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**FLORAL PAINTING LANGUAGE ON PACKAGING TOWARDS FEMALE
CONSUMER ACCEPTANCE OF PRODUCT PACKAGING RECYCLING
STRATEGY**

By

ZOU SHASHA

**Thesis submitted to the School of Graduate Studies, Universiti Putra
Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of
Philosophy**

February 2024

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
fulfilment of the requirement for the degree of Doctor of Philosophy

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February 2024

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Packaging waste of various products has increased dramatically, leading to excessive accumulation of waste, which could be more conducive to sustainable development. The final disposal of product packaging needs to be considered in the design process from the beginning of the product packaging life cycle. Therefore, it is necessary to make product packaging distinctive, attract consumers' attention, promote packaging reuse, increase consumer acceptance, and reduce unnecessary landfills. This research uses case study methodology aiming to integrate the connotation of painting language to make it acceptable to consumers and thus improve the reusability of packaging. The research posits that integrating the connotation of painting language in a package could produce unique product packaging, which increasing consumers' acceptance could promote reusing product packaging. The researcher used her flower watercolor paintings as the unit of analysis. The data collection was divided into 3 phases. Firstly, interviews with seven

manufacturers resulted in 85.7% agreeing with special-shaped, 100% agreeing with environmentally friendly material, and 85.7% agreeing that beautiful and practical product packaging is readily accepted by consumers. In addition, interviews with seven consumers resulted in 71.4% agreeing that bright and relaxed flower-and-bird paintings are more suitable for consumers to accept. From the interviews, the research found that 78.5% agreed with relaxed, beautiful artistic conception, lifelike-plot stories, and emotional expressions more suitable for aroma and beauty care products. Secondly, the research develops a methodology using the connotation and characteristics of painting language to create a product packaging design where five flower paintings were produced to meet the consumers' aesthetic preferences. The final third phase involved interviews with 21 female consumers about their acceptance of the different proposed packaging based on the five flower paintings. Results from these validation interviews found that different types of packaging with the connotation of painting language received consumers' acceptance of 71%-90% and indicated 86%-90% of probable reuse by the same consumers. This research is significant since the increase in consumers' acceptance of different types of packaging that incorporate the language of flower watercolor painting could increase the reuse of a product's packaging. Such reuse efficiently reduces 50% of unnecessary waste transportation to landfills, thereby improving healthy cities and the well-being of citizens. This study recommends that future studies explore other painting connotation languages covering other flowers and extend similar principles to include non-flower paintings.

Keywords: Consumer Acceptance, Increase Reusing, Package, Painting Language Connotation

SDG: GOAL 1: No Poverty



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**BAHASA MELUKIS BUNGA KE ATAS PEMBUNGKUSAN BAGI
PENERIMAAN PENGGUNA WANITA UNTUK STRATEGI PENGITARAN
SEMULA PEMBUNGKUSAN PRODUK**

Oleh

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Sisa pembungkusan pelbagai produk telah meningkat secara mendadak lalu membawa kepada pengumpulan sisa yang berlebihan yang mana melanggar erti kata matlamat pembangunan mampan. Maka, pelupusan akhir pembungkusan produk perlu dipertimbangkan dalam proses reka bentuk dari awal kitaran hayat pembungkusan produk. Oleh itu, terdapat keperluan untuk menjadikan pembungkusan produk tersendiri, yang menarik perhatian pengguna, menggalakkan penggunaan semula pembungkusan, meningkatkan penerimaan pengguna, dan mengurangkan tapak pelupusan sampah. Penyelidikan ini menggunakan metodologi kajian kes yang bertujuan untuk mengintegrasikan konotasi bahasa lukisan untuk menjadikan pembungkusan tersebut boleh diterima oleh pengguna dan seterusnya meningkatkan kebolehgunaan semula pembungkusan. Kajian berpendapat bahawa mengintegrasikan konotasi bahasa lukisan dalam pembungkusan produk boleh menghasilkan pembungkusan yang unik, yang meningkatkan

penerimaan pengguna lalu menggalakkan penggunaan semula pembungkusan produk. Pengkaji menggunakan lukisan cat air bunga beliau sebagai unit analisis. Pengumpulan data dibahagikan kepada 3 fasa. Pada Fasa Pertama, temu bual bersama tujuh pengeluar mendapati 85.7% daripadanya bersetuju dengan bentuk khas, 100% daripadanya bersetuju dengan bahan mesra alam, dan 85.7% daripadanya bersetuju bahawa pembungkusan produk yang cantik dan praktikal akan mudah diterima oleh pengguna. Di samping itu, temu bual bersama tujuh pengguna mendapati 71.4% daripadanya bersetuju bahawa lukisan bunga dan burung yang terang dan santai lebih sesuai untuk diterima oleh pengguna. Daripada temu bual tersebut, kajian mendapati 78.5% daripada kedua kumpulan bersetuju bahawa konsep artistik yang santai, indah, cerita plot seperti hidup, dan ekspresi emosi adalah pilihan yang lebih sesuai untuk produk aroma dan penjagaan kecantikan. Di Fasa Kedua, kajian ini telah membangunkan sebuah metodologi yang menggunakan konotasi dan ciri bahasa lukisan untuk mencipta reka bentuk pembungkusan produk di mana lima lukisan bunga dihasilkan untuk memenuhi keutamaan estetik pengguna daripada temu bual terdahulu. Di Fasa Ketiga pula melibatkan temu bual dengan 21 pengguna wanita mengenai penerimaan mereka terhadap pembungkusan yang telah direka bentuk berdasarkan lima lukisan bunga hasil daripada Fasa Kedua. Hasil daripada temu bual bersama pelanggan ini mengesahkan bahawa reka bentuk pembungkusan dengan konotasi bahasa lukisan dapat diterima oleh 71%-90% pengguna manakala 86%-90% pengguna berhasrat untuk mengguna semula pembungkusan tersebut. Hasil kajian ini penting kerana peningkatan penerimaan pengguna terhadap pelbagai jenis pembungkusan yang menggabungkan

