to the influence of packaging on purchasing decisions, with a level of 0.05. Tables 4-6 provided further details on this topic, revealing packaging that is appropriately sized and shaped for the application can indicate a product's origin and background. As well as convey meaning through graphics to recognize the product information to help individualize the product, categorized according to age groups.

**Table 3:** The effects of age influence on packaging identity and its impact on consumer purchasing decisions.

Evaluation list	$\bar{x}$	S.D.	F	Sig.
a1	4.29	0.60	1.18	0.32
a2	4.04	0.70	1.64	0.14
a3	4.10	0.62	2.92	0.01*
a4	3.99	0.81	1.31	0.26
b1	3.99	0.71	1.33	0.25
b2	4.17	0.73	0.97	0.45
b3	4.01	0.83	1.11	0.36
b4	4.00	0.79	1.21	0.30
b5	4.10	0.78	0.63	0.70
p1	4.17	0.73	3.01	0.01*
p2	4.11	0.75	2.54	0.02*
p3	4.07	0.72	0.39	0.88
p4	4.04	0.77	1.11	0.36
p5	3.82	0.73	0.77	0.59

\* Statistically significant at the level of 0.05

Table 4 provides information on the influence of the packaging's size and shape suitable for use on consumers' purchasing decisions, classified by age group and found to be significant at a level of 0.05. When considering in each aspect, the data suggest that, consumers aged 48-53 years are more likely to make purchasing decisions according to the size and shape suitable for their use, unlike consumers aged between 18-23, 24-29, 30-35, 42-47, and 54-60 years old. Consumers aged 54-60 years are observed to prefer packaging that is the most suitable size and shape for their application. This finding is consistent with Thackston et al. (2013) concept of designing packaging structures that are portable, easy to open for consumption, convenient for storage, and readily available, which can create a positive brand image and influence purchasing decisions.

**Table 4:** Comparison of the average by pair influence on the decision to buy this product based on the size and shape suitable for the application of the packaging. The data is classified by age group.

Ages (Year)	$\bar{x}$	S.D.	18 - 23	24 - 29	30 - 35	36 - 41	42 - 47	48 - 53	54 - 60
			4.06	4.37	4.00	4.09	4.33	3.00	4.67
18 - 23	4.06	0.58	-	-0.32	0.06	-0.03	-0.27	1.06	-0.60
				0.06	0.75	0.87	0.44	0.003*	0.09
24 - 29	4.37	0.62	-	-	0.37	0.28	0.04	1.37	-0.29
					0.09	0.22	0.91	0.00*	0.43
30 - 35	4.00	0.58	-	-	-	-0.09	-0.33	1.00	-0.07
					0.71	0.38	0.01*	0.08	
36 - 41	4.09	0.54	-	-	-	-0.24	1.09	-0.58	
					0.53	0.006	0.14		
42 - 47	4.33	0.57	-	-	-	-	1.33	-0.33	
							0.007*	0.49	
48 - 53	3.00	1.00	-	-	-	-	-	-1.67	
									0.001*
54 - 60	4.67	0.57	-	-	-	-	-	-	

Table 5 provides information on packaging aspects that indicate the origin and background of the product and influence consumers' purchasing decisions. The data is classified by age group and found to be significant at a level of 0.05. When considering each aspect, it was observed that consumers aged 36-41 years are more likely to make a purchase based on packaging that indicates the origin and background of the product, unlike consumers aged 18-23 years, 24-29 years, and 30-35 years old. Consumers in the age group of 36-41 years prefer packaging that can best indicate the origin and background of the product. This finding is consistent with Srivastava et al. (2022) research, which highlights the importance of packaging design in branding and displaying a branding identity on retail shelves. With different designs, shapes, and applications of packaging, it can significantly impact customers' purchasing decisions.

**Table 5:** Comparison of the average by pair influence on the decision to buy this product based on the packaging that indicate the origin and background of the product. The data is presented by age group.

