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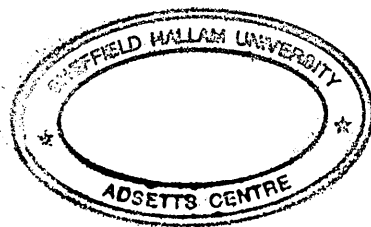
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A Conceptual Model of Packaging Design for eCommerce

Kuo – Li HUANG

A thesis submitted in partial fulfilment of the requirements of
Sheffield Hallam University
for the degree of Doctor of Philosophy



April 2005

Abstract

Packaging is a “salesman” which is used as a marketing tool to assist product sales and deliver product information and attract consumers in conventional marketplaces. It also gives producers a voice in the retail environment. Since the introduction of E-commerce in the 1990's, these functions of packaging have not yet been reproduced in the virtual environment for products sold online. This research explores the meaning by which “online packaging” can be designed and implemented.

Many researchers have identified that consumers find it difficult to buy online, due to poor product presentation and insufficient product information. They can easily obtain these functional advantages from physical packaging. Thus, the aim of this research is to explore a design guideline of online packaging for designers to better apply packaging thinking for products sold online.

This research starts with practical work which contains five tentative studies and a final “laboratory online shop” providing a continuing process of development and evaluation of the research questions and engaging design principles. Rapid ethnographic methods were employed for the data collection. The data analysis and the practical design of online packaging were informed by the theory of Elaboration Likelihood Model (ELM).

The result of the “laboratory online shop” is mainly consistent with the ELM's prediction and the research has resulted in design guidelines for online packaging, providing a framework for designers of online packaging. The guidelines integrate packaging thinking, the rapid ethnographic approaches and applications of the ELM theory, offering an opportunity for designers to apply the functions of packaging to products sold online.

The approach helps designers to collect relevant background information before they design and evaluate developing designs. The guidelines influence designers to have a dual consideration of messages for consumers informed by the ELM's concept of “involvement” during the development of online packaging. Finally, a successful design of online packaging will not only depend on the designers, but retailers and manufacturers will also need to establish the infrastructure of an online shop, so that designers can apply online packaging to eCommerce.

Key words: packaging design, e-commerce, rapid ethnography, ELM.

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Table of contents

List of figures.....	VIII
List of appendixes.....	XIII

Chapter One Introduction

1.1 Aim and contributions of this research.....	1
1.2 Research framework.....	2
1.3 Research questions identification.....	5
1.4 Research methods.....	7
1.5 Plan of the thesis.....	8

Chapter Two Literature review

2.1 Introduction.....	11
2.2 Packaging design.....	15
2.2.1 History of packaging design.....	16
2.2.2 Functions of packaging.....	18
2.2.3 Packaging vs. advertising.....	26
2.2.4 Summary.....	31
2.3 The internet.....	32
2.3.1 The application of hypertext.....	33
2.3.2 Multimedia website design.....	40
2.3.3 E-commerce.....	44
2.3.4 Summary.....	48
2.4 The Elaboration Likelihood Model.....	49
2.4.1 A brief history of cognitive psychology.....	52
2.4.2 Introduction to the ELM.....	55
2.4.2.1 Central Route.....	56
2.4.2.2 Peripheral Route.....	56
2.4.2.3 Involvement.....	58
2.4.2.4 Antecedent process.....	59
2.4.3 The application of the ELM.....	61
2.4.3.1 Social psychology.....	61
2.4.3.2 Marketing research.....	63
2.4.3.3 Advertising research.....	65
2.4.4 Summary.....	68

2.5 Online consumers' attitudes towards product information and presentation.....	69
2.5.1 Shopping agent helps online shopper?.....	70
2.5.2 The need of product information and presentation.....	71
2.5.3 Rich information and presentation for online shoppers.....	72
2.5.4 Summary.....	74
2.6 Preliminary conclusion and development of research questions.....	75

Chapter Three Research Methodology

3.1 Introduction.....	79
3.2 The methodology.....	85
3.2.1 Ethnographic research.....	86
3.2.2 The problem of ethnographic research for designers.....	88
3.2.3 Rapid ethnographic strategy.....	90
3.3 The method of this research.....	92
3.3.1 Interview.....	92
3.3.1.1 The application of interview method in this research.....	94
3.3.1.2 Interviews with designers and experts (Phase of tentative studies).....	95
3.3.1.3 Interviews with consumers (Phase of tentative studies).....	97
3.3.1.4 Interviews with consumers (Phase of laboratory online shop).....	98
3.3.2 Questionnaire.....	100
3.3.2.1 The application of questionnaire method for public viewpoint on online packaging (Phase of tentative studies).....	101
3.3.3 Observation.....	103
3.3.3.1 The application of observation method in this research.....	105
3.3.3.2 Physical and online shopping observation (Phase of tentative studies).....	105
3.3.3.3 Online shopping observation (Phase of laboratory online shop).....	107
3.4 Design practice oriented research.....	109
3.5 Data analysis.....	113
3.5.1 Methods of data analysis.....	113
3.5.2 Validity and reliability.....	116
3.5.3 Sampling.....	119
3.6 Summary	124

Chapter Four Practical Work

4.1 Introduction.....	125
4.2 Phase of tentative studies.....	128
4.2.1 Designers and expert interviews.....	128
4.2.1.1 Interviews with designers.....	128
4.2.1.2 Interviews with experts.....	129
4.2.1.3 Findings.....	130
4.2.2 Public viewpoints towards online packaging.....	132
4.2.2.1 Sampling.....	132
4.2.2.2 Procedure.....	132
4.2.2.3 Outcomes.....	132
4.2.2.4 Questions for online shoppers.....	133
4.2.2.5 Questions for internet users.....	134
4.2.2.6 Findings.....	135
4.2.3 Online packaging analysis.....	137
4.2.3.1 Three formats of online packaging.....	137
4.2.3.2 Findings.....	139
4.2.4 Shopping Observation.....	141
4.2.4.1 Research design.....	142
4.2.4.2 Procedure.....	143
4.2.4.3 Participants in the physical shopping trip.....	143
4.2.4.4 Participants in the online shopping trip.....	144
4.2.4.5 Discussion.....	145
4.2.4.6 Findings.....	146
4.2.5 Simulated Online Shopping.....	148
4.2.5.1 Overview of this study.....	148
4.2.5.2 Participants' involvements with wines.....	151
4.2.5.3 Procedure.....	152
4.2.5.4 Independent variables.....	152
4.2.5.5 Outcomes.....	152
4.2.5.6 Discussion and Implication.....	155
4.2.5.7 Findings.....	158
4.3 Phase of laboratory online shop.....	161
4.3.1 Overview of the experiment.....	162
4.3.2 Research questions	163
4.3.3 Structure of the laboratory.....	164

4.3.4 The design purpose of each task.....	165
4.3.5 Features of online packaging in every task.....	167
4.3.5.1 Online packaging features of task one.....	167
4.3.5.2 Online packaging features of task two.....	173
4.3.5.3 Online packaging features of task three.....	178
4.3.5.4 Online packaging features of task four.....	182
4.3.6 The use of theory.....	189
4.3.7 Procedure and data recording.....	190
4.4 Summary of chapter four.....	193

Chapter Five Analysis and discussion of the laboratory online shop

5.1 Introduction.....	195
5.2 Analysis.....	197
5.2.1 Outcomes of the laboratory online shop.....	197
5.2.1.1 Matrixes for comparisons between tasks.....	198
5.2.1.2 Conceptual mapping.....	201
5.2.2 Online packaging contributions to eCommerce.....	203
5.2.2.1 Unlimited information provision.....	205
5.2.2.2 To provide visual assistance.....	206
5.2.2.3 To expand consumers' consideration lists.....	207
5.2.2.4 Summary.....	208
5.2.3 Involvement and patterns of shopping behaviour.....	210
5.2.3.1 The prediction of participants' behaviour by the ELM.....	210
5.2.3.2 Patterns of shopping behaviour.....	219
5.2.4 Impulse shopping and play behaviour.....	221
5.2.4.1 Impulse shopping and low involvement participants.....	222
5.2.4.2 Impulse shopping and high involvement participants.....	223
5.2.4.3 Play behaviour.....	224
5.2.5 Summary.....	226
5.3 Discussion.....	228
5.3.1 Forms of online packaging.....	228
5.3.2 Innovation in packaging thinking.....	230
5.3.3 The design guideline of online packaging.....	234
5.3.3.1 The use of packaging function.....	236
5.3.3.2 The use of the ELM.....	237
5.3.3.3 The use of interactive feature.....	239

5.3.3.4 The use of rapid ethnography.....	240
5.3.3.5 Using the guideline.....	242
5.3.3.6 To summarise briefly the design guideline.....	245
5.3.4 Summary	247

Chapter Six Conclusion

6.1 Consequences of this research.....	248
6.1.1 Packaging thinking in the online environment.....	248
6.1.2 Research methods for designers.....	250
6.1.3 The application of the ELM for designers.....	251
6.2 Evaluation of the design guideline.....	253
6.3 Criticism and limitations.....	255
6.4 Recommendation for further research.....	258

Reference.....	259
-----------------------	------------

List of figures

Chapter one

Figure 1.1: The research framework of this research.....	2
Figure 1.2: Plan of the thesis.....	8

