



ACCESSIBLE PACKAGING DESIGN FOR THE EIDERLY

BY

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Abstract

As the aging population continues to expand, the presence of elderly individuals is becoming increasingly prominent within our society. Their physical abilities decline with age, necessitating attention from various fields, especially designers. This paper aims to analyze the current issues in food packaging for the elderly, where some certain products available in the market lack age-appropriate packaging, neglecting the visual and psychological needs of the elderly.

The proposed food packaging design strategies intend to enhance information transmission efficiency for elderly-friendly packaging. The research culminates in a detailed series of organic agricultural products and a set of age-friendly food packaging aligned with the physiological and psychological needs of the elderly.

(Total 46 pages)

Keywords: Aging, Food packaging, Humanization, Accessibility, Elderly, Aging Society

Student's Signature..... Thesis Advisor's Signature

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Chapter 1

Introduction

1.1 Background and Significance of the Problem

The common international view is that a country or region is in an aging society when 10% of the population is over 60 years old or 7% of the population is over 65 years old. The world population has entered a moment of rapid aging, and population aging is likely to become one of the most important social trends of the 21st century.

The UN report on world population aging states that from 2015 to 2030, the number of people over 60 in the world is expected to grow by 56%, from 901 million to 1.4 billion, and by 2050, the global elderly population is expected to more than double from 2015 to nearly 2.1 billion (Figure 1.1).

The world's demographic structure is getting "old", while technological development and social progress are continuing to become "new", and the gap between the aging society and the digital society is gradually being reflected in social phenomena. The advent of an aging society is bound to have a huge impact on the consumer market and provide new development opportunities and challenges for the packaging of various products.

However, some businesses are only focused on the health of the food itself, ignoring the humane design of the elderly food packaging open, and even the elderly open these foods there are certain safety hazards.

Therefore, the aging perspective of the elderly food packaging open need humanized design, to pay more attention to the physiological, psychological and

behavioral characteristics of the elderly, pay attention to the elderly food packaging open before, during and after the humanized design, not only to meet the need for the safety of the food packaging itself, but also to enable the elderly to open the use of the elderly will not be harmed, so as to meet the material and spiritual needs of the elderly consumer groups, to enhance the awareness of the product and loyalty. To enhance the awareness and loyalty of the product.

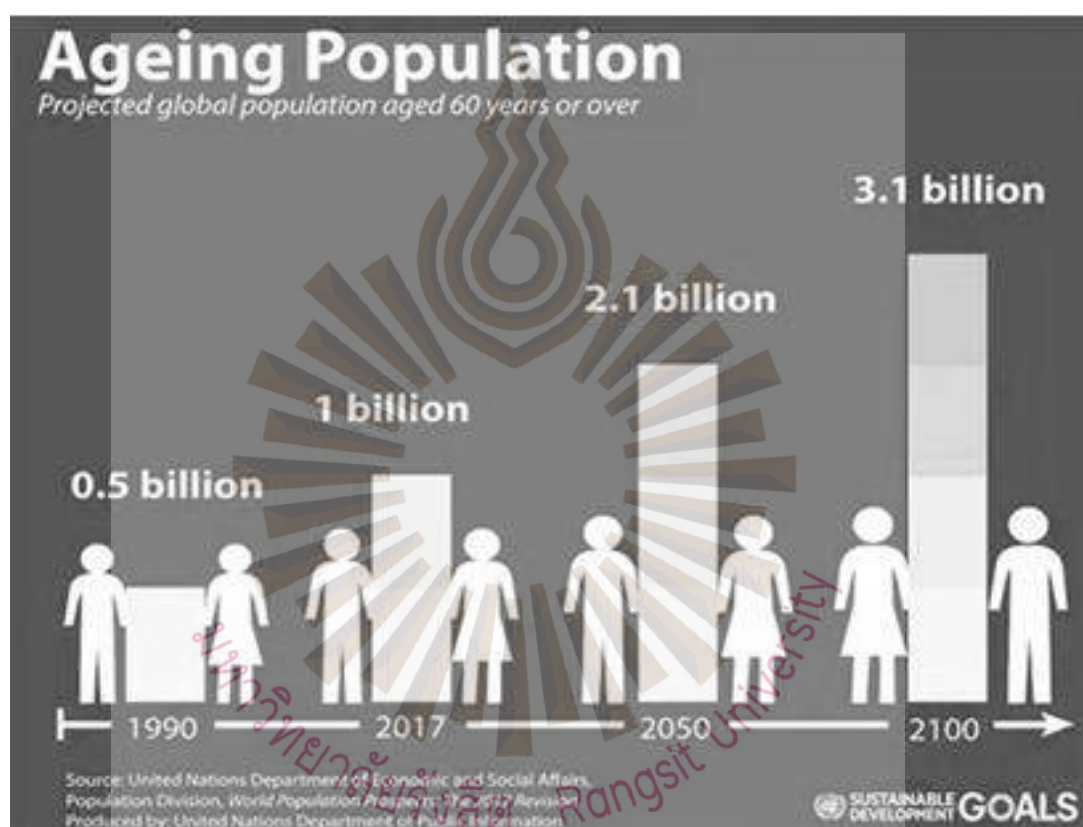


Figure 1.1 UN World Population Ageing Report

Source: the United Nations News, 2017

With the continuous improvement of social life and medical conditions, China has entered the aging society in advance and is in the stage of accelerated development of aging. The elderly population over 60 years of age has reached 240 million at the end of 2018, and it is expected that the number of the elderly population in China will reach 300 million by 2025. Aging has become a trend. In the face of such a huge consumer market, the businessmen with a keen sense of smell have introduced a variety of low-fat, low-sugar and high-calcium food products targeting the elderly

market. In the face of such a huge consumer market, businessmen with a keen sense of smell have launched a variety of low-fat, low-sugar and high-calcium foods for the elderly market. However, some businesses are only focused on the health of the food itself, ignoring the humanized design of food packaging for the elderly to open, and even the elderly to open these foods there are certain safety hazards.

Based on the increasingly serious situation of aging in Chinese society, this paper focuses on the existing problems of packaging in the market. It combines the current status of the elderly group and addresses the issues arising from their physiological and psychological degradation. The paper then presents key points for barrier-free packaging design tailored to the needs of the elderly group. The research field of this paper is in China, and its design scope involves planning corresponding solutions based on relevant research results to create a series of age-friendly food packaging for the elderly.

1.2 Research Objectives

1.2.1 Humanization is penetrated into every aspect of the design.

The connotation of humanization includes two aspects: first, it covers the various basic attributes of human beings, the realization and harmonious development of individual human nature and group human nature and full human rights. The second is the realization of human nature requirements and the harmonious development of human nature. Specifically embodied in both to meet the practical functional requirements of consumers, but also to meet the physiological and psychological needs of consumers, in order to adapt to the changes in the development of the consumer market.

1.2.2 Fully consider the physiological, psychological and behavioral characteristics of the elderly consumer groups.

The design is centered around the process of psychological changes of the elderly, emphasizing the embodiment of the elderly's outlook on life and values, which

can be easily and pleasantly turned on when the elderly are using the products, taking care of the elderly's self-esteem and protecting their mental health.

1.2.3 Combine the four common forms of food packaging in the market, namely bag, cup, bottle and filling, and analyze them in depth.

The more popular food for the elderly on the market, packaging shape is very different, the choice of material complexity and variety, which involves the product used in the structure of the material and production process, and it opens the way is also very different.

1.2.4 Research on the humanized design of food packaging for the elderly before, during and after opening.

In the design of food opening for the elderly, attention should be paid to the physiological features of the elderly such as visual impairment and hand muscle degeneration, but also to the psychological features of the elderly such as movement and behavior, pay attention to the maintenance of their self-esteem and protection of mental health, and explore and study the relationship between the elderly and food packaging.