konotasi bahasa lukisan cat air bunga boleh meningkatkan penggunaan semula pembungkusan produk. Penggunaan semula, walaupun sekali sahaja seperti ini, dapat mengurangkan 50% pengangkutan sisa buangan ke tapak pelupusan yang mana boleh meningkatkan tahap kebersihan bandar serta kesejahteraan penduduk. Kajian masa depan yang disyorkan termasuklah meneroka konotasi bahasa lukisan pelbagai bunga lain dan melanjutkan prinsip yang sama ke atas lukisan bukan bunga.

Kata kunci: Penerimaan Pengguna, Meningkatkan Penggunaan Semula, Pakej, Konotasi Bahasa Lukisan

SDG: MATLAMAT 1: Tiada Kemiskinan

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ABSTRAK	iv
ACKNOWLEDGEMENTS	vii
APPROVAL	ix
DECLARATION	xi
LIST OF TABLES	xvii
LIST OF FIGURES	xviii
LIST OF ABBREVIATIONS	xxii
 CHAPTER	
 1 INTRODUCTION	 1
1.1 Introduction	1
1.2 Research Background	1
1.2.1 The Current Situation of Online Shopping and its Impact on the Environment	1
1.2.2 Impact of Shopping on the Environment	3
1.3 Efforts to Reduce Waste after Product Packaging Use	5
1.4 Related Policies	10
1.5 Problem Statement	13
1.6 Research Questions and Research Objectives	17
1.7 Research Methodology	18
1.8 Thesis Organization	20
 2 LITERATURE REVIEW	 22
2.1 Introduction	22
2.2 Literature Review	22
2.3 Packaging	24
2.3.1 Packaging Materials	24
2.3.2 Packaging Shapes	26
2.3.3 Surface Pattern	28
2.3.4 Synthesis of Packaging	30
2.4 Painting Language	36
2.4.1 Forms	37
2.4.2 Painting Skills	42
2.4.3 Connotation	46
2.4.4 Synthesis of Painting Languages	51
2.5 Increasing Reusability	55
2.5.1 Recycling System	56
2.5.2 Reusing	59
2.5.3 Product Reusing	60
2.5.4 Synthesis of Reusability	61
2.6 Consumer Acceptance	66
2.6.1 Green Packaging Concept	66

2.6.2	Green Aesthetic Preferences	68
2.6.3	Consumer Acceptance	71
2.6.4	Synthesis of Consumer Acceptance	73
2.7	Developing Theoretical Proposition	77
2.8	Chapter Summary	80
3	RESEARCH METHODOLOGY	81
3.1	Introduction	81
3.2	Research Methodology Design Overview	81
3.3	Case Study Research Design	82
3.4	Respondent Statistics	83
3.5	Preliminary Interview Approach	84
3.6	Components of a Case Study	85
3.6.1	Research Questions	85
3.6.2	Theoretical Propositions	86
3.6.3	Unit of Analysis – The Painting Integration Process	87
3.6.4	The Logic of Linking Data to Propositions	88
3.6.5	Criteria for Interpreting the Findings (Acceptance Survey)	115
3.7	4-step Validation	117
3.8	Ethical Matters	118
3.9	Chapter Summary	119
4	RESULTS AND ANALYSIS	120
4.1	Introduction	120
4.2	Results for Preliminary Interviews with Manufacturers	120
4.3	Packaging Design Creation by Manufacturers	146
4.4	Results for Preliminary Interviews of Consumers	149
4.5	Analysis of Merging Flower Painting to Packaging Design	173
4.6	Acceptance and Reuse Validation	175
4.7	Formalizing Painting Language to Fit Recycling Packaging Design	186
4.7.1	Matching Painting Language Elements Suitable for Product Packaging Design	186
4.7.2	Matching Painting Language Connotation Packaging Enhances Consumer Acceptance	187
4.7.3	Recommended Packaging Design Process for Product Packaging Incorporating Flower Paintings	187
4.7.4	Consumer Acceptance and Willingness to Promote Packaging Reuse	188
4.8	Summary	188
5	PAINTING CREATION AND PACKAGING DESIGN	189
5.1	Introduction	189
5.2	Selection and Application of Painting Elements	189
5.2.1	Iris	189
5.2.2	Bird of Paradise Flower	191

5.2.3	Clover	193
5.2.4	Tulip	195
5.3	Selection and Application of Packaging Types	197
5.4	Packaging Effect Display	198
5.4.1	The Creation and Packaging Design Process of Iris	198
5.4.2	The Creation and Packaging Design Process of Bird of Paradise	204
5.4.3	The Creation and Packaging Design Process of Clover	210
5.4.4	The Creation and Packaging Design Process of Tulip	215
5.5	Chapter Summary	222
6	CONCLUSIONS	223
6.1	Introduction	223
6.2	Answers to Research Questions	223
6.2.1	The Answer to Sub-Research Question 1: What influencing factors must be considered for packaging?	223
6.2.2	The Answer to Sub-Research Question 2: What kind of painting language connotation can make the packaging appropriate?	224
6.2.3	The Answer to Sub-Research Question 3: How to increase the reuse of the painting language connotation in the packaging?	225
6.2.4	The Answers to the Main Research Question: How to increase reuse of packages by integrating painting language connotation for consumer acceptance?	226
6.3	Knowledge Contributions	227
6.3.1	Packaging Design for Reuse Theory	227
6.3.2	Recommended Types of Packaging Suitable for Reuse	227
6.3.3	Recommended Painting Language for Green Recycling Design	228
6.3.4	Formalization of Painting Language to Fit Recycling Packaging Design	228
6.4	Impacts on Industry	228
6.4.1	Impacts on Packaging Manufacturers	228
6.4.2	Impacts on Consumers	229
6.4.3	Impact on the Community	229
6.5	Research Benefits	230
6.5.1	Promote Reuse	230
6.5.2	Promotion of Green Consumption Concept	230
6.5.3	Increased Income for Artists	230
6.6	Limitations of Study	231
6.7	Future Research	231
6.7.1	Improve Packaging Competitiveness	232
6.7.2	Promote Upcycling	232