Chapter two

Figure 2.1: The result of database search for related literatures.....	11
Figure 2.2: The areas of the literature review.....	12
Figure 2.3: Functions of packaging.....	19
Figure 2.4: 1001's bottle, before mid-1960s (left) and after (right).....	20
Figure 2.5: The normal turnover of a product as a function of time; Product Life Cycle (right); impact of different factors at each stage of PLC (left)...	21
Figure 2.6: Examples of promotional functions using special displays to promote products.....	22
Figure 2.7: Information of consumers' concerns.....	23
Figure 2.8: To communicate with consumers by using information functions.....	24
Figure 2.9: A poster of a wine advertisement.....	27
Figure 2.10: Consumers are looking for further details.....	27
Figure 2.11: An internet advertisement of wines.....	28
Figure 2.12: An online shop's shopping aisle.....	28
Figure 2.13: Further details of wines by request.....	28
Figure 2.14: A brief timeline of the internet.....	32
Figure 2.15: An example of non-linear hypertext.....	33
Figure 2.16: The development of hypertext applications.....	34
Figure 2.17: The original proposal of the WWW.....	37
Figure 2.18: A screen shot of the hypertext in the first webpage for WWW.....	38

Figure 2.19: A screen shot of the first GUI.....	38
Figure 2.20: A snapshot of Mosaic web browser.....	40
Figure 2.21 Interactivity for different media.....	42
Figure 2.22 (Left): The increasing turnover of eCommerce and decreasing GRE in 2001.....	45
Figure 2.23 (Right): The decreasing money spent on online per person and decreasing EGR in 2001.....	45
Figure 2.24: Elaboration Likelihood Model.....	49
Figure 2.25: The development of cognitive psychology.....	52
Figure 2.26: The difference between central and peripheral route.....	55
Figure 2.27: The application of the ELM in social psychology.....	61
Figure 2.28: The application of the ELM in marketing research.....	63
Figure 2.29: The application of the ELM in advertising research.....	65
Figure 2.30: The concept of online packaging features.....	74
Figure 2.31: 7-11's online shop.....	76
Figure 2.32: The website of FamilyMart convenience store.....	76
Figure 2.33: Producer's history, Peapot.com.....	76
Figure 2.34: Food recipe, Iceland.co.uk.....	76

Chapter three

Figure 3.1: Methods employed in the six studies.....	81
Figure 3.2: Research strategy and methods of this research	83
Figure 3.3: The use of interview method in different phases of studies.....	94
Figure 3.4: The use of questionnaire method for telephone survey.....	101
Figure 3.5: The use of observation method in different phases of studies.....	105
Figure 3.6: The sampling method and the number of sample for each study.....	119

Chapter four

Figure 4.1: This practical work was a sequence of six studies.....	125
Figure 4.2: An example of pure text for products' description.....	138
Figure 4.3: An example of pictorial icons description.....	138
Figure4.4: Products' real images in "aisle"	139
Figure 4.5: Requested product's information.....	139
Figure 4.6: An un-labelled wine sold in a supermarket.....	141
Figure 4.7: Results of the participants' purchases.....	143
Figure 4.8: Participants' preference of online packaging in Tesco online shop..	144
Figure 4.9: A stimulation online shopping aisle.....	149
Figure 4.10: Requested information of Australian wine.....	149
Figure 4.11: Colour changing animation of Spanish wine bottle.....	150
Figure 4.12: Requested information of Spanish wine.....	150
Figure 4.13: Metaphor of animated pictures.....	151
Figure 4.14: Participants' purchasing decisions.....	152
Figure 4.15: The second choice of the high involvement participants.....	156
Figure 4.16: The progress of the "laboratory" experiment.....	162
Figure 4.17: The structure of the "laboratory online shop".....	164
Figure 4.18: Main purpose of each task for the "laboratory".....	165
Figure 4.19: Wine 1- 10 in task one.....	168
Figure 4.20: Animation for wine 10.....	169
Figure 4.21: Style of pictures for wine 1, 4, 5, 7, 8, 9.....	169
Figure 4.22: Wine 2, 360° rotatable bottle.....	170
Figure 4.23: A front rollover image for wine 5.....	170
Figure 4.24: A back rollover image for wine 5.....	171

Figure 4.25: A rollover image and animation mood board for wine 10.....	171-2
Figure 4.26: Wines in the layer 2 of task 2	174
Figure 4.27: A rollover image for wine 1.....	174
Figure 4.28: Front & Back image for wine 1.....	175
Figure 4.29: A pop-up image for a larger label.....	175
Figure 4.30: A pop-up image for a larger label.....	176
Figure 4.31: A pop-up image for a larger label.....	176
Figure 4.32: A larger still image for wine 2.....	177
Figure 4.33: No image for wine 3.....	177
Figure 4.34: Still images for wines in task 3.....	179
Figure 4.35: Limited information for wine 1.....	179
Figure 4.36: More relevant information for wine 2.....	180
Figure 4.37: More extra information for wine 3.....	180-1
Figure 4.38: Still images of each wine.....	183
Figure 4.39: Rollover images for each wine.....	183
Figure 4.40: Basic information and additional links for wine 1.....	185
Figure 4.41: The links have various information.....	185
Figure 4.42: Linked to producer's website.....	186
Figure 4.43: Pop-up windows for various information.....	186
Figure 4.44: Wine 2 has basic wine information, recommendation and ratings..	187
Figure 4.45: Wine 3 has a long webpage which contains rich information.....	188

Chapter five

Figure 5.1: A concise transcript of “laboratory online shop” for interviews and observation.....	197
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Figure 5.2: Participants' intuitive choices without carefully reading information and purchase choices, after browsing information.....	199
Figure 5.3: Under the same conditions of product presentation in task 3 and 4, the participants' reasons to change or not to change their purchasing choices.....	200
Figure 5.4: The mapping.....	202
Figure 5.5: Purchase behaviour of high involvement participants.....	214
Figure 5.6: Purchase behaviour of low involvement participants.....	215
Figure 5.7 Patterns of shopping behaviour in this laboratory experiment.....	219
Figure 5.8: The design guideline of online packaging.....	234
Figure 5.9: A simplified version of the design guideline of online packaging.....	242

Chapter six

Figure 6.1: Some less and not natural settings were used in the studies of 4.2.5 and 4.3.....	256
---	-----

List of appendixes

Appendix A: Transcripts of the interviews with designers.....	272
Appendix B: Transcripts of the interviews with experts.....	275
Appendix C: Questionnaire for the study of public viewpoints towards online packaging.....	278
Appendix D: Interviews' questions and records for the study of simulated online shopping.....	280
Appendix E: Pre-observation interviews' questions for the study of laboratory online shop.....	290
Appendix F: Interviews and observations' transcripts for the study of laboratory online shop.....	291
Appendix G: Drafts for the development of the mapping and the matrix.....	299

Chapter one Introduction

1.1 Aim and contributions of this research

The aim of this research is to discover design guidelines to assist designers to perform online packaging projects, allowing them to have better understanding between eCommerce, online consumer behaviour and packaging functions. The design guidelines will provide a framework for designers to apply packaging thinking to online products in a digital context, in order to fulfil the role of packaging as a “salesman”, in online shopping environments.

This research has made three main contributions. **Firstly**, for packaging thinking, this research extends the limited theoretical and empirical work in the area of online packaging, by investigating the transfer and transformation of packaging functions into online environments. **Secondly**, this research also gives to designers a framework of research methods for online packaging development, by providing design guidelines for online packaging, furthermore it is very likely that it will be the first guideline for applying packaging thinking in a digital context. **Thirdly**, through the application of the Elaboration Likelihood Model (ELM) (Petty and Cacioppo, 1983), this research offers insight into theories from cognitive psychology, to help designers to construct different cues of messages for online consumers with different levels of product involvement, by understanding their needs and predicting their behaviour.

1.2 Research framework

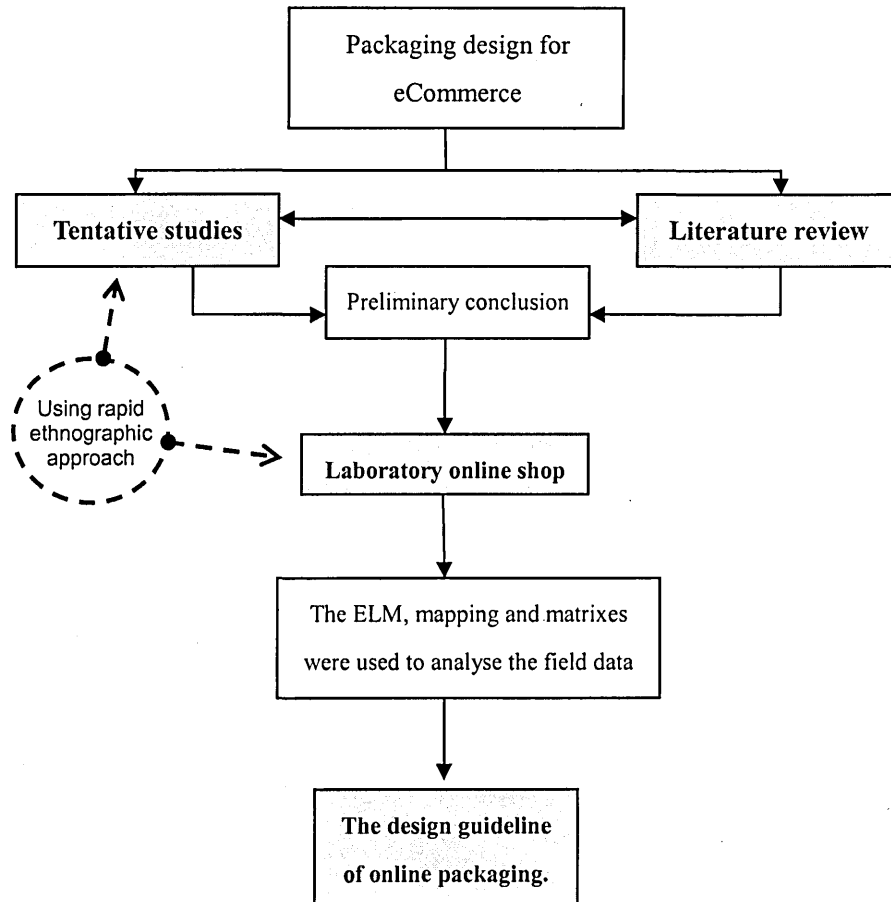


Figure 1.1: The research framework of this research

The research framework falls into four areas as follows:

1) Literature review: To understand the various purposes of packaging and locate the drawbacks of current approaches towards online packaging for eCommerce, as well as knowledge and theories about development of the internet, cognitive psychology and online consumer behaviour.