1.2.5 To provide some reference basis for the sustainable development of food packaging industry for the elderly.

This paper summarizes the problems existing in the current food packaging for the elderly, and at the same time puts forward the design idea of incorporating interactive packaging to provide multiple channels for the elderly consumer groups to accurately receive food information.

1.3 Research on Aging and Commodity Development

Although the situation of China's aging population is grim, there are certain business opportunities and consumer demand hidden behind the huge number of aging population, especially the activity of the market for senior products has had a relatively obvious upward trend in recent years. For example, in terms of the market

for geriatric products and the geriatric service system, the effective supply of elderly services has been further expanded, and at the level of commodity packaging design for the aging population, designers and manufacturers will also specialize in designing types of commodities to meet the use of the aging population under the premise of paying attention to market demand. It is worth mentioning that the development of Internet information technology has greatly changed the mode of commodity trading in the whole society, and more and more elderly people have begun to join the online shopping group, enjoying the convenience of life brought by Internet technology. Under the guidance of young people at home, many elderly people have begun to shop through online channels, and some of them are already good at using online channels to buy the goods they need. Whether it is network shopping or real shopping, the entire shopping consumer market demand is in the expanding trend, which is sufficient to show that the elderly have more obvious commodity consumption potential, so by perfecting the packaging design to fully explore the potential of commodity packaging consumption work has a very clear practical significance.



Chapter 2

Design research

2.1 Preliminary Survey & Research

Design is about the realization of needs to achieve a high quality and more convenient life. The current status of the aging society has given rise to age-friendly design, and at the same time has put forward new requirements for design as the society continues to develop. This thesis takes the current aging society as the background, based on the physiological and psychological characteristics of the elderly in the context of social life, and discovers their requirements for the current food packaging design, and explores the issue of age-appropriateness in the field of contemporary food packaging design based on their needs. Based on the spirit of "human-centered" design, we aim to solve the problem of aging appropriateness in contemporary food packaging design to meet the needs of the elderly. (Lynch, 2015)

Ageing is designed for the elderly, according to international regulations, people over 60 years old are identified as elderly, first of all, we must fully understand the characteristics of the elderly in order to do a good job of ageing, we can understand the characteristics of the elderly from two aspects: physiological function and psychological.

2.1.1 Physiological characteristics:

2.1.1.1 Visual characteristics

Physiological visual deterioration: As the elderly age, the most obvious problem is visual degeneration. The cornea of the eye becomes relatively smaller, the visual acuity gradually decreases, the field of vision also becomes narrower, and the lens presents a state of gradual hardening, which leads to the

problem of blurred vision, and if the lens is in a cloudy state, it also leads to the occurrence of cataracts.

Difficulty in distinguishing colors: The ability of elderly people to distinguish colors is on average about 33% lower than that of young people. As the lens becomes yellow, it selectively absorbs blue light, making it difficult to distinguish blue and yellow at the same time.

Changes in light and dark adaptation: The main phenomenon is that the elderly have more difficulty in adapting to changes in light and dark environments, requiring a longer adaptation period and a significantly slower adaptation rate.

Decreased visual search ability: The decrease in visual search ability in the elderly may be due to a decrease in visual attention allocation.

Reduced visual field: Due to the decrease in the number and function of optic cells, the visual field of the elderly becomes correspondingly smaller, which leads to a corresponding reduction in viewing distance and stereo vision.

2.1.1.2 Auditory characteristics

Frequent short-term hearing loss.

Insensitivity to high-frequency sound: High-frequency sound refers to the sound in the frequency band of 2000-16000HZ, which is expressed as sharp and harsh sound in life, such as the sound of mosquitoes "buzzing" in the ear, doorbell, insects' chirping, etc.

Hearing loss: the normal hearing range is less than 25 decibels, the elderly hearing loss is a common phenomenon, the need to raise the sound intensity to 40 decibels.

Decreased level of auditory selective attention: Focusing on a person's conversation and ignoring other conversations or noises in the environment.

2.1.1.3 Behavioral Characteristics

Mobility: muscle atrophy decreases strength and affects flexibility and limits range of motion in older adults.

Slow reaction time: The muscles and bones of the elderly age to varying degrees due to the weakening of physical functions.

Limb incoordination: Decreased bone density and calcium content can easily lead to fractures and joint stiffness.

Hand trembling and difficulty in handling: Parkinson's and other diseases.

2.1.1.4 Cognitive characteristics

(1) Declining comprehension: Some digital services are designed by the post-80s and 90s, which are different from the era older users live in. Under the influence of declining memory and comprehension, older users have limited understanding of the new generation culture.

(2) Degradation of memory: the long-term memory ability of the elderly group declines significantly, and logical understanding memory is better than mechanical memory; the memory of the past is deep, but the impression of recent events is blurred; the long-term memory ability of the elderly is not as good as the sensory memory and memory. Therefore, the product information layout should help the elderly to develop fixed behavioral habits and deepen their memory through repeated operations (Rogers, 2005).

(3) Decreased attention: There is a phenomenon of stickiness and inertia, losing the precision and speed needed to control the attention process when they were younger.

2.1.1.5 Expression characteristics

Physiological language impairment: refers to the physiological degenerative process that occurs after maturity, which includes cognitive aging of the brain, which can degrade the language skills of many older adults, such as difficulties in vocabulary extraction and problems in understanding discourse with difficulty.

Accent dialect: The regional and cultural differences of the elderly user group are much higher than other groups, and they are used to communicating in dialects due to regional differences, and do not speak Mandarin.

2.1.2 Psychological characteristics:

2.1.2.1 Decreased sense of security

The current network environment is intricate and complex, network fraud, infringement, inducing users' means are endless, the elderly feel less secure on smart devices, more mentality is afraid to operate, no sense of security on the network.

2.1.2.2 Weak adaptability

Due to the limitations of physiological conditions, such as the decline of short-term memory and the degradation of thinking ability, the elderly are less receptive to new things, and it takes longer to learn and understand a new thing, and their ability to adapt to the social and living environment is weakened. They usually find it difficult to learn the use of new technology products and are reluctant to try them out actively.

2.1.2.3 Loss and low self-esteem

Older people may feel out of touch with the times, feel lonely and empty mentally, and are prone to low self-esteem, often feeling neglected and wanting more care and recognition from family and society.

Based on the analysis of physiological characteristics and psychological characteristics of the elderly, the problems affecting the elderly can be basically divided into six categories, namely, can not see clearly, can not hear clearly, difficult to operate, can not understand, can not explain, unwilling to learn (Figure 2.1).