6.7.3 Expand the Scope of Artistic Works	233
6.7.4 Expand the Scope of Cultural Differences	233
REFERENCES	234
APPENDICES	246
BIODATA OF STUDENT	256
LIST OF PUBLICATIONS	258



LIST OF TABLES

Table	Page
1.1 Research Questions and Research Objectives	18
2.1 Floral languages of roses and tulips	50
2.2 Painting Language Elements Shown in Paintings	57
3.1 Research Questions Show the Main Research Questions and Sub-research Questions	86
3.2 Linking Data to Theory Table Showing How the Researcher Will Gather Appropriate Data to Support the Theory	89
3.3 Information Introduction of 7 Interviewed Manufacturers	93
3.4 Information Introduction of 7 Interviewed consumers	93
3.5 Timing and Types of In-Depth Interviews	95
4.1 Thematic Analysis of Manufacturer Interview Data Painting Elements	141
4.2 Thematic Analysis of Manufacturer Interview Data Packaging Types	142
4.3 Thematic Analysis of Manufacturer Interview Data Reuse	143
4.4 Thematic Analysis of Manufacturer Interview Acceptance	144
4.5 Thematic Analysis of Painting Language Elements in Consumer Interview Data	168
4.6 Thematic Analysis of Influencing Factors of Surveyed Consumer Data Packaging	169
4.7 Thematic Analysis of Surveyed Consumer Data on Reuse Factors	170
4.8 Thematic Analysis of Surveyed Consumer Data on Acceptance	171
4.9 List of Selected Fowers	173
4.10 Summary of Analyses by Manufacturers and Consumers	174
4.11 Data Theme Analysis of 21 Consumers Interviewed	184
6.1 The Preference for Green Packaging	226

LIST OF FIGURES

Figure	Page
1.1 Research Design Workflow	19
2.1 Point of departure (POD) diagram for design elements in innovative packaging design	34
2.2 A proposed conceptual framework for design elements in innovative packaging design.	35
2.3 Eye-catching packaging with harmonious patterns	35
2.4 Innovative packaging that attracts consumers	36
2.5 Sketch Flowers Painting	40
2.6 Illustration Painting	40
2.7 Several Manifestations of Painting Elements	41
2.8 Meticulous Painting	45
2.9 Gouache Painting	45
2.10 Landscape Painting Showing Pleasant Connotation	48
2.11 Flower Painting Showing Calm Connotation	48
2.12 Point of departure (POD) Tree diagram for developing painting language of packaging design	54
2.13 A proposed conceptual framework for developing the painting language of packaging design	55
2.14 Point of departure (POD) diagram for increasing reusing of products	64
2.15 A proposed conceptual framework based on increased upcycling	65
2.16 Point of departure (POD) tree diagram for consumer reuse acceptance	76
2.17 A proposed conceptual framework towards consumer reuse acceptance	77
2.18 Point of departure (POD) tree diagram of the study	79

2.19	A proposed conceptual framework based on theoretical propositions of the study	79
3.1	Analysis of Paintings	97
3.2	Painting of Daffodils	99
3.3	Painting of Water Lotus	101
3.4	Painting of Rose Flower	102
3.5	Painting of Green plants	104
3.6	Painting of Green Basket	105
3.7	Painting of Lotus	107
3.8	Painting of Trumpet Vine	108
3.9	Painting of Peony Flower	110
3.10	Painting of Wisteria Flower	111
3.11	Painting of Magnolia Flower	113
4.1	Packaging Design Process for Manufacturers 1, 4, 5	146
4.2	Packaging Design Process for Manufacturers 2, 3, 6, 7	148
4.3	Proposed Packaging Design Process for Integrating Flower Painting Connotation	148
4.4	Integrated Painting Language Packaging Design Flowchart	175
5.1	Iris Flower Creation Pencil Draft	190
5.2	Iris Flower Coloring Process	191
5.3	Bird of Paradise Pencil Draft	192
5.4	Bird of Paradise Flower Coloring Process	193
5.5	Clover Pencil Draft	194
5.6	Clover Coloring Process	194
5.7	Tulip Pencil Draft	195
5.8	Tulip Color Draft in Red Tone	196
5.9	Tulip Color Draft in Yellow Tone	197
5.10	Composition Display of Iris Flower	199