2) Tentative studies: A series of practical activities to identify possible opportunities to incorporate packaging thinking in eCommerce and refine research questions for the final experiment of the “laboratory online shop”.

3) Laboratory online shop: To build a “laboratory online shop” to test the idea of online packaging and to evaluate the finding and research questions from the previous phase of studies, in order to propose design guidelines for online packaging thinking.

4) The design guideline of online packaging: Content analysis, conceptual analysis, triangulation analysis and the ELM were used to create matrixes and mappings in order to analyse the data gathered from the laboratory online shop. From analysis and reflection on design and research methods used, it was possible to develop a guideline which provides a direction for designers to apply packaging thinking to online packaging design.

In the research process the literature review and practical work were concurrent, because there is not sufficient relevant published research to support, on its own, the development of the research questions. Practical work was employed in helping to identify online consumers' needs and online packaging requirements. The literature review focused on four themes (See Fig. 2.2): 1) Packaging design, 2) The internet, especially focusing on the use of hypertext and eCommerce, 3) Cognitive psychology, particularly the ELM, and 4) Online consumers' attitudes towards product information and presentation.

The reason for focusing on these areas was that in section 2.5, many studies show that consumers found difficulties when they were buying products or services on the internet, and the ELM could provide considerations for designers to enhance design thinking, in order to help

online consumers out of their difficulties in online environments. Thus, this causal relationship indicated that it was essential to understand these four themes.

The practical work was divided into two major parts: the tentative studies and the “laboratory online shop”. **The tentative studies** were a sequence of five activities (See figure 4.1), used, together with the literature review, to find and refine the research questions, these studies were also used to evaluate the research methods. **The “laboratory online shop”** was the final data gathering activity of this research. It was performed to evaluate the findings of the tentative studies and gather an additional understanding of the research topic, in order to conclude the design guidelines for online packaging.

1.3 Research questions identification

With the popularisation of the internet, online shopping is growing rapidly, as indicated in section 2.3.3. However, there is no sense of touch and smell in this cyber world. In section 2.5, we found that many researchers pointed out that small, still and blurry pictures with insufficient product information that are the current norm for eCommerce, are not helpful to consumers. These problems increase the difficulty for online shoppers. This raises the question, how can the marketers, manufacturers and designers create more suitable virtual mechanisms for online shopping? This research is developed from this proposition that packaging thinking could provide a practical answer.

E-commerce retail continues to grow, for example, the U.S. Census Bureau (2004) reported that eCommerce retail sales in the United States increased 21.5% from the third quarter 2003 to the third quarter 2004. This is a new channel for companies to distribute their products and services to customers. A traditional retailer, such as Tesco in the U.K., is developing and building on shopping sales through online shopping, with eCommerce helping it not only to expand their market shares online but also to reinforce its company's identity to the consumers. Online shopping offers consumers a convenient environment from where they can purchase products, whilst providing a variety of information that can act as the consumers' purchasing references.

What then, is the connection between eCommerce and packaging?

Initially it seems that there is no relation between them. However this can be clarified if we know the functions of packaging. These can be divided into three categories; primary, secondary and tertiary (Lung, 1982; Emblem and Emblem, 1995; Chou, 1999). The primary function is known as industrial packaging design and concerns the structural nature of packaging. The secondary function is known as commercial packaging design and relates to the issues of visual communication, with the tertiary function being about the additional values to the product e.g., Point Of Purchase (POP) effectiveness and reusable package.

Paine (1981: 3) defines packaging as *“the art, science and technology of preparing goods for market and sale”*. This means that packaging includes all kinds of physical and visual elements which can be used for physically packing the goods and communicating with consumers. This function is to keep the original quality of the products, whilst attracting attention and providing information to the end users, during the processes of transporting and selling.

In this research, the visual function, such as the product's presentation and information, is more important than the other functions, because the author considered that the concept of commercial packaging design could be transferred to the virtual environment, in order to assist consumers in online shopping environments. Thus, the broad research questions are: Is the concept of “online packaging” a useful one for retailers and manufacturers? What are the characteristics of effective online packaging? How can designers produce effective online packaging?

1.4 Research methods

This study was basically a qualitative research and the data collection employing different research methods, including literature reviews, interviews, questionnaires, observations, and empirical design. Rapid ethnography was a central strategy for this exploration.

A rapid ethnographic strategy was used to collect the data for practical work. Millen (2000) proposed rapid ethnography which intends to explore a rich understanding of users and their activities in the area of Human Computer Interaction (HCI). He also pointed out that Blomberg et al described that this research method can help “*designers to understand the varied and complex interrelationships between individual users within and between work groups.*” (Millen, 2000: 280). It could be explained that this research method could be very good for designers to understand their users and design projects. This method will be discussed further in section 3.2.

This research topic, packaging design for eCommerce, is a relatively new area, Rubin and Babbie (2001) stated that the exploration study is normally used to explore a newly developed research issue or a new issue which has rarely been studied. This type of study is valuable when researchers try to define a new issue or phenomenon into a serious research topic. This description would fit the main theme of this study – packaging design for eCommerce, due to the issue that too few people have an awareness of it, in both packaging design practice and within the academia.

Other methods also are also employed for data collection, in this research e.g. literature reviews, interviews, questionnaires, observations, and empirical design. The ELM is used for data analysis as a starting point for conceptual, content and triangulation analysis.

1.5 Plan of the thesis

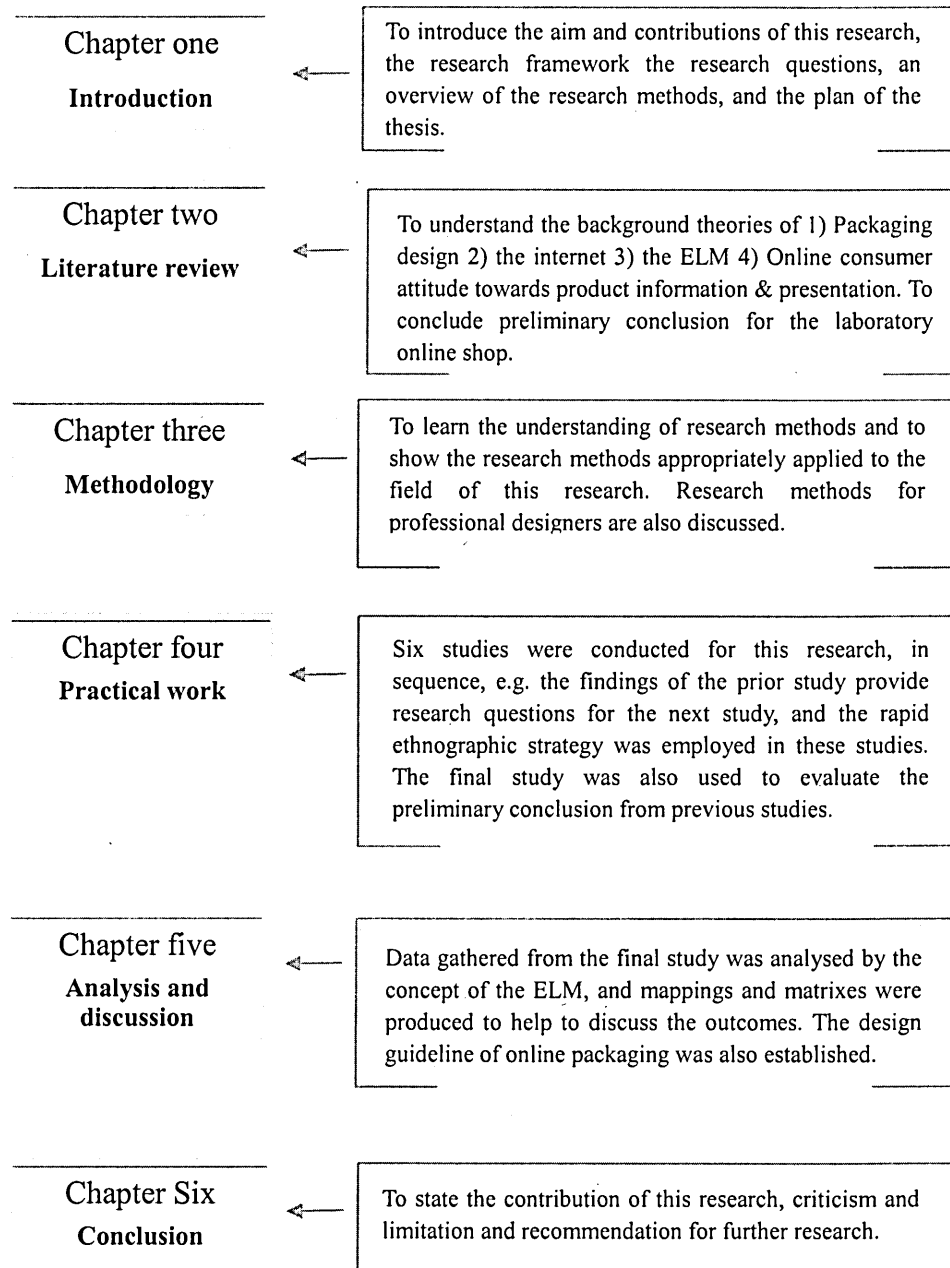


Figure 1.2: Plan of the thesis

This thesis contains six chapters.