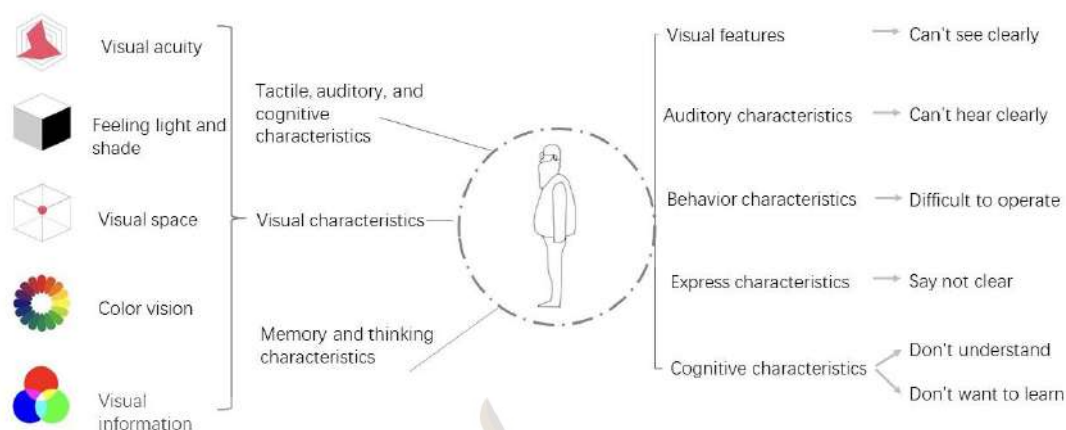


Figure 2.1 The physical features of the elderly

Source: Researcher

Older adults are not just older people; like any other population, they are a highly diverse group, and each individual has different characteristics, which leads to different difficulties for each individual in using the product. Most persons over the age of 65 likely are healthier, more active, and mentally better off today, than were those of previous cohorts (Crews, 2005). The elderly population living in the city, earn a lot of money, so we can design some unique packages for them. From the perspective of practical application, as the elderly are a relatively special consumer group, the requirements of the commodity packaging industry for the aging group also have certain differences, and need to fully reflect the characteristics of the elderly group and the real shopping needs. Usually, some daily necessities or common goods will only come with a simple instruction manual in the selling process, which has the manufacturing date of the goods and simple descriptive words, but the elderly group can not effectively identify these information, so the commodity packaging design should start from the physiological perspective of the elderly, so that the goods have a more eye-catching reminder function, choose a more beautiful and simple structure type or easy to The design of product packaging should be based on the physiological point of view of the elderly, so that the product has a more eye-catching reminder function, choose more beautiful and simple structure type or easy to recognize the font color.

Food is an indispensable part of people's daily life, and in recent years, the issue of food packaging's suitability has gradually attracted attention. Food packaging conveys food information and plays a role in protecting food, etc. However, some of the current products on the market do not show the suitability of the packaging for the elderly, often ignoring the real needs of the elderly groups visually and psychologically.

2.2 Case Analysis

I found an existing brand. The brand name is Jiushan Farm. With the belief that "the time is right, the place is right", the brand provides elderly consumers with high quality organic products. The Grain Gift Box is their first product on the market and uses a series of strong hand-made illustrations in the main visual of the packaging to convey the brand concept of organic farming (Figure 2.2).

The advantage of this package is that the color of the food echoes the color of the package, making it easy to find. The packaging surface is designed with an opening to help seniors find what they want quickly. The disadvantage is that their boxes do not meet the needs of the elderly and are not easy to carry and hold. And they sell the cereals separately.



Figure 2.2 Jiushan Farm brand series packaging

Source: Chinese network RED, 2022

Then there is the case of the brand, Akikawa Farms, a Japanese brand. Their slogan is “What goes into your mouth must not be wrong.” In order to reflect this concept in the package design, the designer used the content information, which is usually placed on the back of the product, as the main design element and highlighted it on the front of the package. In the logo design, the new brand color "Boutaro Green" was set to recall the first generation of idealized farms of the Boutaro family. As the company strives to create a regional cycle-oriented agricultural model, the team designed a logo featuring the mountains of Yamaguchi Prefecture. The raw speckled pattern came from an existing logo and conforms to the shape of a map of Yamaguchi Prefecture and parts of Fukuoka Prefecture. The design has begun to be reflected in the product's packaging. Akikawa Farms has begun working to reconnect its philosophy of reliable food with today's conscious consumer.

For the rest of the packaging, the design uses the consistency of the mountain range theme. When the products are placed side by side on the shelves, the mountains appear to be lined up, creating a strong visual impression on consumers. On the outer

box, an illustration of a farm is used, connected on all four sides. The illustration goes from the pasture to the table, reflecting the slogan "Raise, Make, Eat" (Figure 2.3).



Figure 2.3 Akikawa Farm brand series packaging

Source: Chinese network RED, 2022

The following series of packages is a new range of frozen and pre-cooked fish and crustaceans branded by "Ionian Fish" for the Greek market! Drawing inspiration from the long tradition of fishing, and in order to emphasize the richness of fishing in the Ionian Sea and the Gulf of Ambracia, where the product originates from, the packaging uses a "combination of reality and reality". The packaging adopts a "real and imaginary" design approach, with a simple die-cut on each package allowing the consumer to see the quality of the product he has chosen, while the pattern is presented using a linen pattern technique. The almost rough appearance of the pattern responds to the traditional requirements of the brand's craftsmanship (Figure 2.4).

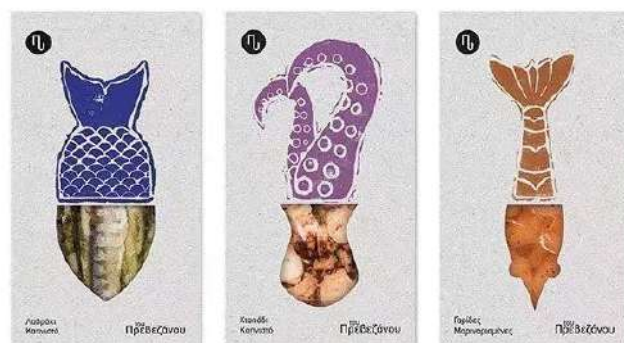


Figure 2.4 Ionian Fish brand series packaging

Source: Chinese network RED, 2023

Packaging design culture is an important expression of modern culture, which contains both traditional ethical elements of society and modern mainstream popular elements. Elderly people and young people are different, they do not pursue excessively avant-garde or fashionable things, often tend to have a traditional cultural depth of the type of things, most prefer quiet and stable culture, so we often find the elderly in the neighborhood to participate in chess activities, playing poker activities, etc. In the level of commodity packaging design, we can also extract some familiar cultural phenomena or representative elements in the life of the elderly and transform them into packaging modeling language.

There are a lot of traditional materials that can be utilized in the field of traditional national art in China, for example, some commodities have been improved at the cultural level in packaging design, such as moon cakes (Figure 2.5). Mid-

Autumn Festival as a traditional Chinese festival, represents the reunion of the family, so in the moon cake packaging design level, you can highlight the humanistic concern for the elderly, square and round generous and stable shape is the main, at the same time in the packaging materials pay attention to the functionality of the product, so that the content is greater than the form, to meet the elderly's rustic life requirements. And in certain festivals as the theme of the gift packaging design, will also use some auspicious patterns (such as cloud pattern, fruit, etc.) to convey the concern for the elderly, to express the respect of the elders of the younger generation to the elders (Figure 2.6).



Figure 2.5 Rabbit and Fairy Illustration Mooncake Packaging

Source: Chinese network RED, 2023



Figure 2.6 Chinese Painting Pomegranate Mooncake Packaging

Source: Chinese network RED, 2023

These are some of the food packaging cases summarized in this article, these cases in different degrees to provide me with a worthy place to learn. At the same time also opened my eyes.

มหาวิทยาลัยรังสิต Rangsit University

Chapter 3

Question Research and Summary

Significant changes in the demographic structure will certainly have a comprehensive impact on the development of social economy and the daily life of the people. Food is the people's livelihood, and food packaging is closely related to people's lives. In the context of the era of concern for people's livelihood as the main theme, it is particularly important and urgent to explore the food packaging design in the context of the aging society.

3.1 Question Research

Due to the low Internet contact rate of the elderly group, the online questionnaire survey was not taken, and the author conducted offline questionnaire research based on visiting places where the elderly are densely populated, such as parks, squares and supermarkets (Figure 3.1). By analyzing the feedback of the questionnaire survey, we learned that people are more concerned about the health and safety issues related to food because they are in the post-epidemic era.