5.11	The Finished Draft of Iris Flower	200
5.12	Handbag Model	201
5.13	Hexagonal Double-lidded Box Model	201
5.14	Design Painting of Side A of the Iris Handbag	202
5.15	B-Side Design of the Iris Handbag	202
5.16	The Design Process of the Iris Hexagonal Double-covered Box	203
5.17	Display of the Packaging Effect of Iris Creation	204
5.18	S-Shaped Composition Display of Bird of Paradise Pencil Draft	205
5.19	The Finished Bird of Paradise Flower	206
5.20	Folio Box Model Display	207
5.21	The Open Display of the Box Model	207
5.22	Bird of Paradise Tote Bag Design Process	208
5.23	Design Process of Bird of Paradise Special-Shaped Packaging Split Box	208
5.24	Display of The Packaging Effect of Bird of Paradise Flower Creation	209
5.25	Shamrock Pencil Draft Creation Composition Display	211
5.26	Model Display of Octagonal Folding Luggage Box	211
5.27	Model Display of Shopping Bag with Trapezoidal Handle	212
5.28	Design Drawing of Side A of Clover Handbag	212
5.29	Design Painting of Side B of Clover Tote Bag	212
5.30	Design Drawing of Clover Octagonal Folding Box	213
5.31	Clover Trapezoidal Hand Shopping Bag Design	213
5.32	Display of the Packaging Effect Created by Clover	215
5.33	Tulip Pencil Draft Creation and Composition Display	216
5.34	The Finished Draft of Red Tulip Flowers	216
5.35	The Finished Draft of Yellow Tulip Flowers	217

5.36	Paper Tote Bag Model Drawing	218
5.37	Oilcloth Handbag Model Diagram	218
5.38	Candy-Shaped Gift Box Model Diagram	218
5.39	Design Drawing of Red Tulip Shopping Bag	219
5.40	Packaging Design of Yellow Tulip Handbag	220
5.41	Design of Yellow Tulip Candy Packaging Box	220
5.42	Display of Packaging Effects Created By Red Tulips	221
5.43	Display of Packaging Effects Created by Yellow Tulips	222



CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter discusses the background of this study, including the discussion of packaging and painting, the current situation of shopping and its impact on the environment, efforts to reduce waste after packaging use, and the current policies for green packaging in various countries worldwide. It also discusses the problem statement of this research and states the research questions and objectives. Then, it presents the research methodology used in the study and, finally, the organization of the thesis.

1.2 Research Background

1.2.1 The Current Situation of Online Shopping and its Impact on the Environment

Internet usage is overgrowing as technology and society continue to integrate (Soh, 2020). The continuous advancement of the internet and information technology has made online shopping more convenient (Ruangkana & Kessuvan, 2019). Purchasing products and services online is known as online shopping (Bhuvaneshwari, 2018). Online shopping is a developing trend with significant players continuing to grow and vast market potential (Agyapong, 2018). Bucko (2018) found that online shopping has become an essential part

of people's lives normal. This trend is supported by the rapid development of technology and increased competition in stores, especially when using the Internet and social media (Králová, 2020). The trend of online shopping is more and more evident because online shopping is convenient for many households and businesses (Samsudin & Ahmad, 2014). The convenience of online shopping has increased the interest of retailers in this segment (Agyapong, 2018).

The popularity of the internet, growing e-commerce, and the increasing use of smartphones in society have driven consumers to spend more time shopping online. In the digital environment, products and consumers are changing, and new information technology enables customers to gain a sense of style through online visuals and audio, attracting consumers to buy. On the other hand, online shoppers may succumb to impulsiveness due to boredom. (Sundstrom et al., 2019). Many factors may have contributed to this impulsiveness: marketers' focus on low prices, specials promotions, free shipping, free returns, and other effective marketing strategies; various special coupons such as "only now," "Today's discount," and other commercial slogans and advertisements; promotion of cross-selling and up-selling; the influence of circle of friends; the influence of public figures such as celebrities and trendsetters; many consumers spend to reward themselves; ease of monotony, depression, boredom, and other negative emotions (Salomo et al., 2021).

At the same time, online shopping also has safety advantages, especially during the COVID-19 pandemic: convenience, speed, simplicity, cheapness, comparable prices, and wide selection (Hao et al., 2019). Brand image, product attributes, and consumer perceived value are also part of this (Salomo et al., 2021). Interesting factors, such as air pollution and environmental degradation, cause consumers to be anxious and worried and avoid outdoor consumption, which also motivates consumers' online purchase behavior (Rhein & Schmid, 2020). It is not surprising that these current situations are encouraging online stores to dedicate valuable corporate resources to profiling online consumer behavior through the development of new technologies. Such technology support offers online stores to attract consumers to shop online by understanding their changing needs and lifestyles (Hao et al., 2019).

1.2.2 Impact of Shopping on the Environment

The popularity of online shopping has grown in recent years mainly because people find it convenient and easy to shop from the comfort of their homes or offices (Bhuvaneshwari, 2018). The rapid growth of online shopping has reduced individual consumers' need to travel, thus reducing greenhouse gas emissions and other energy use in traditional brick-and-mortar stores. However, online shopping is not entirely free from adverse environmental impacts as it can cause unwanted detriment to the environment. One of the biggest culprits is the need for additional packaging that could withstand their delivery. Often, the products are likely to be individually packaged when sent to a customer. A typical online shopping packaging may use as many as seven

packaging materials: banknotes, envelopes, cartons, plastic bags, woven bags, tape, and cushioning material. Therefore, online shopping cannot be considered an immaculate, clean way.

The rapid growth of online shopping is the basis for the differential environmental impact. For example, moving operations online reduces waste such as printing, retail, and shipping needs, but also has to produce more energy-intensive computers. At the same time, with the rapid development of e-commerce, enterprises and entrepreneurs attach great importance to producing low-cost products. Additionally, businesses are developing effective methods and practices to increase productivity with minimal effort and expense. They are neither aware nor concerned about the adverse impact on the environment (Tiwari & Singh, 2011). Online shopping can avoid crowds in malls, reduce retail space, and reduce inventory and waste. However, people also face the fact that online purchases may involve delivery via air, truck, car, or motorcycle, and a large amount of waste discharge will cause damage to the environment. The adverse environmental impact of this mode of transport can be significant (Tiwari & Singh, 2011).