Chapter one introduction: Presents the aim, contributions, research

framework, research questions identification, research methods and the plan of this thesis.

Chapter two literature review: Reviews the background literature related to this research, such as packaging design, eCommerce, packaging and advertising, the ELM, and online consumers attitudes towards product information and presentation. These reviews provide the theoretical support for this research. The theoretical support is also used to evaluate the findings from the practical work. Furthermore, together with the findings of the tentative studies, a preliminary conclusion is developed so that it can be evaluated by the laboratory online shop (See figure 1.1 research framework)

Chapter three research methodology: Presents the research methods applied in this research, such as the methods of data collection, data analysis and sampling. The validity and reliability of the employed research methods is also considered all through this study. Meanwhile, every research method used in this research will be described in detail. Additionally, a rapid ethnographic strategy, design practice oriented research and methods of data analysis will also be discussed in this chapter.

Chapter four practical work: Falls into two parts, the tentative studies phase and the laboratory online shop phase. The tentative studies present a sequence of studies with practical online packaging design (See figure 4.1), to gradually develop the idea of online packaging. The finding of these studies is compared with the literature review for theoretical support, in order to establish a preliminary conclusion for evaluation to be tested in the laboratory online shop (See figure 1.1). The laboratory online shop used

fifteen participants to evaluate the preliminary conclusion, and other ideas of online packaging design arising as the research progressed.

Chapter five analysis and discussion of the laboratory online shop:

Analyses the field data of the laboratory online shop based on the concept of the ELM. It explains what online consumers expect from online packaging and what online packaging can provide to fulfil consumers' needs. The patterns of shopping behaviour, with different levels of product involvement, are also analysed, with the result being mainly consistent with the ELM's prediction. It was also discovered that impulse shopping and play behaviour have strong relations with consumers' physical shopping experiences. The form of online packaging is discussed, however we found no standard form for online packaging. It was found that designers need to develop their thinking to include concepts of online packaging to help consumers transfer their physical packaging thinking to create effective online packaging, because consumers need online packaging to help them to transfer their physical shopping experience into the virtual environment. Finally, the design guidelines of online packaging will be established for designers, to help them to have a complete consideration for the design process for online packaging.

Chapter six conclusion: Describes the main consequences of this research by emphasising the development of packaging thinking in an online context, research methods for designers and the application of the ELM, criticism and limitations are described and that will indicate directions for further research.

Chapter two Literature Review

2.1 Introduction

This chapter is a review of literature that will offer a broad understanding of the role of packaging and consumers' purchasing attitudes in the online environment. It will show where previous research could fit into the idea of online packaging.

Database	Keywords	Sections	Results	Relevant to this research
WOK ¹	Packaging design	Title, abstract	7	0
BHI ²	Packaging design	Title, abstract	15	0
DAAI ³	Packaging design	Title, abstract	15	0
Emerald	Packaging design	All	50	1
WOK	Consumer behaviour, packaging	Title, abstract	0	0
BHI	Consumer behaviour, packaging	Title, abstract	8	0
DAAI	Consumer behaviour, packaging	Title, abstract	71	0
Emerald	Consumer behaviour	All	4580	Refined search as next column
Emerald	Consumer behaviour, packaging	All	50	0
WOK	E-commerce, packaging	Title, abstract	0	0
BHI	E-commerce, packaging	Title, abstract	0	0
DAAI	E-commerce, packaging	Title, abstract	2	1
Emerald	E-commerce	All	1450	Refined search as next column
Emerald	E-commerce, packaging	All	9	1

Figure 2.1: The result of database search for related literatures

The figure 2.1 shows that there are only a few papers related to this research topic. It was difficult to select areas for the literature review at the

¹ Web of Knowledge, including Social Science Citation Index, Science Citation Index, and Art and Humanity Citation Index.

² British Humanity Index.

³ Design and Applied Art Index.

beginning of this research, due to insufficient literature to suggest a research direction. However, the author chose four areas (packaging design, the internet, Elaboration Likelihood Model (ELM) and online consumer attitude towards product presentation & information) which were gradually considered relevant to the idea of online packaging, after a few tentative studies had been conducted. Figure 2.2 shows the areas that were considered relevant to this research.

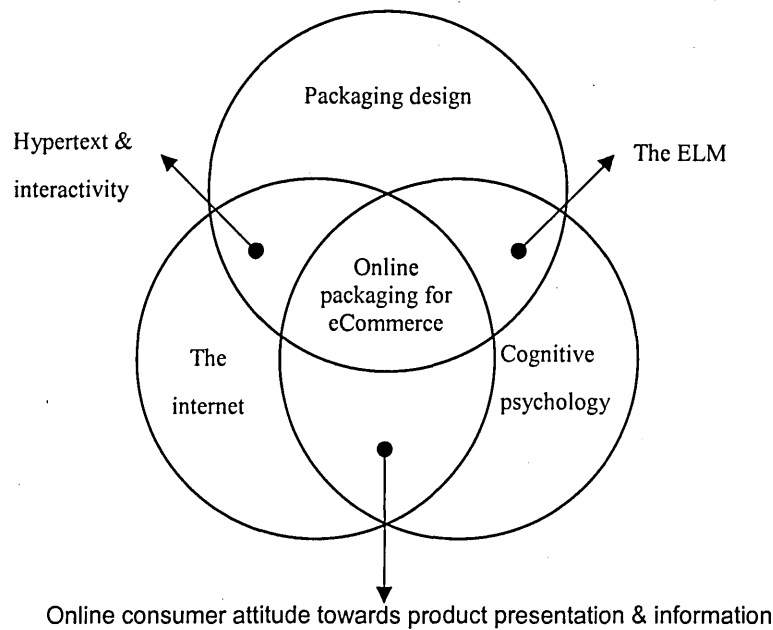


Figure 2.2: The areas of the literature review

This chapter contains five sections, four sections for the literature review and one section for the preliminary conclusion of the literature review and the tentative studies. Each section will be briefly introduced as follows:

1) Functions of packaging: Packaging has three main functions, primary, secondary and tertiary functions. The primary function concerns product protection and distribution, which has been used for keeping the product in a

complete condition since 3000 B.C. The secondary function is for visual communication, which has been gradually used for conveying product presentation and information to consumers after the industrial revolution. The tertiary function is the additional value for a product, e.g. environmentally friendly. The secondary function is the main theme that is considered to be transformed to the virtual environment in this research.

2) The internet: The internet originated in the 1960's. With the development of hypertext and the graphic user interface, the internet is gaining popularity for helping people communicate with each other and to acquire information. While online shopping cannot have many of the benefits of physical packaging's presentation, we have the opportunity to employ these new characteristics of hypertext and interactivity to compensate.

3) The ELM: Elaboration Likelihood Model (ELM) is a theory of cognitive psychology and has been the main theory used to guide the design of online packaging in this research and to evaluate the practical work. The concept of two message routes has provided this research with a guideline to construct persuasive information for consumers who have different levels of product involvement. Its prediction of consumer behaviour can be used to analyse the field data. This research has indicated that this theory can be an effective tool for designers during their design process.

4) Online consumers' attitudes towards product information and presentation: This section will show that many researchers have already discovered that consumers have difficulties when buying online, due to poor

product information and presentation. The author argues that this situation can be amended by enhanced online packaging, because a product's packaging act as a "silent salesman" in the physical environment and provides consumers with product presentation and information. These functions could be transferred into the online environment to help consumers who shop online.

5) Preliminary conclusion: Findings from the literature review and the tentative studies assume that the secondary function of packaging could be transferred into the online environment to continually carry on the role of a "salesman", in order to help consumers shop online. Research questions are proposed for the main experiment "laboratory online shop", which will evaluate these questions, in order to discover not only online packaging contributions for both online shoppers and eCommerce but also for the design guidelines of online packaging for designers.

2.2 Packaging design

Packaging is widely used for a variety of purposes including, product protection, transportation, warehousing and point of purchase (POP) displays where it is known as a “silent salesman” (Pilditch, 1973). The functions of packaging were originally to protect and preserve products, prevent them from being damaged, reduce storage and transportation costs in the distribution process, provide appealing presentation for products such as attractive POP display, and convey information to consumers, for example the quality labelling system. Today, the mission for packaging has been further expanded to the utility of goods, in order to contribute to the quality of people's lives and their shopping experiences. This section mainly focuses on the functions of secondary packaging design, such as promotion, information and communication functions, where the author wants to discuss how these packaging concepts can be applied in the online shopping environment.

2.2.1 A brief history of packaging

The earliest forms of package were utilising raw materials such as leaves, skin, hollowed out logs, and fur to keep food or product protected (Lung, 1982; Lox, 1992; Chou, 1999). However, these raw materials could not keep the food or product in the best of conditions. About 3000 B.C., the Egyptians used a specific kind of leaf as a plate and invented papyrus from a plant's fibre to wrap food (Chou, 1999). They also utilised glass to make bowls and jars as containers for daily use.

The first canned package was attributed to a French industrialist Nicolas Appert (Rouffignac, 1990; Lox, 1992) at the beginning of the 19 century. He invented the canning process, which used a glass jar – as a way of preserving food by heating it inside a sealed container. The development of the technique for sterilizing packaging, by heating it in a metal container goes back to Napoleon (Roth & Wybenga, 2000), when he needed to feed his army during wars.