Figure 3.1 In-depth conversations with seniors at supermarkets and case studies
in books

Source: Researcher

By analyzing the feedback from the questionnaire survey, we learned that most elderly people still prefer to shop in supermarkets, and food safety is the main factor affecting their shopping, and they usually buy food in supermarkets (Figure 3.2). Most of the seniors who participated in the survey emphasized the issue that while price is still important to them, food safety and health are more important at this stage.

Questionnaire Survey (A total of 30 seniors were interviewed.)

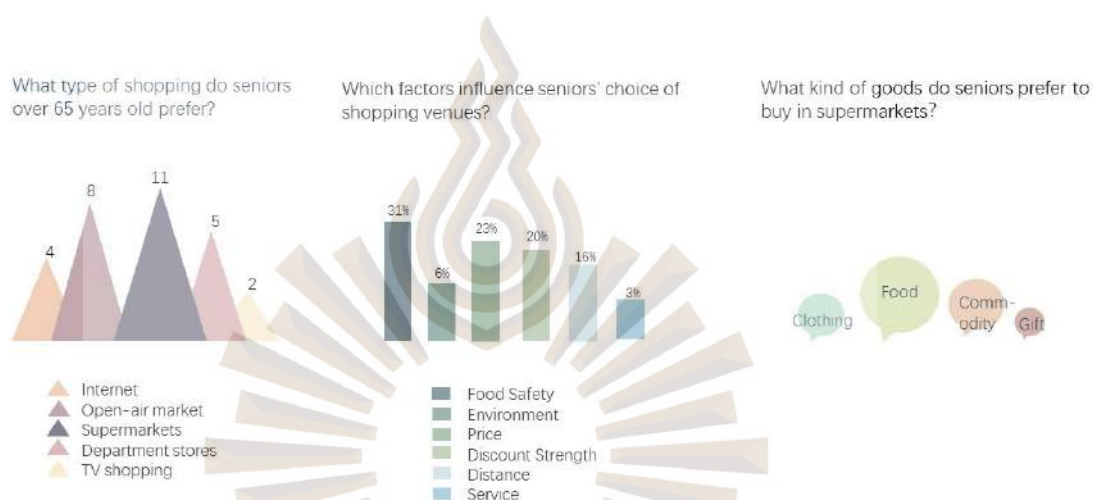


Figure 3.2 Questionnaire feedback form

Source: Researcher

Then, we conducted in-depth interviews with two of the older adults to learn more about some of their views on current food packaging (Figure 3.3). The purpose of this interview was to gain insight into the real needs and obstacles of the elderly in the supermarket shopping process. The target interviewees were set as local seniors aged 65 years or older, capable of behavior, with medium or higher income levels, and more focused on shopping experience and product quality and safety. The author summarized and refined the information obtained from the interviews.



Figure 3.3 In-depth Interview Information Summary

Source: Researcher

3.2 Question Summary

Current problems of age-appropriate food packaging (Figure 3.4).

1) Food packaging information is not conducive to the recognition of the elderly

Restricted by physiological functions, the attention and comprehension of the elderly have decreased, and have certain obstacles when reading, many elderly people need to use presbyopia glasses when reading the text. Therefore they usually fail to find the focus for the full-page design, and often need to look at it repeatedly and constantly. At the same time, most elderly people suffer from common chronic diseases, and have their own limitations on the purchase of goods, while the current market food packaging almost no hints for these common chronic diseases, which undoubtedly increases the difficulties of the elderly groups to buy food. (Bou-Mitri, 2020)

2) The aesthetics of food packaging does not meet the interests of the elderly

Due to the special background and upbringing of the elderly in China, they prefer stability, poor acceptance of new things, and prefer conservative and traditional style. Considering the aesthetic interests of the elderly, the packaging design should be as aesthetically balanced as possible between the preferences of the

elderly and the objective aesthetics. It is not evident that these design principles are followed whenever accessibility issues are dealt with the older adults or people with disabilities. (Mustaquim, 2015) However, the senior food packaging on the market now is usually just a small modification of the original product packaging, which does not fully meet the aesthetic interests of the elderly.

3) Food packaging does not take care of the experience of the elderly (Figure 3.5)

The usage experience of elderly people is of the most important factor for packaging design (Buddeejeen, 2018). Older people due to the growth of age, memory function is reduced, the ability to accept new things is poor, in the way of packaging, some new packaging open way for them to become difficult. And the elderly usually have "save up" behavior, therefore, food packaging should especially take into account the function of secondary storage. The choice of materials, the elderly also prefer to be able to second use of environmentally friendly packaging. Now many products on the market are designed to pursue simplicity, the surface will be very smooth, but the elderly due to the degeneration of hand muscles, in picking up these products are easy to fall; glass and other fragile materials will produce dangerous.

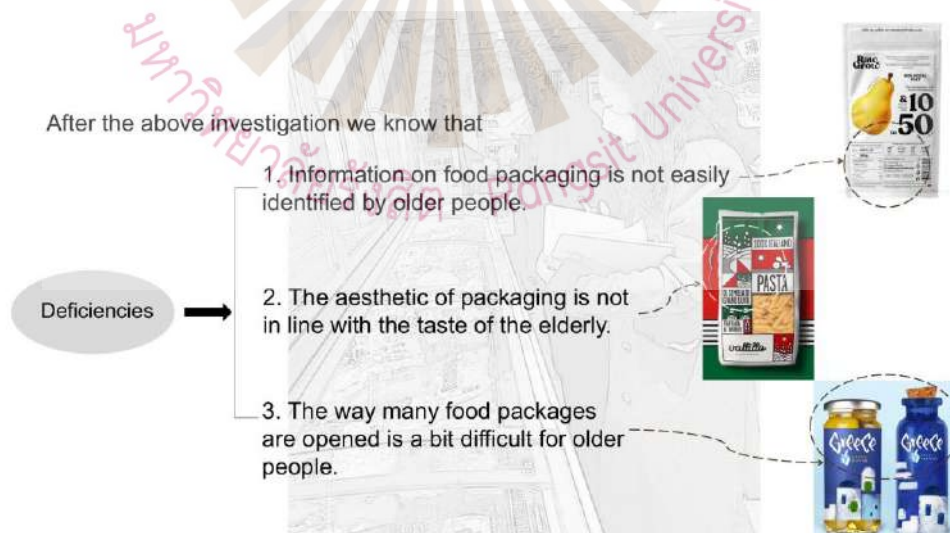


Figure 3.4 Summarize the shortcomings of the packaging on the market

Source: Researcher



Figure 3.5 Detailed list of each disadvantage of packaging

Source: Researcher

To determine the direction of the packaging design, I conducted another interview. Understand that they will often eat grains and cereals due to their bad teeth. So I went to the supermarket again to investigate the cereal packaging (Figure 3.6).

Most cereal packages are too heavy for older people, and they all require hand-carrying, and older people's fingers are not strong enough to grip them firmly enough.



Figure 3.6 Observe cereals packed in the supermarket and talk to the elderly

Source: Researcher

Humanized analysis of the opening of food packaging for the elderly

At present, the more popular food for the elderly on the market, the packaging shape is very different, the choice of materials complex and diverse, which involves the structure of the materials used in the product and the production process, and the way it is opened is also very different. According to the different materials used in food packaging for the elderly, the product packaging open roughly: paper-based materials, plastic-based materials, glass-based materials, metal-based materials, etc., selected from the market the four most common forms of food packaging for the elderly in the market: bagged, cups, bottles and filled, are selected as the object of analysis (Figure 3.7).

1) The opening of bagged food packaging

Bagged food usually uses zipper, press type, squeeze cap type and other opening methods.

2) Cup food packaging opening

The opening part of the senior cup type food is also usually designed in the cup lid, usually using cup food special sealing equipment, heat sealing of the container, sealing production materials such as paper, plastic, composite materials.