Age (Year)	$\bar{x}$	S.D.	18 - 23	24 - 29	30 - 35	36 - 41	42 - 47	48 - 53	54 - 60
			3.94	4.00	4.46	4.64	4.66	4.00	3.66
18 - 23	3.98	0.73	-	-0.27	-0.17	-0.838	-1.02	-0.02	-0.02
			0.18	0.43	0.00*	0.02	0.96	0.96	
24 - 29	4.25	0.57	-	-	0.09	-0.57	-0.75	0.02	0.25
					0.71	0.04*	0.09	0.06	0.06
30 - 35	4.15	0.80	-	-	-	-0.66	-0.846	0.15	0.15
					0.02*	0.06	0.73	0.73	
36 - 41	4.82	0.40	-	-	-	-0.18	0.82	0.39	
					0.69	0.07	0.07		
42 - 47	5.00	0.00	-	-	-	-	1.00	1.00	
						0.57	0.57		
48 - 53	4.00	1.00	-	-	-	-	-	0.00	
									1.00
54 - 60	4.00	1.00	-	-	-	-	-	-	-

Table 6, provides information on packaging aspects that can convey meaning through graphics and influence consumers' purchasing decisions. The information is presented by age group and the results were found to be significant at a level of 0.05. When considering in each aspect, the findings indicate that, consumers between the ages of 18-23 years are more likely to make a purchase based on packaging that can convey meaning through graphics to recognize the product. However, the same is not true for consumers between the ages of 30-35 years and those between the ages of 36-41 years. In contrast, it was found that among consumers in the age group of 36-41 years, more preferred packaging that can convey the meaning of the graphic as much as possible. This aligns with Vyas (2015) research, where the packaging design elements such as size, shape, material, graphic design, typography, illustration, consumer perception (interests, purchases, repeat purchases), and consumer experience (feel, utility of usage) were found to vary depending on the consumers' professional status and age. These elements also impact the consumers' response to the packaging, including their purchasing decisions and the likelihood of repeat purchases.



**Table 6:** The comparative results of the average by pair influence on the decision to buy this product, based on the packaging that can convey meaning through graphics to recognize the product, classified by age group.

Age (Year)	$\bar{x}$	S.D.	18 - 23	24 - 29	30 - 35	36 - 41	42 - 47	48 - 53	54 - 60
			3.94	4.00	4.46	4.64	4.66	4.00	3.66
18 - 23	3.94	0.76	-	-0.06	-0.52	-0.69	-0.72	-0.06	0.27
		0.78	0.02*	0.004*	0.09	0.89	0.52		
24 - 29	4.00	0.82	-	-	-0.46	-0.64	-0.66	0.00	0.33
					0.09	0.03	0.14	1.00	0.46
30 - 35	4.46	0.52	-	-	-	-0.17	-0.20	0.46	0.79
				0.55	0.66	0.32	0.09		
36 - 41	4.64	0.50	-	-	-	-0.03	0.64	1.00	
					0.95	0.26	0.09		
42 - 47	4.66	0.57	-	-	-	-	0.67	1.00	
					0.26	0.09			
48 - 53	4.00	1.00	-	-	-	-	-	0.33	
									0.57
54 - 60	3.66	0.57	-	-	-	-	-	-	-

3) Effects of personal factors in terms of education level as shown in Table 7, it was found that personal factors in education have an influence on packaging identity, which in turn, impacts consumers' purchasing decisions. When the packaging is the ease of use of the product and the use of color in the packaging design is effective, this relationship has been observed to be significant at a level of 0.05. Furthermore, when comparing the influence on consumers' purchasing decisions between packaging that is easy to use, as well as the use of color in its design, classified this information on a case-by-case basis, can identified all the related factors, which have been analyzed and classified by study on a pair-by-pair basis. Details of these results are shown in Table 8-9.