Before the industrial revolution, the storage, handling and protection of a product were the main functions of packaging. After the industrial revolution, other functions of packaging were also developed, such as branding and visual attractions, due to the great use of machinery on mass production goods and an increased consumption (Hine, 1995; Emblem and Emblem, 1996).

After World War II, the packaging industry has become a significant economic force in the advanced industrial nations (Roth, 1990). The

packaging industry has a very important role in modern business activities, as well as business functions, including marketing, advertising, point-of-purchase, informative function and promotional materials. They were significantly dependent on the packaging (Roth, 1990; Lox, 1992; Stewart, 1996). Since the rise of the modern supermarket, the visual function of packaging acts a very important role in attracting consumers' attention in the "self-service" shopping environment. Packaging seemed to take the place of shop assistants to provide a voice for products.

Now, we have already moved onto another new trading platform – that of online shopping. Interestingly though, the visual role of packaging seems not to have caught up with this new trend of shopping environment. The internet is a "highly self-select environment" (Kathman, 2002) where the consumers cannot usually obtain an instant answer to an enquiry and normally do the shopping alone. Hence, they need to make decisions by themselves, with the information in their hands. Therefore new packaging design thinking should be different from traditional thinking for gaining a greater market share of eCommerce. This niche of packaging for eCommerce should be studied.

2.2.2 Functions of packaging

This research is focused on virtual packaging for internet shopping but it is necessary to understand the functions of physical packaging, in order to transfer packaging thinking from the real to the virtual. Packaging was defined by the European Federation (2000) as

“all products made of any materials of any nature to be used for the containment, protection, delivery and presentation of goods, from raw materials to processed goods”.

As mentioned previously, Paine (1981, pp.3) defines packaging as *“the art, science and technology of preparing goods for market and sale.”* These definitions provide a perspective of packaging functions that show that packaging functions can be physically and visually appealing to assist products during the selling process from the manufacturers to the end users.

Packaging includes all kinds of physical and visual elements which can be used in physically packing the goods and visually communicating with consumers. The function is to keep the original quality of products, whilst providing information to the end users during the processes of transporting and selling.

The various functions of packaging can be divided into three categories; primary, secondary and tertiary (Lung, 1982; Emblem and Emblem, 1996; Chou, 1999). The primary functions as known as industrial packaging design concern the structural nature of packaging. The secondary functions as known commercial packaging design relate to the issues of visual

communication, with the tertiary functions being about the additional values for the product. The basic requirements of physical packaging include (Figure 2.3) containment, protection, preservation, communication, promotion, loading and storage, as well as the convenience of use (Pilditch, 1973; Lung, 1982; Paine, 1990; Sonsino, 1990; Stewart, 1996; Morgan, 1997; Chou, 1999). In this research, the secondary functions will be the main focus, because the idea of “online packaging” is a concept relating to the packaging of product presentation, which transfers the functions of physical commercial packaging, such as sales, promotion and information, to the virtual environment, in order to assist eCommerce sales (Huang et al, 2003). The following discussions are the summaries based on the above references, with a concentration on the secondary functions.

Functions of packaging		
Primary functions	Secondary functions	Tertiary functions
Protection, storage, warehousing, transportation, distribution	Sales, promotion, information, communication, branding	Safety, ease of use, reuse, value added, multi-functions

Figure 2.3: Functions of packaging

2.2.2.1 Sales function

The purpose of this function is to express the image of product and describe the products' features, giving consumers a confidence that will 1) make a favourable impression and 2) make purchasing decisions more efficient (Stewart, 1996). Blackwell et al (2001) also pointed out that some buyers were shopping impulsively and in a hurry to pick it from the shelf, additionally more than 54% of consumers often intended to employ

products' displays as a replacement for a physical shopping list. A highly recognisable packaging can allow consumers to efficiently identify a product or service which can provide a specific need to the consumers.

Packaging can be distinguished from its product and deliver to the consumer four elements: purpose, performance, quality and value (Milton, 1991). An example is 1001 liquid carpet cleaner (Figure 2.4) (Milton, 1991).



Figure 2.4: 1001's bottle, before mid-1960s (left) and after (right)
Source: Milton (1991: pp.5)

Even though 1001 has not had any TV commercials or national advertisements' advertising the product since 1967, its sales are still good. Since the 1960's, 1001 has changed the shape of the bottle, the material of the bottle and the colour of the liquid cleaner. However the main colours of the labeling and the branding are almost the same. The image of 1001 is still strong in consumers' minds and effectively influences purchasing decisions, which is demonstrated by its strength of sales.

Therefore the packaging has to be clearly identified. Manufacturers have to give in depth consideration to the quality of the product and equally good

consideration to the packaging design. In most cases it is difficult to try or taste the quality and standard of a product at the sales point. Hence buyers would concentrate on the package design.

Furthermore, Lox (1992) mentioned that Kotler and Mickwitz described that the commercial functions of packaging played an important role on saleability and / or returns for a specific product. Especially, when the sales of a product reach the saturation stage of the Product Life Cycle (PLC), the packaging can obviously affect the increase of product sales in a profitable environment (Figure 2.5).

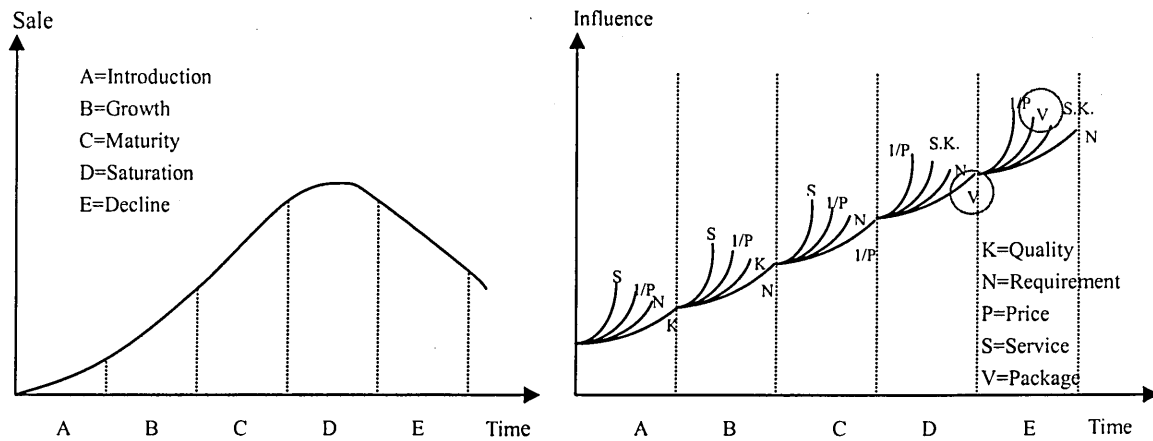


Figure 2.5: The normal turnover of a product as a function of time; Product Life Cycle (left); impact of different factors at each stage of PLC (right). Source: Lox (1992, pp.24)

However, what if consumers cannot instantly recognise a product's identification in the online environment? This could mean that the retailers might not make good sales, due to the weakness of the product's identification. On the contrary, if online retailers could make the online presentation simply and clearly identify the product, it is likely to bring the same benefits in online shopping that it gives in physical packaging.

2.2.2.5 Promotional function

The promotional function is similar to the sale function but it concentrates on the advertising function of packaging (Stewart, 1995). In addition, it is also intended to attract shoppers' attention, so that it has an influence on their purchasing decisions, especially during promotional drives (Figure 2.6). This promotional function of the packaging plays a key role for POP packaging, as it is directly addressed to the consumer.

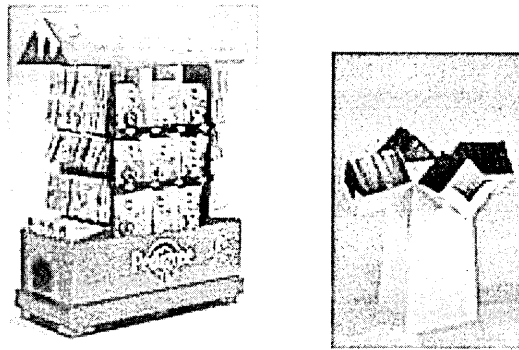


Figure 2.6: Examples of promotional functions using special displays to promote products.

2.2.2.6 Information function

The various pieces of information printed on the packaging provide the consumer with details about the contents and usage of the particular product. Consumers gather information about the product through the label. Manufacturers need to update themselves on the packing and labeling needs of the target markets to avoid any deceptive and unfair methods of packaging.

Information	Consumer's concerns
The product itself	Branding, capacity, colour, country of origin, date of made/expired, ingredients, nutrition facts, performance, the image of product, the weight, size, method of usage, meat / vegetable diet
The peripheral of product	Pricing, the contact of manufacturer, manufacturer's warranty, additional information sources, voltage input/output, method of maintenance, product's history, material of product, accessory

Figure 2.7: Information of consumers' concerns

Examples (Figure 2.7) include branding, pricing, the weight (both net and gross), the specification listing of ingredients, colour, country of origin, capacity, date of made/expired, the image of product, the contact of manufacturer, the performance of product, nutrition facts, additional information sources, voltage input/output, method of maintenance, manufacturer's warranty, method of usage, product's history, meat / vegetable diet, material of product, accessory and size, which all need to be written on the label clearly. This concise information could allow consumers to compare between different products, in order to make a more informed purchasing decision. A recent story reported by British Broadcasting Corporation (BBC) (2004), said that the Food Standards Agency (FSA) suggested 26 million British people should reduce their salt intake for preventing potential diseases, e.g. heart attack, and manufacturers should have better labeling of salt in order to help people to change their diet. This story shows the importance of transparent information that also plays a role for both commercial and public justice purposes.