3) The opening of bottled food packaging

The common bottle packaging in the market mainly includes plastic, glass, ceramic and organic composite materials, etc. The opening methods are mainly screw cap, cork and crown cap, etc. The screw type opening design is more used in plastic materials, and is also one of the most widely used and convenient ways to open.

4) Opening of canned food packaging

Canned foods occupy a large proportion of the senior food market. Such as milk powder, meat loaf, canned food, nuts and other foods are mostly packaged in this way. In order to ensure the smooth opening of canned foods, most of the sealing lids and pull rings are made of metal.



Figure 3.7 Classification of food packaging according to the different materials

Source: Researcher

The whole process of opening food packaging covers three stages: before opening (searching for the opening part), during opening (understanding the opening method), and after opening (opening the package); for non-disposable food, there also exists the process of sealing and reopening after opening, and food for the elderly is no exception. In the design of food packaging for the elderly to open, should be opened for the different stages of the corresponding humanized design, summarized as the visibility and ease of use before opening the design, open the functionality and innovative design, open the safety and environmental protection design, so that the elderly in the opening of the different phases of the security and convenience, in order to meet the growing demand for services for the elderly.

1) Humanized design before opening

In the design of food packaging with opening device for elderly consumers, the shape, structure and material of the package can be exaggerated design, and with highly recognizable colors, graphics and text to prompt the location and method of opening the package, from the visual orientation and tactile orientation to guide the elderly to open correctly in two aspects. Therefore, we should pay attention to the humanized design of food packaging for the elderly before opening, one is to highlight the visibility of the design to use simple abstract, colorful graphics to indicate the opening position, supplemented by the necessary text to explain, and with

bold lines or eye-catching arrows to enhance recognition. The second is to highlight the ease of use of the design, the choice of different categories of structures, materials bring a different tactile feeling, in order to convey the opening information, highlighting the elderly food opening design of the visibility and ease of use, easy for the elderly to open easily and correctly. For example, for yogurt and other cups of food, can be used to extend the opening of the disposable cup lid, to facilitate the elderly consumers can clearly perceive the opening part, and then safe and smooth opening.

2) Open in the humanized design


The elderly food packaging before opening even with a more perfect visual and tactile orientation, if the opening in the opening ignored the design of the details of the opening action, it is also easy to cause safety problems due to improper operation of the elderly. Therefore, we should pay attention to the elderly food packaging to open the humanized design, one is to highlight the functionality of the design, select the surface rough texture of the material so that the elderly in the opening of the package is not easy to slip, to ensure that the correct opening at the same time to reduce the strength of the package to open. The second is to highlight the innovative design, with novel visual experience, stable color matching, intuitive graphic feeling, so that the elderly food packaging has a "temperature", naturally, will also have infectious and affinity, to bring the elderly closer to the distance between the food, so as to ensure that the elderly safe, convenient to open the food packaging, to promote the re-purchase. Such as canned food in the open, you need to open in accordance with the direction of the schematic shape and force hook up the ring, and the ring is close to the surface of the can, usually with the finger will pull out the ring, the use of improper is easy to damage the nails. In the face of the elderly as a special consumer group, the can top interface and the pull ring to do appropriate treatment, such as cutting flat can top interface, and the pull ring to extend the appropriate, so that when opening the required strength will become smaller, to ensure the safety of the elderly to eat. When opening cups of food, the traditional way to open the spiral-based, but the lack of this way to open the point of force leads to the elderly is difficult to unscrew, in the case of grip is not big enough to open the slippery phenomenon. We

can consider designing a small and exquisite "point of force" shape on the cap, thus realizing a simple, convenient and humanized design.

3) open the humanized design

Elderly food packaging needs to be used after opening to open again, whether the packaging has a repeated airtight structure, to consider a number of factors, in the repeated use of the process of modeling, structure is not easy to slip or damage, both to protect the quality of food and can take care of the safety of the elderly. At the same time, after the opening of the metal pull bad, plastic bottle caps and so on, indirectly caused by environmental pollution and waste of resources. Therefore, to focus on the elderly food packaging after opening the humanized design, one is to highlight the safety of the design, but also the whole package to open the essential attributes of humanized design, always throughout the entire design process. The second is to highlight the design of environmental protection, set up a low-carbon environmental protection concept, the selection of non-toxic and harmless, easy to degrade and easy to recycle or can be regenerated material. Such as bottled food for the elderly, the use of materials are mostly glass containers, and the use of the opening method is the bottle cap sealing. The design, once opened after the use of incomplete and difficult to repeat the seal, in the glass bottle mouth on both sides of the installation of two small wire device, the use of open when it is gently press the small wire device, the bottle cap will slowly and automatically pulled up, when not in use, the cap will be pressed on, not only repeated open and safe and environmentally friendly.

In food packaging design, we must fully consider the physiological characteristics and psychological characteristics of the elderly population, on the basis of the study of the group's functional requirements and emotional expectations of food packaging, I will then propose the corresponding food packaging design strategy (Figure 3.8).



How packaging can be improved in the daily life for the elderly?

Figure 3.8 Propose a general design strategy

Source: Researcher



Chapter 4

Design Process

4.1 Design concept & idea

There are four major categories of design needs for the elderly. The first is physiological needs, including visual, memory, and touch. Then there are service needs, The content is easy to understand. The goal is clear. The security guarantee. And psychological needs value embodiment and always accompany. Finally is material needs, financially support, the elderly population living in the city, earn a lot of money, so we can design some unique packages for them.

Only by studying the internal needs of elderly users can we abandon the limitations and truly review the packaging design from the perspective of elderly users.

Older people should not only eat well, but also eat healthy and match their meals to their bodies. Most of the food packaging designs available in the market for living purposes, such as table salt and rice, are based on human regular use considerations and do not take into account the special characteristics of the elderly population. As seniors living independently, these are necessities. So, I decided my design direction, mixed grains packaging design.

4.2 Propose new product direction

Whole grains provide a wide range of nutrients and phytochemicals that optimize health. (Slavin, 2000) Based on my research, I wanted to create a combination. (Figure 4.1) According to the nutritional value of each grain to make a

combination, divided into different series. The combination of different grains together will bring improvements to the body.

Five grains refers to: rice, wheat, soybeans, corn, potatoes, but also customarily will be outside the rice and flour grain called miscellaneous grains, and five grains miscellaneous grains also refers to the food crops, so the five grains is also a collective term for food crops. Grains and cereals can nourish the five organs. As early as in ancient times, there is "a grain to supplement an organ". Soybean heavy kidney, rice heavy moisturizing lungs, millet heavy spleen, sorghum heavy liver, wheat heavy heart.

Six benefits of grains and cereals

- 1) Prevent disease and maintain health
- 2) Anti-cancer
- 3) Remove toxins from the body
- 4) Enhance memory
- 5) Beauty and skin care
- 6) Promote fat metabolism

Nutritional value of 20 grains and cereals:

- 1) Millet: sleep and stomach

Millet can benefit the kidneys and stomach, in addition to the heat to replenish the deficiency, restful and stomach. Millet is rich in tryptophan, can be easily absorbed, tryptophan will prompt the secretion of pentahydroxytryptophan sleep-promoting serotonin, is a very good sleep and stomach food.

- 2) Sorghum: spleen and stomach.

Sorghum can warm the middle and astringent intestines, stop cholera, facilitate urination, strengthen the spleen and benefit the middle, replenish the gas and clear the stomach. Sorghum has a significant therapeutic effect on children's indigestion and adults' spleen and stomach qi deficiency. Pediatric dyspepsia, can take sorghum into the pot fried incense, shelled and ground powder, each time to take 2-3

grams to take. But sorghum is warm, containing tannins with astringent diarrhea, constipation should not be consumed.

