

# A Comprehensive Evaluation of Gift Packaging

**Shuo-Fang Liu and Mingkai Hong**

National Cheng Kung University, Tainan 70101, Taiwan (R.O.C.)

## ABSTRACT

Due to the rapid development of the global economy, the production of domestic waste has increased rapidly, causing increased damage to the global environment. Among them, packaging waste accounts for the largest proportion of household waste, and product packaging can lead to an excess of emissions, resource waste and environmental pollution, which are key areas that have received increased attention by society. In particular, the phenomenon of over-packaging has been on the rise, with gift packaging being the “hardest hit area.” The gift-giving behaviour is a manifestation of people’s communication style, and these types of gifts which carry such emotional communication have gradually become the material carrier of etiquette culture. The packaging can show the value of the gift and enhance the quality of the gift. In addition, the emotional and social values contained therein are more easily realized. Therefore, consumers tend to pay close attention to the packaging when choosing gifts and are willing to pay extra for excessive packaging. Compared to ordinary commodities, gifts have special product positioning and their packaging is an important component of their value, therefore businesses understand that there is extra profit in gift packaging and are willing to make unnecessary designs for gift packaging. Nowadays, the phenomenon of over-packing in gifts is getting more and more attention from all walks of life, the problem of over-packing has triggering factors in the whole life cycle. To crack the problem of over-packing in gifts, we need to start from the roles of these triggering factors, which come from the production side, the consumption side and the third party. These entities are the manufacturers of the gifts, the designers who design gift packaging, the gift-givers who buy the gifts, those who receive the gift and the organizations that evaluate the packaging impartially. However, in the existing research, the comprehensive evaluation of gift packaging is still unclear, and there is a lack of theoretical guidance on how to reduce the triggering factors of excessive gift packaging from different perspectives. Therefore, this study focuses on this phenomenon to investigate the views of various roles on overwrapping in the life cycle of gift packaging, using existing gift packaging as a reference, extracting elements of gift packaging through literature survey, using questionnaires to obtain the evaluation of various roles on packaging elements, quantifying the obtained results, constructing a set of comprehensive evaluation scale for evaluating gift packaging, and presenting the results in the form of radar diagrams. The results of this study can optimize the design and development of gift packaging at the production end, correctly guide the selection and use of gift packaging at the consumer end, and provide a common evaluation standard for third-party organizations to judge the excellence of gift packaging. This study will reduce the triggering factors of over-packaging in the whole life cycle of gift packaging, alleviate the environmental pressure brought by over-packaging, and create a more sustainable gift packaging concept.

**Keywords:** Gift packaging, Overpacking, Fuzzy comprehension evaluation method, Sustainable

## INTRODUCTION

With the rapid development of global economy and urbanization, the production of domestic waste is increasing rapidly and the environmental problems are becoming more and more serious. China, other regions in East Asia and parts of Eastern Europe and the Middle East have the fastest growth rates of municipal waste, with China surpassing the United States as the world's largest waste generator in 2004 (Hoornweg & Bhada-Tata, 2012). In Europe, each European citizen generates about 160 kg of packaging waste per year, which is the first of all waste types (Eurostat, 2022). Packaging is not just a cardboard or box, but a secure, economical and efficient storage system for handling, shipping and selling (Dixon-Hardy & Curran, 2009). However, it has a serious drawback that the product is usually discarded directly after use, which inevitably increases the damage to the environment (Magnier & Schoormans, 2015). A survey conducted by China Youth Daily in 2021 among 1,521 respondents revealed that 92% of consumers believe that over-packaging is a serious problem in China, and more than 65% of consumers are worried that over-packaging will bring pollution and massive material waste (Jieyin Li, 2021b, 2021a). Moon cakes, for example, many packaging more than four layers, and even some are equipped with lights and sound (XU HUA, 2021).

In this paper, we will investigate the relationship between gift packaging and various roles in the whole life cycle of gift packaging and find ways to reduce over-packaging. It is expected that the results of this study will serve as a reference for subsequent scholarly research.