**Table 7:** Effects of Educational Influence on Packaging Identity on Consumer Purchasing Decisions.

Evaluation List	$\bar{x}$	S.D.	F	Sig.
a1	4.29	0.60	4.15	0.02*
a2	4.04	0.70	0.62	0.54
a3	4.10	0.62	1.15	0.32
a4	3.99	0.81	0.06	0.93
b1	3.99	0.71	0.57	0.56
b2	4.17	0.73	0.28	0.75
b3	4.01	0.83	0.60	0.55
b4	4.00	0.79	1.60	0.21
b5	4.10	0.78	3.66	0.03*
p1	4.17	0.73	0.25	0.78
p2	4.11	0.75	2.35	0.10
p3	4.07	0.72	0.13	0.87
p4	4.04	0.77	0.33	0.71
p5	3.82	0.73	0.86	0.42

\* Statistically significant at the level of 0.05

**Table 8:** Comparison of the average by Pair Influence on the decision to purchase this product from the ease of use of the product, classified according to the study.

<b>Education</b>	<b><math>\bar{x}</math></b>	<b>S.D.</b>	<b>Lower than bachelor's degrees</b>	<b>bachelor's degrees</b>	<b>Higher bachelor's degrees</b>
			4.20	4.30	5.00
Lower than bachelor's degrees	4.20	0.59	-	-0.10	-0.80
			0.41	0.005*	
Bachelor's degrees	4.30	0.61	-	-	-0.70
					0.01*
Higher bachelor's degrees	5.00	0.00	-	-	-

Table 8, presents the influence of ease of use on consumers' purchasing decisions, classified by the study conducted. The significance level was found to be 0.05. When considering in each aspect, the findings indicate that, consumers with education levels that higher than bachelor's degree tend to make purchasing decisions based on the ease of product usage, compared to consumers with lower education than bachelor's degrees and at bachelor's degree, this means that consumers with higher education level than bachelor's degrees were found to be most likely to purchase products with convenient packaging. This is consistent with the research conducted by Alaeddin Mohammad K. Ahmad & Qais Mohammad K. Ahmad (2015) which finds that packaging design is intended to facilitate and increase the efficiency of communication with consumers and is also a strategic tool to attract consumers' attention and awareness about product quality.

**Table 9:** Comparison of the average by Pair Influence on the decision to buy this product from the use of color in packaging design, classified by study.

<b>Education</b>	<b><math>\bar{x}</math></b>	<b>S.D.</b>	<b>Lower than bachelor's degree</b>	<b>bachelor's degree</b>	<b>Higher than bachelor's degree</b>
			4.20	4.30	5.00
Lower than bachelor's degree	4.06	0.78	-	0.03	-0.93
			0.87	0.01*	
Bachelor's degree	4.04	0.78	-	-	-0.96
					0.009*
Higher than bachelor's degree	5.00	0.00	-	-	-

Table 9, shows the different aspects of color use in packaging design that affect consumers' purchasing decisions, classified by the study conducted. The significance level was found to be 0.05. When considering in each aspect, the findings indicate that, consumers with higher education than bachelor's degrees influenced by the use of color in packaging design which is differently than consumers with lower education than bachelor's degrees and at bachelor's degrees. Meaning that consumers' who has higher education than bachelor's degrees easiest decided to purchase the products from the color used on packaging designed. These findings are consistent with the research conducted by Wang, Haiying & Gani, Muhamad & Liu, Chang (2023) which studied the impact of snack packaging design characteristics on consumer purchasing decisions. The study found that colors, shapes, images, lines, and letters had

the greatest influence on consumers' purchasing decisions.

4) As shown in Table10, indicates that personal factors in terms of occupational, found to be not significant influence on packaging identity, which affects consumers' purchasing decisions at a level of 0.05. This finding is consistent with Amnat Tengsuwan's (B.E. 2556) study on the purchase decisions of facial cleansing products made from herbs among the retirement age population in Bangkok. The study found that the status and occupation of consumers do not influence their decision to purchase facial cleansing products. However, income showed a significant influence on the purchase of facial cleansers made by the retirement age population at a level of 0.05.