The rapidly changing environment is a significant issue in today's world, and people are paying more and more attention to environmental issues (Bhuvaneshwari, 2018). Climate change has caused ecological, economic, and social disasters. Many countries are re-examining their environmental protection issues and simultaneously making consumers pay more attention to the environment (Lin & Niu, 2018). Lin & Niu found that environmental

pollution comes from lifestyle changes and numerous choices, thus encouraging the movement towards requirements for green products. Online purchase of green products refers to purchasing green products and services online. Consumers' attention is shifting from ordinary products to green products to safeguard the environment and our health. Green products are more and more accepted by people and contribute to the protection of the environment. Consumers' awareness and purchase patterns of green products such as shopping bags, solar cells, LED lights, paper cups, and handmade paper are constantly being optimized and improved. Green consumption is becoming an important academic and practical topic. However, few products are 100% green as all product development has some impact on the environment (Bhuvaneshwari, 2018). A gap exists between attitudes and behaviors toward green consumption (Nguyen et al., 2019). Consumers choose standard products more because they are cheap and easy to buy. This behavior will provide opportunities for producers and is not conducive to resource utilization and environmental protection (Costa et al., 2016). Such consumers' environmental knowledge, environmental awareness, and attitudes toward the environment also affect online shopping behavior (Lin & Niu, 2018).

1.3 Efforts to Reduce Waste after Product Packaging Use

Winterich (2019) states that after receiving the product, many people are no longer interested in its packaging once it has served its purpose. Much of this packaging goes directly to landfills instead of being recycled, thus burdening

the environment. Many materials are not degradable, and some may even contain harmful chemicals that threaten human health (Verma et al., 2017). Consumers' growing appetite for online shopping and the rapid growth of various packaging materials led to excessive accumulation of waste (Koç, 2013). Verma et al. (2017) pointed out that packaging waste is increasing continuously, and packaging waste is piled up like a mountain, accounting for 5% of the total waste. To a large extent, this will lead to the waste of resources, an increase in garbage, and environmental pollution, which is not conducive to sustainable development. Therefore, there is a need for green and sustainable packaging, which is conducive to promoting the circular and sustainable development of the economy (Yaduvanshi et al., 2016).

Gustavo et al. (2018) argued that the booming online shopping market may have driven economic growth but also caused environmental concerns due to extensive product packaging waste. Retailers and couriers may use multiple packaging materials for each packaging, resulting in overpacking. This excessive packaging is to protect the goods and reduce the risk of damage in transit, but this behavior leads to a waste of resources. With the rapid growth of online shopping, this massive demand for online distribution will inevitably lead to a corresponding increase in the consumption of packaging materials. Although both paper and plastic can be recycled (Banaite, 2016). Verma et al. (2017) suggested that less than 10% of paper and plastic packaging materials are ultimately recycled. Song (1998) believes that one can describe packaging as encompassing all operations in manufacturing containers. The relevance of sustainable packaging stems from the fact that it should consider the three

pillars of the sustainable concept—economic, social, and environmental—as the triple bottom line. Therefore, it is essential to consider which easy-to-use and easy-to-upgrade materials can be added during the product packaging design process (Passaretti et al., 1994). During the design and development of product packaging materials from the earliest stages of the product packaging life cycle, one must consider the final processing of the product packaging (Gaines, 2012). Therefore, the final disposal of product packaging must be factored into the design process from the beginning of the product packaging life cycle. Redesigning can reduce the environmental impact of product packaging. The biggest motivation for packaging redesign is economic gain, including adjusting packaging size or type, yielding environmental benefits (Gustavo et al., 2018).

Packaging must be unique to be reused to minimize unnecessary landfill disposal (Liang, 1997). Palombini et al. (2017) mentioned that the packaging waste of various products is increasing rapidly, and waste recycling is getting more and more attention. Recycling is the way of the future. By recycling and reusing product packaging, cities can significantly reduce waste emissions. Such efforts are conducive to recycling resources, promoting a circular economy, and sustainable development (Palombini et al., 2017). Specific packaging characteristics can significantly reduce or completely prevent waste disposal, facilitating subsequent recycling (Palombini et al., 2017). Additionally, Brosius et al. (2013) argue that recycling waste items reshapes linear consumption into circularity while reducing consumer consumption and waste of new resources. Products made from renewable resources also have

significant benefits, and the use of renewable resources to achieve sustainable product packaging has been gaining widespread attention in society (Gadhav et al., 2018).

Sustainable Packaging has published some packaging sustainability measures based on these four characteristics: 1) effectiveness, 2) efficiency, 3) circularity, and 4) safety (Dellis, 2017). Fitzpatrick (2012) defines eco-efficiency as a management philosophy that drives businesses to seek environmental changes that positively impact profits. It encourages activities that would add greater value while reducing environmental impact. In view of consumer needs and desires, lifestyle choices, and awareness of product life cycles driving packaging innovation, perhaps recycling can be designed as a product packaging objective that carries the expression of environmental protection that would be part of everyday life. The unique green packaging can significantly reduce packaging waste and facilitate subsequent upcycling (Braungart, 2007).

The concept of a circular economy emphasizes the reducing, reusing, and recycling products and materials during production, distribution, and consumption (Corona et al., 2019). These activities are intended to replace scrapping in current production and consumption practices. Economic growth can be decoupled from resource use by reducing and recycling natural resources (Ibid.). The circular economy approach can become a new economic form and economic environment development model (Banaite, 2016). It has significant environmental, economic, and social benefits on a

global scale. This study would look into supporting a circular economy model from a sustainable manufacturing approach focusing on a broader, innovation-based approach to products across multiple life cycles (Jawahir & Bradley, 2016).