## PACKAGING

The history of human use of packaging dates back to the caveman period, when people used nature's packaging materials, such as leaves and bark as packaging containers, and as time progressed, woven bags, leather bags, ceramics and other packaging containers gradually appeared. After the invention of paper-making by Cai Lun in the Eastern Han Dynasty in 105 A.D., the use of paper as packaging for goods gradually emerged. After the Industrial Revolution in the eighteenth century, production technology developed rapidly, output increased dramatically, and finished products were lowered to form a large consumer market, so that "packaging" was used for market storage and transportation to convey information from producers to consumers. In 1856, the British invented corrugated paper, and in 1894, corrugated cardboard was made into corrugated boxes for the first time in the United States. After the twentieth century, the consumer market became dominant and product packaging became a sales tool in the market competition (Zhu Chen Chun Tian, 1991). Modern packaging has long since ceased to be satisfied with the function of protecting goods and facilitating transportation, packaging has become a powerful marketing tool, and excellent packaging design can create more value for consumers, enhance brand value and promote sales value for products (Lijuan Wang, 2016).

"Packaging" is a corporate practice that links production and consumption and integrates "scientific technology" and "artistic thought" to protect

products, expedite storage and transportation, and facilitate consumption. The most typical classification of packaging is based on its use, which can be divided into “commercial packaging” and “industrial packaging”. The main function of “commercial packaging” is to promote the convenience of sales and use, and the improvement of operational efficiency. “Industrial packaging” is packaging for the purpose of transportation or storage, and is used for a variety of raw materials, parts, semi-finished products, and finished products that are not intended for consumers, and the packaging method varies with the nature of the goods and the storage environment (Zhu Chen Chun Tian, 1991).

The gift packaging in this study falls under the category of commercial packaging.

Sometimes, packaging materials affect the quality of the product and influence the consumer's perception of the brand (Gagula et al., 2020). One of the keys to successful packaging design is to select materials that best meet product characteristics, marketing needs, environmental concerns, and regulatory and total cost requirements(Brozovic, Kovacevic, & Bota, 2021). The shape of a package can be broadly divided into two functions: one is to “protect the contents” and the other is to “convey the image of the product inside”. The moment consumers see the packaging, the shape is what catches their eyes. The more unique the shape of the package, the more attractive it will be to consumers in the store, and the more it can be used as an indicator to find the product. In short, a special shape can be a symbol of a product and a brand(Masahiro Fukui & Miko Sugaki, 2016).

To explore the classification of existing gift packaging, this paper will introduce both the materials and the basic forms of commercial packaging (see Table 1).

## OVERPACKAGING

The term “overpackaging” describes products that are wrapped in more material than required(Elgaaïed-Gambier, 2016). In general, two types of packaging can be distinguished: primary packaging and secondary packaging. Primary packaging is the material that surrounds the product and is usually in direct contact with the product. Secondary packaging is used in addition to primary packaging to collect a certain amount of primary packaging. Overpack is the third category and must be clearly distinguished from the previous two types. It does not contain the product and does not have a grouping purpose (Monnot & Reniou, 2012). In some cases, the term “overpacking” is also used to describe primary or secondary packaging that is too large for the amount of product it contains (Elgaaïed-Gambier, 2016).

## FUZZY COMPREHENSION EVALUATION METHOD

Fuzzy Comprehension Evaluation Method is a comprehensive evaluation method based on fuzzy mathematics. This comprehensive evaluation method converts qualitative evaluation into quantitative evaluation based on the affiliation theory of fuzzy mathematics, i.e., it uses fuzzy mathematics to