**Table 10:** Occupational aspect that influences on packaging identity for consumer purchasing decisions.

Evaluation List	$\bar{x}$	S.D.	F	Sig.
a1	4.29	0.60	1.58	0.15
a2	4.04	0.70	1.23	0.29
a3	4.10	0.62	0.66	0.71
a4	3.99	0.81	1.49	0.18
b1	3.99	0.71	0.26	0.96
b2	4.17	0.73	0.58	0.77
b3	4.01	0.83	1.10	0.37
b4	4.00	0.79	1.84	0.09
b5	4.10	0.78	1.24	0.29
p1	4.17	0.73	2.10	0.05
p2	4.11	0.75	1.88	0.08
p3	4.07	0.72	0.49	0.84
p4	4.04	0.77	0.77	0.61
p5	3.82	0.73	1.12	0.36

\* Statistically significant at the level 0.05

**Table 11:** Effects of Revenue Influence on Packaging Identity on Consumer Purchasing Decisions.

Evaluation List	$\bar{x}$	S.D.	F	Sig.
a1	4.29	0.60	1.17	0.33
a2	4.04	0.70	1.07	0.37
a3	4.10	0.62	0.94	0.44
a4	3.99	0.81	1.06	0.38
b1	3.99	0.71	2.76	0.03*
b2	4.17	0.73	0.93	0.45
b3	4.01	0.83	0.67	0.61
b4	4.00	0.79	2.89	0.03*
b5	4.10	0.78	2.64	0.04*
p1	4.17	0.73	2.61	0.04*
p2	4.11	0.75	2.32	0.06
p3	4.07	0.72	0.72	0.58
p4	4.04	0.77	0.39	0.81
p5	3.82	0.73	2.03	0.10

\* Statistically significant at the level of 0.05

5) The results of personal factors in terms of income, Table 11 presents the findings of it, revealing that, income is a significant variable that influences packaging identity. When graphics on packaging can clearly communicate information about the product, it provides opportunities to sell and expand the market. The use of color in packaging design, and packaging that indicates the origin and background of the product, show significant meaningful impact at a level of 0.05. When comparing the difference in influence on consumers' purchasing decisions when graphics on packaging can clearly communicate information about the product. The graphics on the packaging provide opportunities to sell and expand the market. The use of color in packaging design, as well as packaging that indicate the origin and background of the product. The data is classified by income by pair, and details are shown in Tables 12-15.

**Table 12:** Comparison of the average by pair that influence on the decision to buy this product from the packaging design that can clearly communicate product information to consumers on their decision to purchase a product, classified by income.

Income (Baht)	$\bar{x}$	S.D.	Less than 5,000	5,000–10,000	10,001–20,000	20,001–30,000	More than 30,000
			3.45	3.94	4.27	4.08	3.85
Less than 5,000	3.45	1.03	-	-0.49	-0.82	-0.62	-0.40
			0.04*	0.002*	0.01*	0.23	
5,000 – 10,000	3.94	0.64	-	-	-0.33	-0.14	0.09
					0.08	0.45	0.77
10,001 – 20,000	4.27	0.63	-	-	-	0.19	0.41
					0.34	0.17	
20,001 - 30,000	4.08	0.70	-	-	-	-	0.22
							0.45
More than 30,000	3.85	0.37	-	-	-	-	-

Table 12, the influence of graphic aspects on packaging design that can clearly communicate information to consumers about the product on their purchasing decisions. The data is classified by income and significant at a level of 0.05. When considering in each aspect, it was found that consumers earning less than 5,000 baht are significantly influenced by graphics on packaging that can clearly communicate information about the product, unlike consumers with higher incomes 5,000-10,000 baht, 10,001-20,000 baht, and 20,001-30,000 baht. Consumers earning 10,001-20,000 baht were shown to be the group most likely to buy products based on packaging graphics that can communicate information to consumers about the product as clearly as possible.

**Table 13:** Comparison of the average by pair that influence on the decision to buy this product from the graphics on the packaging provide opportunities to sell and expand the market, classified by income.