Pandit et al. (2010) proposed that the purpose of promoting circulation is to achieve sustainable development. Upcycling turns waste materials into something more valuable or a higher quality second life. It is becoming more common and considered a viable way to reduce material and energy usage. The transition to a circular economy offers vast opportunities for all types of businesses, and increasing the rate of the economy's material circulation can also reduce environmental burdens (Berg et al., 2018). Failure to address this integrated cycle may increase the burden of reducing material consumption, thereby increasing environmental, economic, or social impact.

The downcycling of materials leads to severe consequences such as waste of resources and environmental pollution. Circular indicators for sustainable decision-making should be comprehensive enough to avoid burden shifting and indicate how recycling benefits are distributed across products (Corona et al., 2019). Sustainable development is not a new concept; it has been developed for decades, and its implementation is a complex task that requires long-term and sustained efforts (Banaite, 2016). In general, this study points out that waste emissions can be reduced through the recycling and reuse of product packaging, and green and sustainable packaging is conducive to promoting economic circulation and sustainable development.

1.4 Related Policies

Palombini (2017) pointed out that green is becoming increasingly popular. To transform e-commerce into a green business and meet the growing demand for e-commerce, enterprises must cooperate with multiple stakeholders. In contrast, enterprises need to invest in packaging innovation, including reverse logistics. A sustainable supply chain mechanism is proposed to include a system to promote reuse and recycling as a sustainable solution to this packaging problem. At the same time, consumers also need to demonstrate sustainable consumption behavior. Certain packaging features can significantly reduce or completely prevent waste from sale and subsequent recycling. However, most of these traits can be replaced by simpler alternatives, increasing the marketability of the taxon. The recyclability of packaging can be quantified and compared at an early design stage. A design method is proposed to quickly estimate the recyclability of packaging (Chueamuangphan, 2020).

Yaduwanshi et al. (2016) proposed that painting evokes people's inner feelings through the language of images—a process of shaping artistic images and conveying artistic connotations, and is an essential material carrier for creative artists. Painting is the spiritual communication between people and objects. Painting can directly reflect objects' shape, color, and other visual feelings. (Liang, 1997). The various forms of artwork and the combination of various artistic elements in paintings can make objects appear better (Wu, 2015). Integrating the visual elements of painting language and different painting

techniques into product packaging design can create unique packaging. Song (1998) proposed that by combining the form and technical elements of meaningful paintings and, at the same time, echoing the connotation of the painting with the content of the product, we can innovate the expression of product packaging and create a unique packaging design.

This study believes that with the development of society and the advancement of science and technology, people could do more to damage their environment. Governments (such as ADD REFS) have introduced relevant policies to promote green packaging, sustainable development, and a circular economy to save resources, protect the environment, and protect the ecology. Relevant state departments are also actively promoting green packaging in the express delivery industry, establishing a recycling system as much as possible, and eliminating harmful substances in packaging. Currently, the government rarely regulates the environmental impact and recycling of e-commerce packaging. However, obstacles still need to be addressed, mainly the need for relevant legislation, regulations, or strong policies. In addition to government and industry efforts to transform the packaging waste challenge into a sustainable business opportunity for the future, it is up to each of us as consumers to collaborate to ensure we maximize the benefits of the convenient and fast online shopping experience. If nothing is done now, this study's concern is that the public will be paying the costly price later.

Many multi-industry partners jointly launch green logistics initiatives, focusing on green solutions, such as promoting green packaging and recycling,

adopting electric delivery vans in multiple cities, and applying big data to improve logistics efficiency. Boxes can be saved, and packages delivered to consumers wrapped in biodegradable materials. Optimizing resources and minimizing energy use can reduce the industry's carbon footprint (Chueamuangphan, 2020). Technology has provided too much convenience for environmental protection. We must make these technologies resistant to possible negative impacts on the environment and, ultimately, humans. Therefore, there is a need for clear rules to enforce effective monitoring and surveillance mechanisms as well as installation and operation procedures (Tiwari & Singh, 2011). However, courier companies and online platforms are reluctant to recycle due to low profitability (Chueamuangphan, 2020). Despite the possibility of recovery and recycling, municipal waste departments often send unsold sorted residue directly to landfills, reducing workers' income but increasing their environmental impact.

Chueamuangphan (2020) believes that the cost of packaging to the environment and human health has yet to be included in the market pricing mechanism, and companies need more policies and mechanisms to motivate more sustainable choices. To meet the booming market demand while maintaining delivery quality and price competitiveness, retailers and couriers use cheaper, non-degradable plastic bags, such as those made of chemical industry waste that contain harmful substances into plastic bags. At the same time, many attempts to recycle consumer or end-user packaging waste may increase shipping costs as the recycling industry is relatively immature (Rogoff & Williams, 2012).

Moreover, commerce puts more pressure on costs and lead time to change controlled manufacturing options, and production can more accurately track fluctuations in demand, reducing overproduction. Additionally, e-commerce demands fast shipping with little or no fees. Therefore, businesses would often counter the shorter lead times of their competitors with shorter lead times. Such efforts have put tremendous pressure on multinational companies. Hence, companies can establish better shipping fill rates through better and smoother cooperation, making distribution more efficient and reducing greenhouse gas emissions from shipping (Tiwari & Singh, 2011).