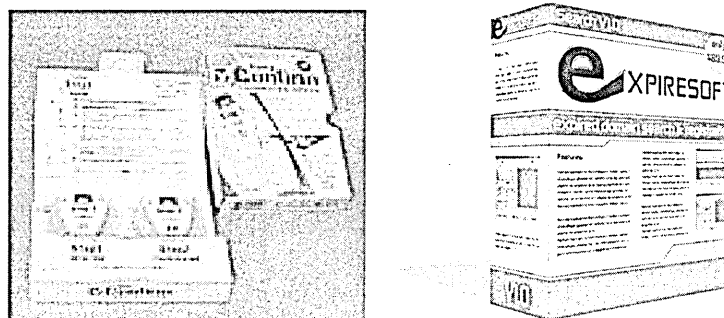


Figure 2.8: To communicate with consumers by using information functions

How do we utilise these secondary functions on products sold online? An advantage of online packaging is the hypertext, which can maximise the source of information and content. The physical packaging has a limited space to print relevant information, hence the manufacturer can only choose specific information to print (Figure 2.8), however, the chosen information might not be sufficient for everybody. For example, canned food does not normally have space to print a recipe, so some supermarkets, such as Safeway, produce a free monthly magazine with a limited number of recipes in order to recover this disadvantage. The free magazine can both promote the food which is shown in its pages as well as being a supplement to the packaging that may have insufficient information printed on it. Nevertheless, people might not normally have the magazine at home and the information on the packaging again limits specific knowledge.

On the internet, these types of problems can be minimised. The manufacturers and retailers can produce a total catalogue of information to place beside any product; specific specifications on ingredients can be fully explained as space is not as limited as it is on the packaging of a product in a supermarket. For example, websites can contain all the vital information

that a consumer might need to know in order to make a well informed purchasing decision.

Nowadays, people have many choices when they want to buy a particular product, being able to choose from dozens of similar products. Furthermore, research showed (Chou, 1999) that the consumers usually paid less than one second's attention browsing per product on shelves, when they were shopping in supermarkets. As a consequence, it is quite hard to make a decision. So, the manufacturers have to meet the customer's needs and ensure that make the packaging is distinguished from others in order to sell their products. In these circumstances, packaging could be a powerful tool in the marketing for the sales of the product. However, during online shopping, consumers cannot touch products, nor can they see the packaging clearly in cyberspace. So how can consumers be persuaded by the online packaging?

According to a survey of 40 eCommerce websites, Visser (2002) suggested that it is difficult to translate the existing packaging design and marketing tactics into online retailing. He also found that information and emotional components could not be seen within retailer's web sites through current online packaging. But he did not explain why this is so in his research. Thus a new packaging design strategy that can be used for online products must be developed for helping consumers shopping online.

2.2.3 Packaging vs. advertising

Advertising campaigns sometimes link packaging and advertising together, even though they all promote the product and attract the consumers' attention. However some aspects allow us to recognise subtle differences between them.

Kotler, et al (1996) indicated that there are more than 15000 items in an average supermarket, with 53% of customers shopping impulsively, packaging being one of the main factors in achieving this figure. Reiner and Rose (2002) provide us with three points to distinguish the difference between advertising and packaging 1) 70% of impulse shopping, consumers could not remember the advertising of the item. 2) The packaging of a product advertises the product before and after purchase. 3) The packaging of a product has a longer shelf life than the life of the product's advertisement. They also reported that Richard Linxweiller did extensive research on this topic, showing that there were only 20% of products in German supermarkets being promoted by conventional advertising, conversely the other 80% of products were selling without any advertising at all. It is obvious that packaging plays a very important role on product sales, something advertising cannot replace.

In such a competitive environment, how is a product chosen by customers? Branding can be an important determinant to influence consumers purchasing decisions (Stewart, 1996; Blackwell et al, 2001), as branding usually represents the quality of products, the trustworthiness of the brand and the recognition of products and packaging provides one of the vehicles

for branding. However, this research does not focus on this aspect of packaging. Apart from the branding issue, the packaging might be the last chance to persuade customers before the check out point. Self-service shopping has been very popular since modern supermarkets were introduced. As nobody stands by the supermarket shelves to introduce the product to the customers, it is believed that packaging is a good solution as a sales promotional tool for this marketing problem (Oliver, 1995; Stewart, 1996). Attractive packaging could help to enhance sales, providing the packaging gives an intangible or tangible benefit to the customer. The benefit could be emotional or functional.

Let's take an example of buying wines in brick-and-mortar retailers and imagine that a person is induced with a desire to buy a bottle of wine by an advertisement (Figure 2.9), which may be just a concept of a certain brand of wine or may not point out a specific bottle of wine. The person writes the wine down on his shopping list or bears the wine in her/his mind.

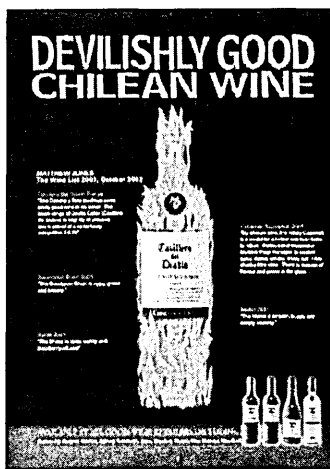


Fig. 2.9: A poster of a wine's ad



Fig. 2.10: Consumers are looking for further details

Once the person goes to a supermarket to buy the wine (Figure 2.10), the packaging of the product likely acts as a trigger to make a sale because the

packaging is presenting at least three roles on the shelves that we have reviewed from literatures : 1) A symbol of confirmation to tell consumers that it is what they want to buy, such as graphic design, branding and colour, 2) An information provider to offer consumers sufficient information for them to make a purchasing decision, such as alcoholic consistency and type of grape, and 3) An advertising effect to make a message repetition to those whose attention is caught by the packaging, such as the picture of the advertising endorser.

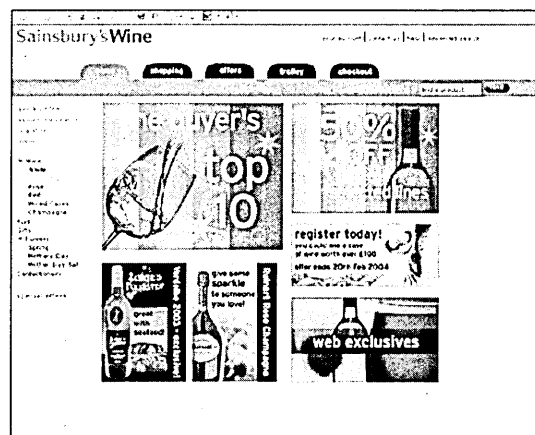


Fig. 2.11: An internet advertisement of wines

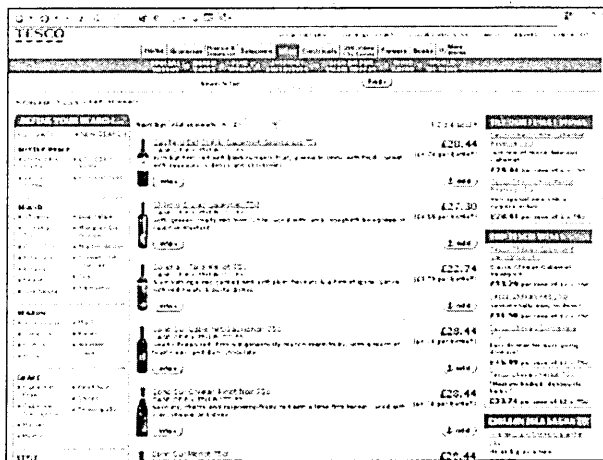


Fig. 2.12: An online shop's shopping aisle.

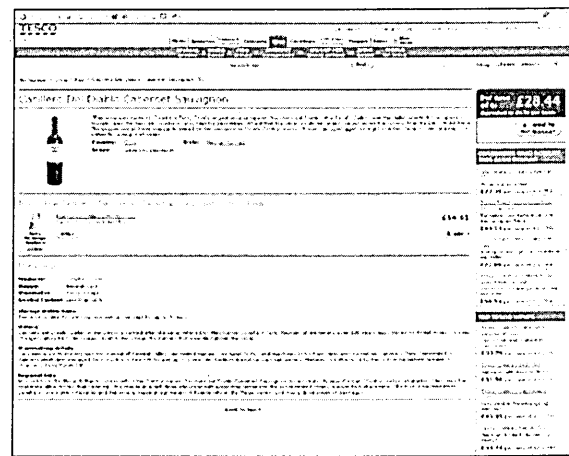


Fig. 2.13: Further details of wines by request

Similarly, in the online environment, people can also be induced with a desire to buy a bottle of wine through internet advertising (Figure 2.11) when

they are browsing websites. If people want to buy online, they need to log onto an online shop to be able to look for the wine. Again they need to “walk” to the right “aisle” to look for the wine (Figure 2.12). Once they see the “packaging” of the wine, they can either put it into the “shopping trolley” straight away or read the information on the “packaging” (Figure 2.13) before making the purchasing decision.

It can be argued that people are looking at the “packaging” of the product for confirmation and information when they are buying products in brick-and-mortar outlets as well as in the online environment, not the advertising of the product, because advertising does not offer those requirements for consumers at sale points.