Income (Baht)	$\bar{x}$	S.D.	Less than 5,000	5,000–10,000	10,001–20,000	20,001- 30,000	More than 30,000
			3.45	3.94	4.27	4.08	3.85
Less than 5,000	3.45	0.82	-	-0.52	-0.50	-0.90	-0.40
			0.05	0.08	0.001*	0.28	
5,000 – 10,000	3.97	0.75	-	-	0.02	-0.39	0.11
					0.93	0.05	0.72
10,001 – 20,000	3.95	0.78	-	-	-	-0.40	0.09
					0.07	0.77	
20,001 - 30,000	4.36	0.70	-	-	-	-	0.50
							0.13
More than 30,000	3.85	0.89	-	-	-	-	-

Table 13, the graphics on packaging has opportunities to sell and expand the market that influencing

consumers' purchasing decisions, classified by income, significant at the level of 0.05, when considering in each aspect, it was found that, consumers who earn less than 5,000 baht are significantly influenced by graphics on packaging design when it comes to purchasing decisions, unlike consumers who earn 20,001-30,000 baht. Consumers earning 20,001-30,000 baht were shown to be the group that most likely to buy products based on graphics on packaging design, which have the opportunity to sell and expand the market.

Table 14, the use of color in packaging design and how it influences consumers' purchasing decisions, classified by income found to significance at a level of 0.05, when considering in each aspect, the data showed that, consumers with incomes of 10,001-20,000 baht were significantly influenced by color in packaging design when it comes to their decision to purchase products, unlike consumers with higher incomes between 20,001-30,000 baht and more than 30,000 baht, consumers earning between 10,001-20,000 baht were shown to be the group that most likely to buy products based on the color in the packaging design.

**Table 14:** Comparison of the average by pair that influence on the decision to buy this product from the use of color in the packaging design, classified by income.

Income (Baht)	$\bar{x}$	S.D.	Less than 5,000	5,000–10,000	10,001–20,000	20,001–30,000	More than 30,000
			3.91	4.17	4.45	3.92	3.57
Less than 5,000	3.91	0.94	-	-0.26	-0.54	-0.01	0.34
			0.32	0.05	0.97	0.36	
5,000 – 10,000	4.17	0.75	-	-	-0.28	0.25	0.60
						0.17	0.21
10,001–20,000	4.45	0.67	-	-	-	0.53	0.88
					0.02*	0.01*	
20,001 -30,000	3.92	0.81	-	-	-	-	0.35
							0.29
More than 30,000	3.57	0.53	-	-	-	-	-

**Table 15:** Comparison of the average by pair that influence on the decision to buy this product from packaging that indicate the origin and background of the product, classified by income.

Income (Baht)	$\bar{x}$	S.D.	Less than 5,000	5,000–10,000	10,001–20,000	20,001–30,000	More than 30,000
			4.00	3.97	4.09	4.52	4.42
Less than 5,000	4.00	0.63	-	0.02	-0.09	-0.52	-0.43
			0.90	0.73	0.04*	0.22	
5,000 – 10,000	3.97	0.78	-	-	-0.12	-0.55	-0.46
						0.54	0.004*
10,001 – 20,000	4.09	0.68	-	-	-	-0.43	-0.34
					0.04*	0.28	
20,00 -30,000	4.52	0.65	-	-	-	-	0.09
							0.77
More than 30,000	4.42	0.78	-	-	-	-	-