1.5 Problem Statement

More recently, many have advocated repurposing as a means of reducing waste, and it refers to creating or creatively modifying any product from old materials in an attempt to produce a product of higher quality or value (Sung, 2014). Short product lifespans and single-use packaging can lead to premature disposal of valuable resources (Bridgens, 2018). Reuse is an environmentally conscious form of creative consumption (Wilson, 2016), the process by which used materials will transform into something of higher value and quality during their second life. It is increasingly recognized as a promising means of reducing material and energy usage and achieving sustainable production and consumption. For this reason and other foreseeable benefits, the concept of an upgrade cycle has received increased attention from numerous researchers and commercial practitioners in recent years (Sung & Sung, 2015).

Recycling is increasingly recognized as a viable way to reduce material and energy usage. Packaging encompasses all operations of designing and creating containers for products. According to Sonneveld (2005), the relevance of sustainable packaging stems from the fact that it should be integrated into the three pillars of the sustainable concept: economic, social, and environmental. In contrast, Verghese (2012) argues against the three pillars of sustainable packaging since customers tend to randomly discard the packaging instead of recycling it after receiving a purchased product. Therefore, there is a need for a unique reuse of packaging to reduce unnecessary landfills (Song et al., 2015).

Upcycling can be considered a green practice in the field of product stewardship. Specifically, green products are characterized by environmental sustainability (Griskevicius et al., 2010). Green new products are technologies to protect the natural environment and resources, save energy, or reduce pollution and greenhouse gas emissions (Schoemaker, 2011). The result of reusing can be viewed as a green technology as it allows consumers to reduce their environmental footprint. Focus on the creative consumption practice known as "upcycling," where consumers repurpose waste instead of throwing it away. Through reuse, consumers transform old products into objects with new uses—transforming or creating new products and new technologies in production.

A comprehensive literature review (see Chapter 2) revealed that more and more people are paying attention to recycling and reusing waste, and recycling is the future trend. It is necessary to explore what materials to add to the design process of product packaging to facilitate recycling (Winterich et al., 2019). In the life cycle of product packaging, the final handling of product packaging is considered during the design and development of product packaging materials from the earliest stages of the cycle (Yaduvanshi et al., 2016). Specific packaging characteristics can significantly reduce or completely prevent waste disposal, facilitating subsequent recycling (Song et al., 2015).

Products made from renewable resources have huge benefits, and the sustainability of applying renewable resources to product packaging has attracted widespread attention from society (Svanes et al., 2010). Ecolabels have high scores and positively affect willingness to choose between sustainable and typical packaging (Sonneveld, 2005). Green design and ecological concepts continue to gain popularity, but there is still much waste of resources. In this junction, this study would like to introduce the integration of painting language to solicit emotions towards environmental conservation. Painting language integrates knowledge, skills, feelings, and materials and embodies the painter's emotion (ADD REF). Perhaps adding painting language could lead to forming a unique kind of packaging, which will contribute towards the sustainable use of packaging.

In this study, the researcher proposes applying the characteristics of the painting language to the packaging design to form a unique packaging design.

The addition of painting language could make people directly feel the shape of things visually, albeit as if communicating about the product inside (Liang, 1997). It embodies the organic form of artwork and the overall structure of various visual elements in painting art (Wu, 2015), especially if the visual elements of painting language and different painting techniques can create unique packaging designs when applied to product packaging designs.

This study agrees with Song (1998) about combining meaningful painting forms and techniques and combining the connotation of painting with the content of design products to innovate the form of expression for creating a unique packaging design. The research proposes integrating graphic language features into a product packaging design that can form unique packaging, increase reuse, and reduce garbage accumulation. The purpose of this study is to use painting language in packaging design, which will help consumers accept and reuse packaging, reduce waste disposal, save resources, and protect the environment.

Researchers found that most of the current international product packaging designs focus on the use of materials or the rationality of the structure. However, the design and production of product packaging that can be accepted and reused by consumers is easily overlooked. Design research on applying painting language on packaging surfaces still lacks significant evidence. Therefore, it is meaningful if the beauty of product packaging can make it unique, thereby prompting consumers to accept and reuse the packaging and reduce waste. This study believes that packaging could be

uniquely modified so that consumers would appreciate its packaging and be motivated to reuse it. This study aims to meet the demand for green packaging, support the circular economy, and maximize the development of sustainable cities to reduce unnecessary landfill disposal.

1.6 Research Questions and Research Objectives

This study utilized Ibrahim (2011 & 2020) to guide the formation of the leading research question. Ibrahim's research question's (RQ) construct categorization technique was used for identifying three different RQ Constructs— "WHO, " "WHAT, " and "HOW"—in formulating a main research question. "WHO" is defined as the element impacted by the study, "WHAT" is the information or body of knowledge required to solve the problem, and "HOW" is the targeted impact of the study. This study states its main research question as follows:

“How to increase the reuse of packaging with the integration of painting language connotation and for consumer acceptance?”

Following Ibrahim (2011 & 2020), the subsequent sub-research questions and objectives are presented in Table 1.1.

Table 1.1: Research Questions and Research Objectives

RQ Construct	Research Sub-Question	Research Objective
Package [WHO]	What influencing factors need to be considered in packaging?	To understand the influencing factors that need to be considered in packaging.
Painting Language Connotation [WHAT 1]	What painting language connotation can make the packaging towards females suitable?	To evaluate painting language connotation that can make the packaging towards females suitable.
Increase Reusing [WHAT 2]	How to increase reusing with painting language connotations in the packaging?	To increase reusing with painting language connotations in the package.
Consumer Acceptance [HOW]	How can we increase packaging reuse with the integration of painting language connotation and for consumer acceptance?	To increase packaging reuse by applying painting language connotations and for consumer acceptance.