The aim of commercial packaging design is to provide relevant information that can fulfil consumers’ needs as well as encouraging impulse or planned purchasing with attractive presentation and persuasive information. Typically this co-exists with the advertising function of the pack that forms a powerful alliance (Stewart, 1996). However it has to emphasise that advertising and packaging might exist together on one body, nevertheless, they work for different purposes. The advertising can convey an awareness of a product, a service and even a concept to consumers, but it does not carry full information for a product.

The duty of online packaging is not only needed to provide sufficient information for products but also to play the role of the “salesman” to consumers. As mentioned in section 2.2.1, packaging is now facing a time of innovation where its presentation and information functions need to be

converted into the virtual world. Therefore the author considered that online packaging should be able to do the same job as it would do in the real shop environment. Even more importantly, the author thought that online packaging could not be replaced by internet advertising, although online packaging has not been deeply studied.

2.2.4 Summary

According to the development of commerce and the rise of supermarkets, the role of packaging has been expanded from a role as a “silent protector” to that of a “silent salesman”. The role of packaging is constantly developing, according to the change of trading platform. Since the introduction of eCommerce in the early 1990’s, online shopping has gradually caught the consumer’s attention. We need to take a fresh look at packaging design strategy to utilise packaging functions in the online environment.

Packaging has three main functions, primary, secondary and tertiary. The secondary is mainly used for visual communication with consumers and is also a very useful tool for selling products in marketplaces. This research considers that the secondary function could be more likely transferred into the online environment, e.g. product information and presentation than other functions.

The advertising effect is one of the packaging functions, especially at a sales point, as packaging can catch consumers’ attention and act as a reminder to reinforce their awareness of a specific product. Although advertising and packaging share some functions their main function are quite different. Advertising is used to stimulate consumers’ awareness or interests for products to attract them to marketplaces, but packaging is employed to provide product information and act as a trigger to lead the purchases. The author considers that internet advertising and online packaging cannot be lumped together.

2.3 The internet

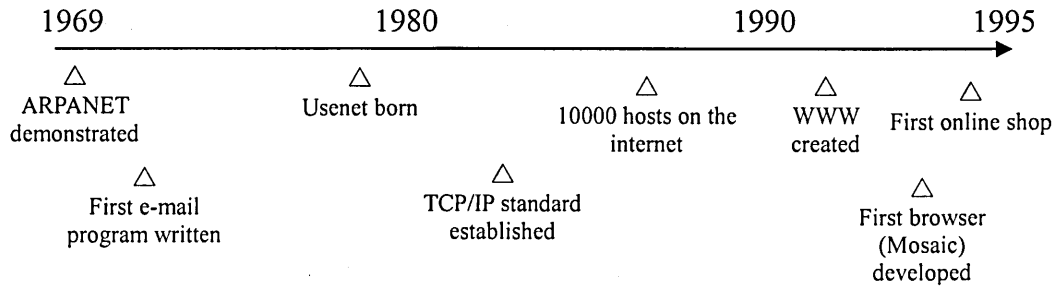


Figure 2.14: A brief timeline of the internet

The internet originated in the 1960's by the U.S.A. Defence Department as part of an Advanced Research Project Agency (ARPA) research project on 'internetworking', by linking several private and universities computers into a national network for computer science research (Kahn, 1994). As the idea started to realise a new potential the ARPANET project was created. The project was stationed at the University of California Los Angeles in 1969 and used a 50Kbps network to connect four research sites; Stanford Research Institute, University of California Santa Barbara, and the University of Utah in Salt Lake City (Leiner, et al, 2003; Gromov, 2003), where these four host computers were connected together. As time passed and the project developed this initial model of the internet soon developed into a communication tool in terms of the infrastructure of the inter-host connection, there is no much difference between the form that the internet took a few decades ago and what we currently use today.

2.3.1 The application of hypertext

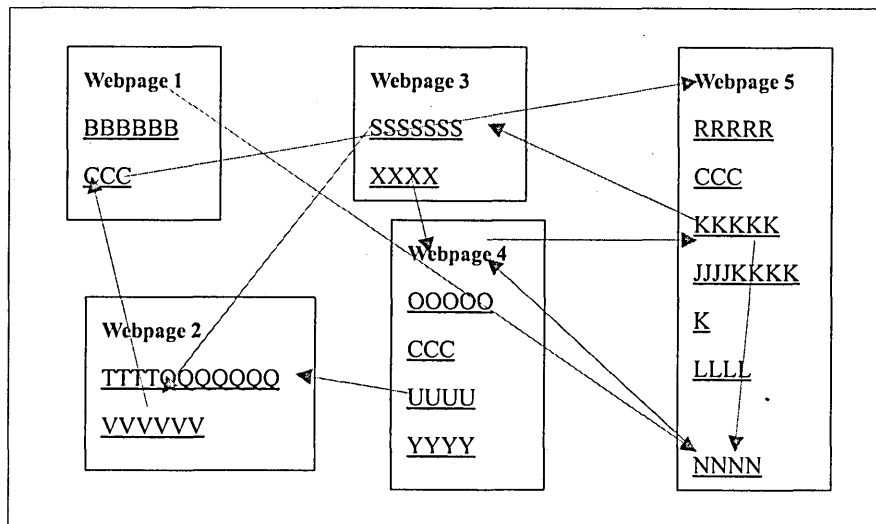


Fig. 2.15: An example of non-linear hypertext

Gauntlett (2000, pp.222) defined that

“hypertext includes links or shortcuts to other documents, allowing the reader to jump easily from one text to related texts, and consequently from one idea to another, in a multi-linear, non-sequential manner.”

Hypertext is a method of managing online information that uses a non-linear model (Figure 2.15). In relation to the internet, it also has significant characteristics which can include either chains, trails, hypermedia, a text composed of words, or indeed images that are linked electronically by a number of different routes. Conversely the linear model is quite step-by-step, for example, if you are doing a chemical experiment, you might need to follow its procedures in order to discover the accurate results.

Similarly Mcgovern et al (2002, pp.118) also said

“while print text is linear, hypertext can have multiple paths and that lead

in multiple direction.....Hypertext is the main concept behind the invention of the web – it's what allows such a vast amount of information to be linked together."

Eaton (2003) indicated that there was nothing remarkable about the internet until the existence of hypertext. He believed that hypertext is the gateway that connects to the boundless World Wide Web (WWW), which has billions of hypertext pages from millions of computer servers in the internet. From the viewpoint of information dissemination, web pages are relatively easier to create, publish and update, in relation to the traditional method of newspapers and broadcasting. The function of hypertext allows users to click on one part of a text or image and be immediately linked to a section of a webpage or a webpage from another computer server. This is a new kind of connectivity and user oriented choice.

Year	Application	Proposed by	In brief
1945	Memex	Vannevar Bush	It was based on the idea of a mechanised library to store information of various kinds principally on microfilm, where links between items could allow automatic jumps.
1965	Xanadu	Ted Nelson	Xanadu would allow the entire world's literature to be linked up, as a centralised hypertext archive.
1968	NLS	Douglas Engelbart	This system held in a large shared database of papers, reports, memos and cross references.
1984	NoteCards	Xerox	It contained various forms of information, e.g. text, voice, images and graphics.
1985	Intermedia	Brown University	Intermedia was rich in display features, showing both text and graphics together in scrollable document windows.
1991	WWW	Tim Berners-Lee	World Wide Web was used at CERN 1991 and released to the public 1992. It became first global standard hypertext afterwards.

Figure 2.16: The development of hypertext applications
 (Based on Nielsen, 1995; Neumüller, 2001)

The development of the hypertext (Figure 2.16) was very important for the application of the internet. The WWW is one of the applications that utilise

the hypertext technology and is also the most popular form to surf the internet. Before the invention of the WWW by Tim Berners-Lee in 1991, there were many hypertext applications that had been proposed. (Nielsen, 1995; Neumüller, 2001)

1) Memex

In 1945, Vannevar Bush, proposed a system called Memex (memory extender) which was intended to be 'mechanised library' that gathered information and microfilm, where the 'mechanised library' would have automatic links between items. Although the system was never completed, Bush is still acknowledged as the founder of hypertext (Fluckiger, 1995). In 1945 he published an article titled "As we may think" (Bush, 1945) which supported the belief that science should not be only used for war purposes but that it should also be used to engage with people's well being.

2) Xanadu

The term 'Hypertext' was coined by Ted Nelson in 1965 (Nielsen, 1995; Neumüller, 2001), in relation to his Xanadu system, which was intended to assist in the construction of a hypertext server which would allow all of the world's literature to be linked up to a 'centralised hypertext archive' that would then be accessible to use situated at a computer terminal (Fluckiger, 1995).

3) NLS (online system)

Douglas Engelbart was another hypertext pioneer with the NLS, as his interactive 'multi-user hypertext system' demonstrated in 1968 (Engelbart

and English, 1968). It was used to store research papers in a database that was used as a shared network, as well as an online conference system that linked six monitors together.

4) NoteCards

NoteCards were developed by a research team at Xerox Company in 1984 and was designed to *“support the task of transforming a chaotic collection of unrelated thoughts into an integrated, orderly interpretation of ideas and their interconnections”* (Halasz, 1988: 836). NoteCards were built on the idea that there were four basic kinds of objects: notecards, links, browser card, and a filebox. Due to these objects, NoteCards were able to contain different types of information, e.g. text, voice, images and graphics, as well as being able to establish hypertext links amongst the individual cards (Balasubramanian, 1993).