Table 15, shows that packaging aspects which indicate the origin and background of the product influence consumers' purchasing decisions, classified by income at a level of significance of 0.05, when considering in each aspect, it was found that, consumers with incomes of 20,001-30,000 baht were significantly influenced to buy products from such packaging, unlike consumers with incomes less than 5,000 baht, 5,000-10,000 baht, and 10,001-20,000 baht, consumers with incomes of 20,001-30,000 baht mostly decided to buy the products from packaging that indicate the origin and background of the



product. This is consistent with Amnat Tengsuwan's (B.E. 2556) study on the purchase decisions of facial cleansing products made from herbs among the retirement age population in Bangkok. The study found that the status and occupation of consumers do not influence their decision to purchase facial cleansing products. However, income showed a significant influence on the purchase of facial cleansers made by the retirement age population at a level of 0.05. Furthermore, Vyas (2015) research, where the packaging design elements such as size, shape, material, graphic design, typography, illustration, consumer perception (interests, purchases, repeat purchases), and consumer experience (feel, utility of usage) were found to vary depending on the consumers' professional status and age. These elements also impact the consumers' response to the packaging, including their purchasing decisions and the likelihood of repeat purchases.

### **The Main Findings from This Research Are as Follows**

#### ***Gender Factor:***

- Males tend to choose products based on packaging that effectively conveys the meaning message through graphics, enabling them to identify or recognize the product more easily than females.

#### ***Age Factor***

- Consumers between the ages of 54 and 60 showed a preference for packaging that is the most suitable in terms of size and shape for their specific needs.
- Consumers aged 36-41 preferred packaging that effectively communicates the origin and background of the product and convey the meaning through graphics to recognize the product.

#### ***Education Factor***

- Consumers with higher levels of education, beyond a bachelor's degree, were found to be more likely to purchase products based on the convenience of product usage and the colors used in the packaging design.

#### ***Income Factor***

- Consumers with earning the monthly income between 10,001-20,000 baht demonstrated a strong tendency to buy products with packaging graphics that clearly communicate information about the product and utilize effective colors.
- Consumers with earning incomes between 20,001-30,000 baht showed a preference for purchasing products with packaging that has the potential to expand the market and effectively communicates the origin and background of the product.

### **Conclusion and Suggestion**

The study's conclusion is that odor-absorbing charcoal products made from bamboo currently lack appropriate packaging for distribution and transportation. To address this issue, the study proposed 4 different packaging designs suitable for various usage contexts. These include 1) kits for use on both men's and women's shoes. 2) Inside refrigerators. 3) In car interiors, and 4) As bathroom accessories. The packaging designs were informed by the study's findings on the challenges and requirements related to odorizing charcoal packaging, with a focus on functional attributes such as size, sorting, and ease-of-use, along with visual elements like the Bunnak flower pattern from Phichit Province. The structural and graphic design results have been guided by the findings of the study on problems and needs in designing charcoal packaging that absorbs odors from bamboo. This concept was developed by designing the structure to have functional features that are suitable for various usage characteristics. Window penetration implies different functions; the packaging is the appropriate size to grip comfortably, can be

easily sorted for sale and transport, as well as be reused. The graphic pattern was derived from the woven fabric of the Bunnak flower, which is a traditional woven fabric in Phichit Province. The original pattern was redesigned as the background of the packaging, and the Bunnak flower, the flower of the Phichit Provincial tree, was included in an illustration that shows the charcoal absorbing the smell from bamboo. A study on the influence of personal factors on packaging identity regarding the purchase of odor-absorbing charcoal found that personal factors, gender, age, education, and income significantly influenced the decision to purchase bamboo odor-absorbing charcoal at the level of 0.05. However, personal and occupational factors did not significantly influence the purchase decision of odor-absorbing charcoal at the level of 0.05. When considering the details of each aspect, it was found that personal factors and gender influenced purchasing decisions when the packaging could convey meaning through graphics to recognize the product. Personal factors such as age influenced purchasing decisions when the packaging was an appropriate size and shape for use, indicated the origin and background of the product, and conveyed meaning through graphics to recognize the product. In addition, personal factors in education influenced purchasing decisions when the packaging was the ease of use of the product and the use of color in the packaging design. Finally, the results showed that personal factors in income influenced purchasing decisions when the graphics on the packaging communicated information about the product to consumers clearly. Good graphics on packaging can help selling the products and expand markets. The use of color in packaging design can indicate the origin and background of the product. The research findings will guide the design of packaging identity, taking into account various personal factors such as gender, age, occupation, education, and income. This will help the community enterprise group generate more sales and better tailor their marketing strategies to meet the needs of their target audience.