3) Job's tears: clearing heat and strengthening the body

Job's tears, the protein contained in it is much higher than rice, noodles, easy to digest and absorb, to reduce the burden on the stomach and intestines, strengthen the body is beneficial. Job's tears are good for clearing away heat and strengthening the body, strengthening the spleen and lungs, stopping diarrhea and stomach, reducing swelling, and easing the role of intestinal and gastric inflammation, which is suitable for foot fungus and swelling, and can also improve acne, lighten dark spots, freckles, and roughness of the skin, etc. Modern research has proved that Job's tears have a positive effect on the skin and the body. Modern research has proved that Job's tears have anti-tumor, enhance immunity, lower blood sugar and other effects. Job's tears and rice porridge or add an appropriate amount of rock sugar to eat, can make the tumor patients increase appetite, reduce the toxic side effects of radiotherapy. In addition, Job's tears contain coixenin on the transverse muscle has an inhibitory effect, can reduce wrinkles, people may wish to eat more beauty.

4) Gorgon fruit: prevent aging

Gorgon fruit can tonify the spleen and kidneys, astringent diarrhea, analgesic and sedative, relieve diarrhea, neuralgia, rheumatism and bone pain lumbar and knee joint pain and other symptoms. Gorgon fruit can also strengthen the spleen and stomach, spleen and blood, so that a person's ears and eyes, beautify the skin, anti-aging.

5) Buckwheat: lowering blood lipids

Buckwheat can benefit the energy, appetite and bowel movements, clearing heat and detoxification. Buckwheat in the medical clinic is used in the prevention and treatment of hypertension, stroke, atherosclerosis, nephritis and other diseases. Which contains large linoleic acid, can reduce cholesterol and blood lipids in the body.

6) Soybeans: broaden the qi

Soybean has the "king of beans" said, was called "plant meat", "green dairy cattle", the most nutritious value. Soybeans can strengthen the spleen and open the middle, moistening dryness and eliminating water, broadening the gas,

clearing heat and dispersing blood, weak spleen and stomach should be eaten often. Soybean can prevent and improve breast cancer, prostate cancer and improve women's menopausal symptoms, osteoporosis, etc.; to maintain vascular softening, improve iron deficiency anemia, neurasthenia. Made of soybeans with a variety of soy products such as tofu, soy milk, etc., also has medicinal properties: tofu can broaden the qi, heat and blood, especially suitable for phlegm and heat cough and asthma, wind and cold, sore throat people eat.

7) Oats - lowering blood sugar

Oats can nourish the spleen and kidney, stop bleeding and swelling, and strengthen the body. Linoleic acid contained in oats is good for diabetes, constipation, cholesterol suppression, conditioning of post-disease weakness, prevention of cardiovascular disease, and maintenance of stable blood sugar.

8) Brown rice: help digestion

Brown rice can help digestion, easier to digest and absorb than white rice, can prevent beriberi and eliminate toxins. Brown rice retains the germ, which accounts for only three percent of the rice, but contains 70 percent of the vitamins and minerals, especially vitamin B1. Therefore, it is more suitable for infants and diabetics, as well as people who want to maintain a slim figure. Brown rice retains a large amount of dietary fiber, which can promote the proliferation of beneficial intestinal bacteria, accelerate intestinal peristalsis, soften feces, and prevent constipation and intestinal cancer; dietary fiber can also be combined with cholesterol in the bile to promote cholesterol discharged, thus helping patients with hyperlipidemia to reduce blood lipids.

9) Black beans: nourishing Yang

Black beans are a cool nourishing aphrodisiac. Moderate consumption of black beans, diabetes, vision loss, premature whitening of the beard, eczema foot, anemia, has a very good therapeutic effect. Eat some black bean powder every day, mixed with sesame powder, walnut powder, can make hair black and bright. Modern people work under great pressure, prone to physical weakness and fatigue. To enhance vitality and energy, according to the theory of the motherland medicine, tonifying the kidney is very important. Black beans are an effective kidney tonic. According to the theory of Chinese medicine, beans are the grain of the kidney, black

is water, and water goes to the kidney, so it is beneficial for people with kidney deficiency to consume black beans. Black beans also have the effect of beauty and skin care for young women.

10) Purple rice, black rice: eye protection

Black rice is a precious variety of glutinous rice, diabetes and cardiovascular disease patients ideal dietary supplements, but also very high nutritional value of tonic, [Dream of Red Mansions] called the "Yutian cochineal rice". Purple rice and black rice and other purple and black grains are generally rich in anthocyanins, with antioxidant effect, can prevent fat oxidation and maintain the health of blood vessels in the eye.

11) Sesame seeds - blood circulation and skin care

Sesame laxative, but also blood and skin, hair black hair, more brain and memory and delay the role of aging. Sesame contains substances that prevent the human body from gaining weight, in the diet to lose weight at the same time, with sesame consumption, rough skin can be improved.

12) Wheat: spleen, nourish the heart

Wheat is sweet, neutral and slightly cold, has the spleen and kidney, nourish the heart and tranquilize the efficacy. Insomnia can be used wheat and rice, jujube porridge served together. In addition, wheat bran contains high dietary fiber, hyperlipoproteinemia, diabetes, atherosclerosis, hemorrhoids, senile constipation, colon cancer have preventive and curative effects.

13) corn: lower cholesterol

Taste sweet and flat, with the spleen and dampness, appetite and wisdom, heart and blood role. Linoleic acid in corn oil can prevent cholesterol precipitation to the blood vessel wall, to prevent hypertension, coronary heart disease has a positive effect. In addition, it has diuretic and blood sugar lowering effect, especially suitable for diabetics. American scientists also found that eating corn can stimulate brain cells, enhance human memory. Luteinizing hormone and zeaxanthin contained in corn can prevent the occurrence of macular degeneration of the eyes of the elderly.

14) green beans: heat detoxification

Mung beans are cold in nature and have the function of clearing heat and detoxification. Nutritious, is a good product to prevent heatstroke, can be made into a variety of pastries, fans, noodles, brewing mung beans and shochu.

15) Red bean: clearing heart fire, tonifying heart blood

Chinese medicine believes that red beans clear heat and dampness, swelling and detoxification, clearing the heart in addition to annoyance, blood and tranquility, but also for the body to supplement potassium, magnesium, phosphorus, zinc, selenium and other nutrients. Li Shizhen said red beans for the "heart of the valley", red beans can clear the heart fire, but also to replenish the heart blood. In addition, red beans are rich in crude fiber material, help lower blood fat, lower blood pressure, improve cardiac activity function. Red beans are rich in starch, so they are also known as "rice beans", which has the function of "Jin Jin liquid, facilitate urination, eliminate bloating, remove swelling, stop vomiting". Red beans are indispensable in people's lives, high nutrition, multi-functional grains.

16) Peanuts: fruit of longevity

Peanut is one of the "ten longevity food", rich in vitamins, proteins, fats, riboflavin, unsaturated fatty acids and calcium, phosphorus, etc., and its spleen and stomach disorders, coughing and wheezing, anemia, constipation, intestinal dryness and so on have a very good therapeutic effect, is a kind of food for young and old alike.

17) Sweet potato: prevention of cardiovascular disease

Sweet potato is low-calorie, low-fat food, but also to prevent carbohydrates into fat, eat in the fall and winter can play a role in weight loss. And sweet potatoes are rich in potassium, beta-carotene, folic acid, vitamin C and vitamin B6, these five ingredients can help prevent cardiovascular disease.

18) Fava beans: memory enhancement

Fava beans contain calcium, zinc, manganese, phospholipids and other important components that regulate the brain and nervous tissue, and are rich in cholecalciferol, which has a brain-boosting effect on memory. Calcium in fava beans, conducive to bone calcium absorption and calcification, can promote the growth and development of human bones.