(Adapted from Ibrahim (2011 & 2020))

1.7 Research Methodology

The overall research adopts the case study research methodology. Figure 1.1 shows the whole process of this research. The research method has five components: research questions, theoretical proposition, units of analysis, logic linking data to the proposition, and criteria for interpreting the findings. Please see Chapter 3 for a detailed elaboration of the research methodology.

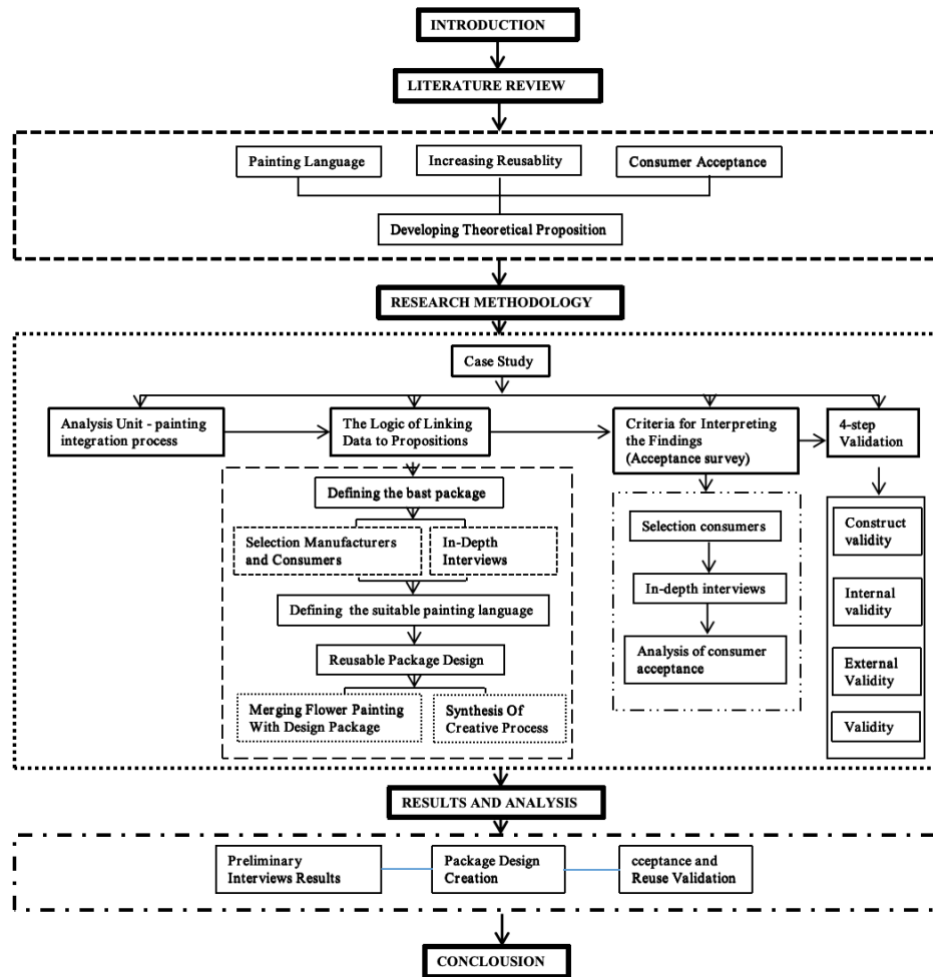


Figure 1.1: Research Design Workflow

1. The research question is, "How to increase reuse of packaging by integrating painting language connotation for consumer acceptance?"
2. Theoretical proposition: *Integrating the connotation of painting language in the package could produce unique product packaging, which, by increasing consumer acceptance, could promote the reusing of product packaging.*
3. Unit of analysis: the painting language integration process.
4. The Logic of Linking Data to Propositions: Obtain information from manufacturers and consumers through interviews for determining the type of packaging and appropriate painting. Packaging design process was developed after analysis of the results.
5. The criteria for interpreting the findings are to investigate consumer acceptance. In-depth interviews were conducted with 21 female consumers on the consumers' acceptance of new paintings and packaging design and whether they would consider changing their

behavior towards recycling the packaging. The standard for interpreting the results is 80%, and the acceptance rate of consumers interviewed must be greater than or equal to 80% for the research to be accepted and thus validated.

1.8 Thesis Organization

This thesis consists of six chapters. They are:

Chapter 1 introduces the study by briefly explaining the research background, problem statement, research question, objectives, methodology, and thesis organization.

Chapter 2 presents a comprehensive literature survey on painting language, reuse, and consumer acceptance. It covers how the literature review is carried out, presenting the results before synthesizing them to form the theoretical proposition for the case study.

Chapter 3 elaborated on the selected case study research methodology. This chapter outlines the research method used in this study and rationalizes using qualitative research methods and the research design. It describes the case study research methodology and details its components, including the research question, theoretical proposition, the unit of analysis, logic linking data to theory, and criteria for interpreting the results. It concludes with the validation and limitations of this study.

Chapter 4 presents the results and analyses of the interviews. The results include manufacturers' and consumers' selections for four paintings and eight packaging types. This chapter describes how the paintings were created to suit the packaging types and how they were applied to the packages. It also presents the results from the acceptance interviews and the potential for reuse among 21 female consumers.

Chapter 5 describes the painting creation and packaging design process, which follows the outcome from Chapter 4. The process contains 1) the selection and application of painting elements, 2) the selection and application of packaging types, and 3) the process of painting creation and packaging design.

Chapter 6 summarizes the research results. It presents the research conclusion, answers to the research questions, knowledge contributions, benefits, and impacts. The chapter concludes with the limitations of this thesis and recommendations for future studies.

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