This research used a combination of quantitative and qualitative methods, along with systematic data collection tools. One of the limitations of the study was the use of data collected, for a specific, used a Purposive Sampling Method from a random location at the Provincial Trade Fairs, which took approximately 7-10 days to collect. There is a possibility that the results may vary if the samples are different. Therefore, the information should be interpreted within the context of a specific target audience.

Further research should focus on racial differences or housing positions that affect the identity design on packaging, which in turn influences purchasing decisions. This research can help designers create packaging that meets the needs of a broader range of consumers.

## References

- Alaeddin Mohammad K. Ahmad & Qais Mohammad K. Ahmad. (2015). Factors Influence on Packaging Design in an Impulse Consumer Purchasing Behavior: A Case Study of Doritos Pack. *International Journal of Marketing Studies*, 7(6): 92-101.
- Amnat Tengsuwan. (B.E. 2556). *Deciding to buy a facial cleanser made from the Group's Foundation Public Retirement in Bangkok*. Independent master's Research. Rangsit University.
- Kanchanok Sia. (B.E. 2560). *The influence of product packaging on consumers' decision to buy herbs for health in Si-Phum, Chiang Mai*. Independent Research Master of Business Administration Maejo University, Chiang Mai.
- Malešević, M., & Stančić, M. (2021). Influence of packaging design parameters on customers' decision-making process. *Journal of Graphic Engineering and Design*, 12(4), 33.
- Polyakova, K. (2013). *Packaging design as a Marketing tool and Desire to purchase*. Thesis in degree Programme in International Business, Faculty of Business Administration, Lappeenranta, Saimaa

University of Applied Sciences.

Prachid Thinbut. (B.E. 2531). *Packaging design*. Bangkok: O.S. Printing House.

Pun Kongcharoenkiat and Somporn Kongcharoenkiat. (B.E. 2541). *Food Packaging*. Bangkok: Packmates.

Srivastava, P., Ramakanth, D., Akhila, K., & Gaikwad, K. K. (2022). Package design as a branding tool in the cosmetic industry: consumers' perception vs. reality. *SN business & economics*, 2(6), 58. <https://doi.org/10.1007/s43546-022-00222-5>

Steenis, N.D., Herpen, E.V., Lans, I.V., Ligthart, T.N., & Trijp, H.C. (2017). Consumer response to packaging design: The role of packaging materials and graphics in sustainability perceptions and product evaluations. *Journal of Cleaner Production*, 162, 286-298.

Tinwong Rakissarakul and Thanyathorn. (B.E. 2556). A study of local identity in the Lower North to design artistic remarks on souvenir packaging. *Silpakorn University Journal*, 33(1), 93-110.

Thackston, K., Galvarino, J., Ouzts, A., & Pham, A. (2013). *Consumer Purchasing Based on Packaging Structural Design/Product Visual Display in a Retail Environment*. Retrived from <http://www.andrewd.ces.clemson.edu/courses/cpsc412/fall11/teams/.../group7.pdf>

Veerana Napakorn. (B.E. 2561). *Packaging forms that affect consumers' decision to buy dried fruits from supermarkets in Bangkok*. Journal of Walayolongkorn Review. (Humanities and Social Sciences), 8(1), 37-44.

Vyas, H. (2015). Packaging Design Elements and Users Perception: a context in fashion branding and communication. *Journal of Applied Packaging Research*, 7(2), 95-107.

Wang, Haiying & Gani, Muhamad & Liu, Chang. (2023). Impact of Snack Food Packaging Design Characteristics on Consumer Purchase Decisions. *SAGE Open*. 13. 215824402311671. 10.1177/21582440231167109.

Weigel, R. H., & Newman, L. S. (1976). Increasing attitude-behavior correspondence by broadening the scope of the behavioral measure. *Journal of Personality and Social Psychology*. 33. 793-802.