**Table 1.** Packaging material, type and main contents.

Material	Container shape	The main contents
timber	Wooden box cask	Food, snacks, groceries wine
Paper	Carton Paper bags	groceries Food, snacks, groceries
Cardboard	Carton  Paper cups Paper bags Paper trays Paper cans Liner paper carton Transport box	Food, snacks, cosmetics, body care products, household products, cigarettes, medicines, electrical appliances  Food, snacks, drinks Soft drinks, alcoholic beverages, body care products Food, refreshments Food, snacks, household items Cosmetics, body care products, household products Food, snacks, electrical appliances Shipping all kinds of packaging
corrugated paper	bottle	Soft drinks, alcoholic beverages, body care products, medicines, food
glass	pot	Soft drinks, alcoholic beverages, body care products, cosmetics, food
metal	hose bag	Medicines, groceries Food, household goods
Fiber, cloth ,l plastics (Injection molding)	container lid	Food, snacks, cosmetics, body care products, household goods Food, soft drinks, alcoholic beverages, cosmetics, body care products, household goods
plastics (Hollow molding)	PET bottle	Food, soft drinks, alcoholic beverages, cosmetics, body care products, household goods, medicines
plastics (Vacuum forming)	hose Blister packs tray TP packaging (Press-extrusion blister packaging). Deep-drawn vessels	Food, cosmetics, body care products, medicines Cosmetics, body care products, household goods and electrical appliances Food, snacks, cosmetics, body care products, household goods, electrical appliances Snacks, medicines
plastics (Extruded molding)	hose	foodstuff Food, cosmetics, body care products, medicines
plastics (Folding Bay Processing)	Transparent box	Food, snacks, cosmetics, body care products, household goods, electrical appliances
Plastic film	Soft packaging	Food, snacks, cosmetics, body care products, household goods, medicines, electrical appliances
Plastic film + plastic (Injection molding)	Suction nozzle attached Flexible packaging	Food, beverages, body care products
Styrofoam	cup	Food & Beverage

make an overall evaluation of things or objects that are subject to multiple factors. It has the characteristics of clear and systematic results, can better solve fuzzy and difficult to quantify problems, and is suitable for various non-deterministic problems.

**Step1:** Five gift packages with high sales volume were selected as the research samples, and their elements were extracted and organized through the focus interview method.

**Step2:** According to the fuzzy integrated evaluation method and the elements of the survey design, a five-step Likert scale was used to collect the respondents' perceptions of the excesses of each element. The questionnaire will be distributed to different target groups, namely, manufacturers, designers, gift-givers, gift-receivers, and third parties. To obtain a more comprehensive attitude and awareness.

**Step3:** Collection of factors: The excess of gift packaging needs to be evaluated from its component elements, such as the number of layers of packaging, additional embossed decoration in the packaging, transparent plastic material in the packaging, etc. All these factors constitute a collection of evaluation indicators, recorded as:

$$U = \{u_1, u_2, \dots, u_n\}$$

**Step4:** Review set: Due to the different evaluation value of each indicator, different levels are often formed, such as the evaluation of the current case gift packaging level: completely excessive, seriously excessive, excessive, slightly excessive, but not excessive. A collection of various determinations is called a comment set, and is recorded as:

$$V = \{v_1, v_2, \dots, v_m\}$$

**Step5:** The weight of each factor: In general, the role played by each factor in the comprehensive evaluation of the factor set is different, and the comprehensive evaluation results are not only related to the evaluation of each factor, but also depend to a large extent on the role played by each factor on the comprehensive evaluation, which requires the determination of the weight distribution among the factors, which is a fuzzy vector on U, recorded as:

$$A = \{a_1, a_2, \dots, a_n\}$$

**Step6:** Fuzzy integrated judgment matrix: For the indicator  $U_i$ , the affiliation of each criterion is a fuzzy subset on V. The evaluation discipline of the indicator  $U_i$  is:

$$R_i = [r_{i1}, r_{i2}, \dots, r_{im}]$$

The fuzzy composite matrix of each indicator is:

$$R = \begin{bmatrix} r_{11} & \cdots & r_{1m} \\ \vdots & \ddots & \vdots \\ r_{n1} & \cdots & r_{nm} \end{bmatrix}$$

**Step7:** The results were synthesized and quantified to compile the feelings of various types of respondents on the excessive degree of different gift packaging elements.

**Step8:** Compare and contrast the similarities and differences of different groups of respondents' views on gift overwrapping, and explore the relationship between the various roles.

**Step9:** Based on the results of the analysis, we organized and summarized the results to create a gift overpacking scale.

## CONCLUSION

Existing research and theoretical evidence suggests that the fuzzy composite evaluation method can be used in the comprehensive evaluation of gift packaging to produce a gift overwrapping scale, which provides manufacturers with information on consumer demand for gift packaging, aids them in making marketing decisions, ranks the weighting of elements in gift packaging by the giver and receiver, and helps designers understand what elements to include in a popular gift package. The scale also helps the gift giver to select the right gift packaging to reduce waste.

Later experiments are conducted to verify the efficiency of the application, add details and improve the paper.

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