19) Kidney beans: beneficial to the heart

Kidney beans contain saponin, urease and a variety of globulin, can effectively improve immunity, activate lymphoid T cells, and urease is a better treatment for patients with hepatic coma. Kidney beans is also a high potassium and low sodium food, very suitable for heart disease, atherosclerosis, high blood fat and salt patients.

20) Lentils: lower cholesterol

Lentils provide protein and soluble fiber that can lower cholesterol, and they contain twice as much iron as other legumes. Lentils are also high in vitamin B and folic acid, which is very important for women to reduce the rate of fetal malformations.



Figure 4.1 Different combinations of grains

Source: Chinese network RED, 2022

Here is a table from which you can see that different grains are good for the organs (Table 4.1).

Table 4.1 A part of the different grains that are good for different organs

Grain	Brain	Eyes	Heart	Skin	Stomach	Joints	Lungs	Liver
Soybeans					√	√		
Red beans			√					
Black beans		√		√				
Fava beans	√					√		
Buckwheat	√						√	
Purple rice		√						
Sesame	√							
Wheat			√					
Kidney beans			√					
Sorghum								√
Brown rice					√		√	

According to research, grains and cereals are divided into eight parts, which correspond to eight body parts. Eat This one is good for the eyes, and this one is good for the brain, Lungs, heart, liver, skin, stomach, joints.

Seniors should consume 50 to 100 grams of whole grain foods per day. So I think it would be better to make the mixed grains package into smaller portions.

So, I decided to create a box that could be placed in their homes and a display box in the supermarket, as well as some small packages. If a part of the home box is eaten up, you can go to the supermarket to buy some back and put it in the big box. The large box of servings is 32 bags, the display box has eight, each box has 10 bags, 1 small package of grams is 50 grams.

4.3 Design exploration

There is the first version of the model (Figure 4.2). The shape of a person. Advantages are easy to see, find what you want quickly. Disadvantages are the packaging is too cumbersome and not easy to carry.



Figure 4.2 Pictures of the first version of the model

The second version of the model is a rectangular box (Figure 4.3). Advantage is the ability to visually see each box. Disadvantages are the pattern is too medical. The internal structure is not solid.

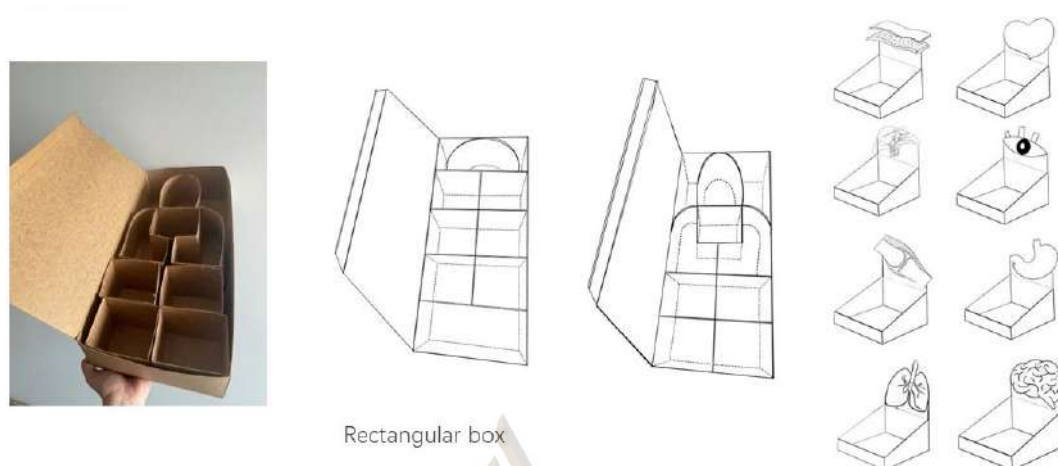


Figure 4.3 Pictures and sketches of the second version of the model

The third model, which continues the second model (Figure 4.4). A carrying handle was added. After testing, this carrying handle is not good.



Figure 4.4 The third version of the model picture

4.4 Final design

These illustrations of eight parts (Figure 4.5). Using different shapes of beans to form the eight parts of the body. The inspiration comes from the traditional Chinese culture, paper cutting. In China, paper cutting is usually used during the Chinese New Year to symbolize good luck and good wishes. Older people are generally fond of it, so I used the element of paper cutting to echo the emotional value of older people.

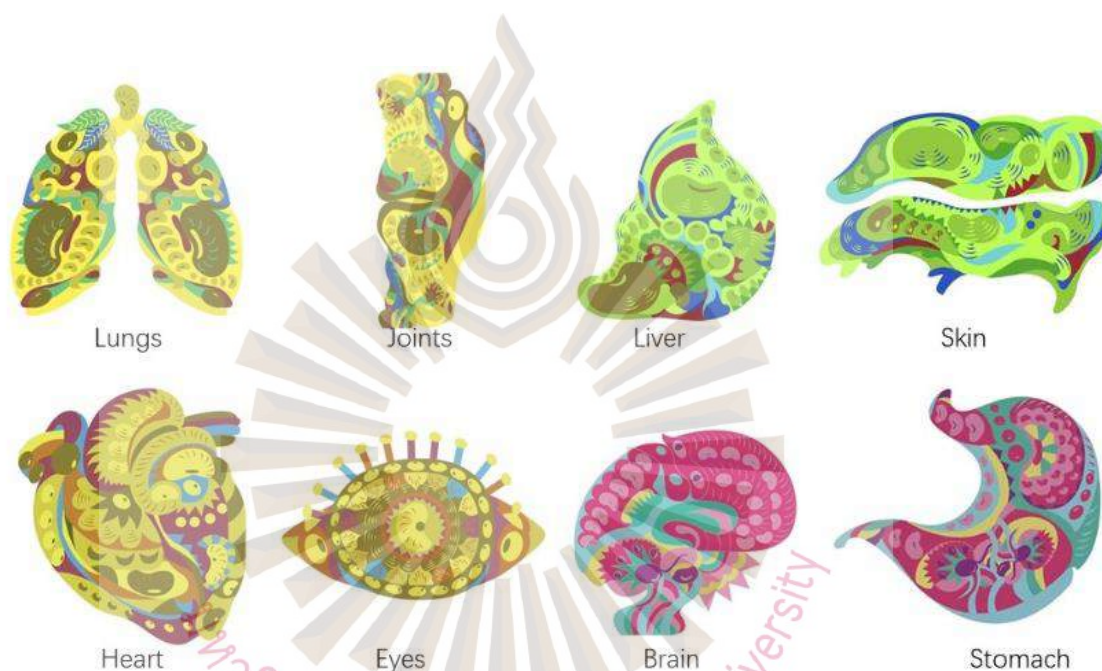


Figure 4.5 Eight parts of the illustrations

Here is the logo design and font design (Figure 4.6). The logo uses the element of leaf to symbolize green health and environmental protection. It is also the Shan of the brand name Jiushan. The final presentation is an image of an old man.



Figure 4.6 Logo design and font design patterns

Next is the plan view of the package (Figure 4.7).

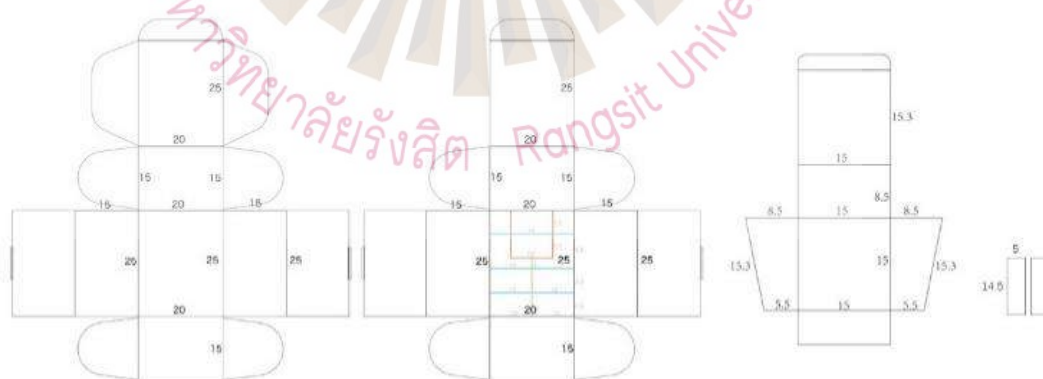


Figure 4.7 The plane expansion of each package

This diagram is the layout of the large package, the display box, and the small package (Figure 4.8).

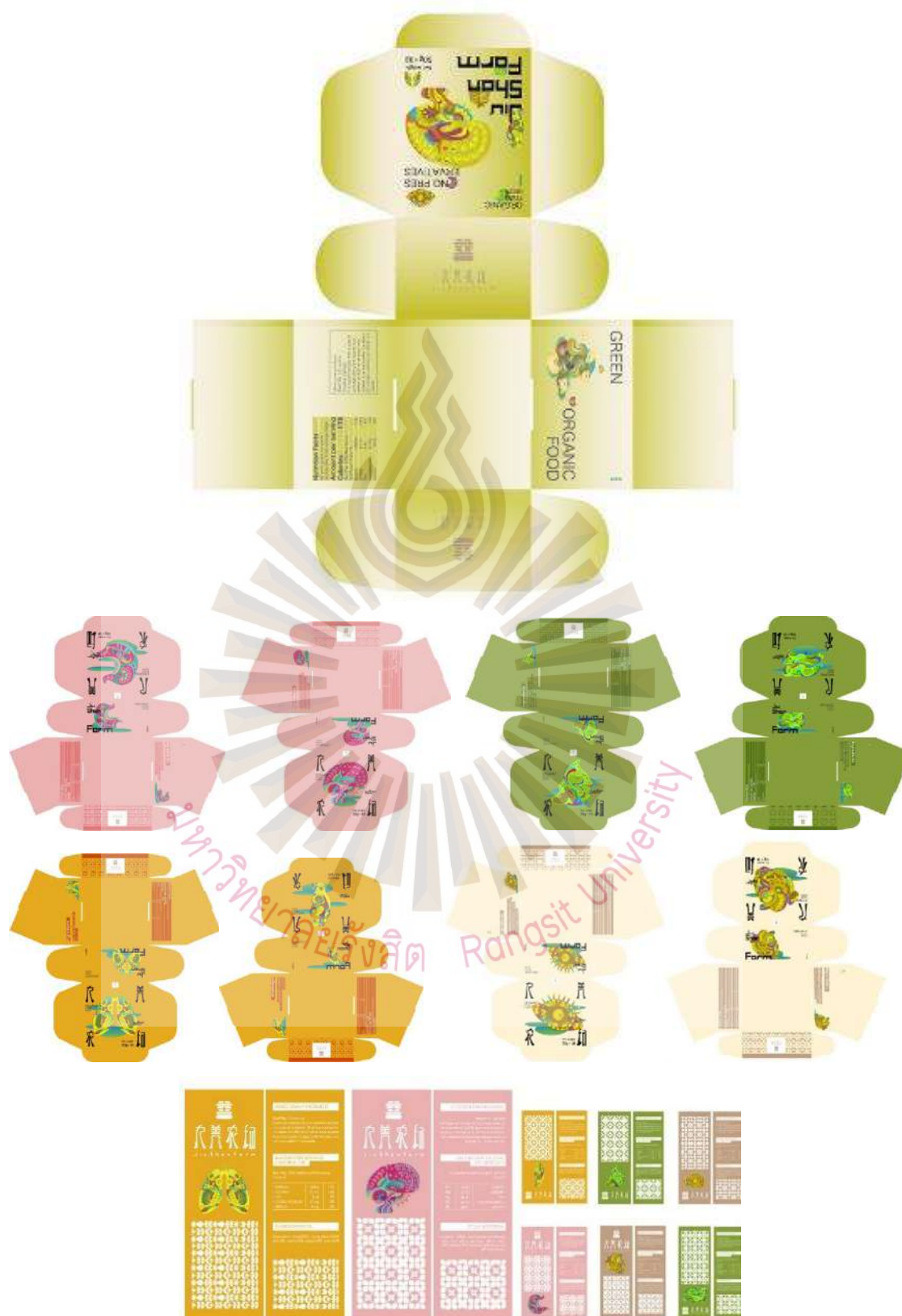


Figure 4.8 The layout of each package

Finally, the physical photo of the packaging. This page is a large package, printed on card stock (Figure 4.9). In order to comply with the concept of environmental protection, the whole package does not use glue, but it is not solid enough structure.



Figure 4.9 The physical picture of the package printed on card stock

This one is Final product ,printed on cardboard (Figure 4.10). In the exploration of the packaging, I used organic glue in order to make the structure more stable. In order to make it easy for the elderly and even all people to carry, I changed this, the carrying handle was changed to a shoulder strap, which can be carried more easily.



Figure 4.10 The physical picture of the package printed on cardboard

Display boxes on supermarket shelves (Figure 4.11). In order to make the display box inside the small package can let everyone see more clearly, I made a

bottom, which allows the small package to stand up. The display box also did not use glue.



Figure 4.11 Pictures of display boxes on supermarket shelves and pictures of individual display boxes

Small package. I chose paper as the material for the small package, which can be easily torn open (Figure 4.12).



Figure 4.12 Pictures of small packages made of paper and pictures of small packages torn open

Therefore, the above is a complete set of food packaging designs for mixed grains that I have created, based on the results of various research studies. This series includes a large box set, display boxes for eight different mixed grains formula (lungs, joints, liver, skin, heart, eyes, brain, and stomach), and individual pouches for each of the eight formulas.



Chapter 5

Conclusion and Recommendations

5.1 Conclusion

From the perspective of aging in the new era, the humanized design of food packaging for the elderly should focus on "comfort + effectiveness + beauty." Though it's just one component of food packaging, it significantly impacts both food storage safety and the well-being of elderly consumers. Applying this knowledge base ensures that products are safe, efficient, and user-friendly for older adults (Fisk, 2002). Therefore, designers should skillfully transform received information into artistic design, catering to the various physiological, psychological, and behavioral needs of the elderly. They must also consider food properties, green material requirements, and elderly expectations for safe food packaging and easily handling. This approach aims to provide convenience and humanized design services to a broader elderly audience, reflecting the cultural content and humanistic care in food packaging for the elderly.

5.2 Recommendations

The aging design strategy for food packaging challenges traditional solidified thinking, offering innovative ideas to improve food packaging. Embracing more accessible approaches can revolutionize our lives, and we hope that everyone will contribute to the development of society.

Packaging designers, as creators of beautifying life, should actively undertake more social responsibilities. Based on the design concept of respect and care, we seek to innovate food packaging design in the context of the aging society by further analyzing the physiological and psychological characteristics of the aging population in detail. From the perspective of ergonomics, we utilize the multi-dimensional

knowledge system of product design, structural design and visual communication design to meet the functional demands of the elderly for food packaging. And, on this basis, from the perspective of emotional comfort to highlight the humanized design, stimulate and maintain the emotional resonance, to meet the emotional expectations of the aging population for food packaging, so as to design more emotionally caring food packaging, to improve the quality of life of the aging population, to create a healthy and harmonious good life.



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