5) Intermedia

This application had many display features that included both text and graphics in scrollable windows. There was a serial of programmes included in the Intermedia, such as a text editor (InterText), graphics editor (InterDraw), picture viewer (InterPix), timeline editor (InterVal), 3D model viewer (InterSpect), animation editor (InterPlay), and video editor (InterVideo) (Neumüller, 2001). These all supported both shared and concurrent access to documents as they were all based on a system of permission points that would allow them to gain access, so that the user can place new links to particular documents by themselves.

6) WWW

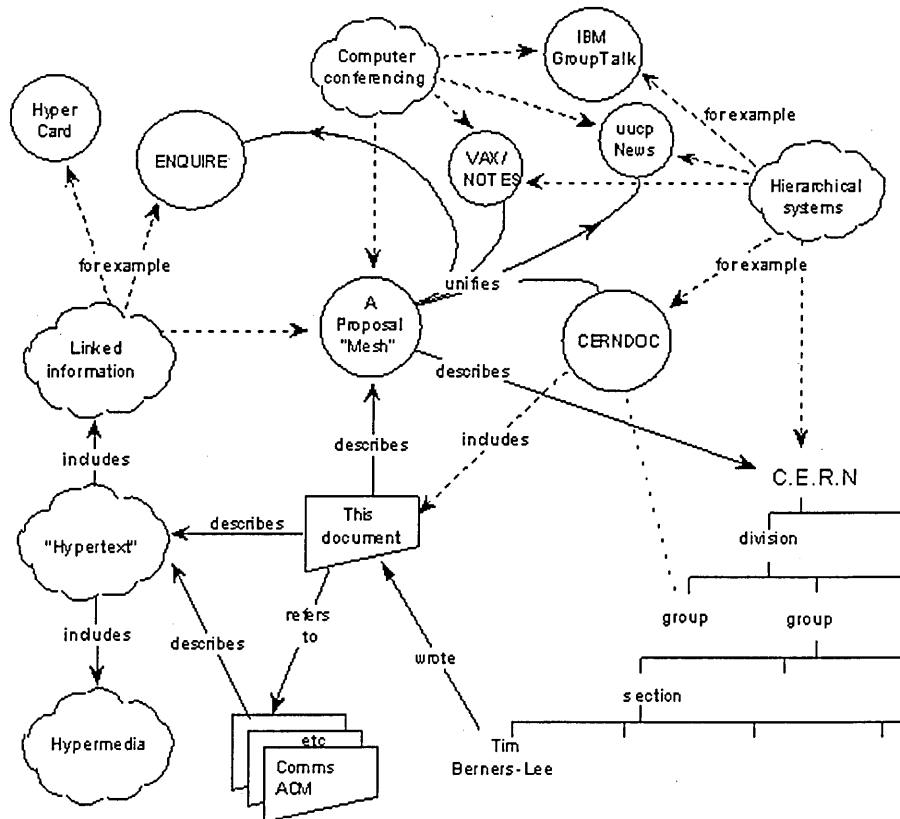


Figure 2.17: The original proposal of the WWW, (Berners-Lee, 1989)

The concept of the World Wide Web was originated at CERN (European Organisation for Nuclear research) in 1989, when Tim Berners-Lee suggested an idea to help them develop an easier way to keep track of and up date their information and documentation (Figure 2.17).

He outlined the deficiencies in the hierarchical information delivery systems they were using, and then described the advantages of a hypertext based system (Berners-Lee, 1989). This would allow him to make a quick response to any potential information that had been received, as well as being able to automatically request the mailing address of the receiver for any letter that he might be composing (Feizabadi, 1998). The first

functioning hypertext on the WWW written by Berners-Lee and was given the address of "http://nxoc01.cern.ch/hypertext/WWW/TheProject.html" (Figure 2.18). The WWW was used by CERN for their internal research centre during 1991 and was released to the world in 1992.

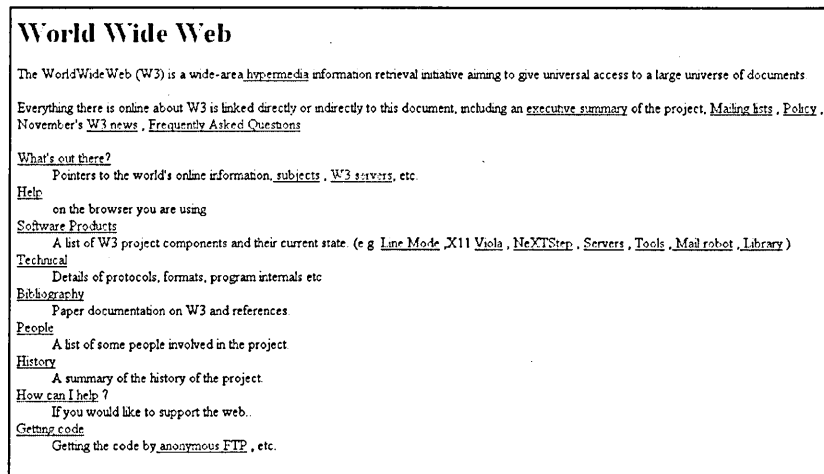


Fig. 2.18: A screen shot of the hypertext in the first webpage for WWW. This is a later copy (1992) of original web page existed in Berners-Lee's computer in 1990, (Berners-Lee, 1997)

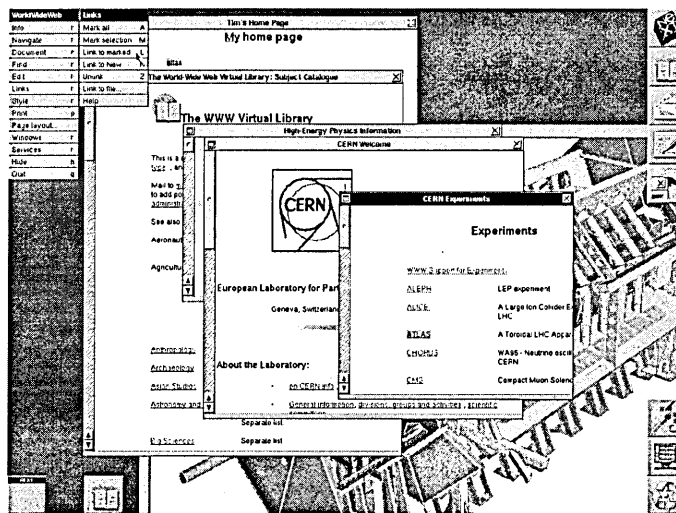


Figure 2.19: A screen shot of the first GUI, written by Berners-Lee in 1990, and called it "WorldWideWeb" (or Nexus, he renamed it later). Berners-Lee (undated)

Several different ways of viewing WWW documents were devised. The first Graphic User Interface (GUI) web browser (Figure 2.19) was called the World Wide Web by Berners-Lee in 1990. Importantly though, the WWW also described three significant mechanisms --- HyperText Transfer Protocol

(HTTP), Uniform Resource Locator (URL) and HyperText Markup Language (HTML) (Fluckiger, 1995; Bouvin, 2000). The first is HTTP, which is a file transferring protocol that attaches information files to WWW hypertext links. Secondly, URL (which is a worldwide naming agreement), allows internet users to store a website's 'address' and locate a particular website with ease. Finally, HTML is a simple programming format that allows users to construct their own webpages and insert other URL links into the list of their HTML webpages.

This invention helped the internet to move forward to a multimedia environment, which contained text, graphics, image, video, animation and sound. This indicates that designers can utilise different design techniques to compose attractive websites with user friendly interface and interactivity for the internet user. In the next section, we will discuss multimedia website design.

2.3.2 Multimedia website design

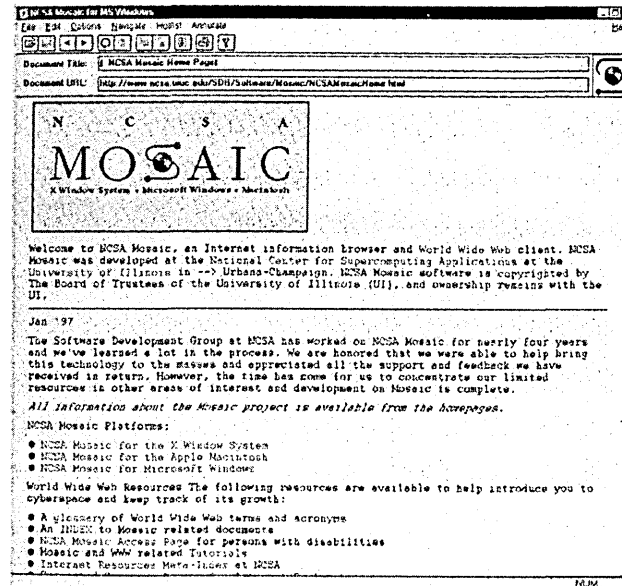


Figure 2.20 A snapshot of 1994's Mosaic web browser

Mosaic (Figure 2.20) was the first commercialised graphical Web browser - it allowed various formations of information to be used via webpages – text, graphics, images, film, animation and sound for people to communicate online or receive (Gauntlett, 2000; Fluckiger, 1995).

Rose (2002:8) explained the importance of visual experience, she said: *“Postmodernity is ocularcentric not simply because visual images are more and more common, nor because knowledges about the world are increasingly articulated visually, but because we interact more and more with totally constructed visual experiences.”*

Since the invention of the multimedia web browser, website design is rapidly developing from a text-based to a design-based medium for multi-media communication since that time. When the WWW attained

graphic user's interface, people were able to get used to the internet without struggling for specific computer languages. The experiment of Petersen and Nielsen (2002) also showed that the visual effect can be used to catch internet users' attention, thus the visual information will be easier to perceive by the internet users. This helps the users to remember visual information easier than non-visual information.

However, researchers (Gerdes and Nachtwey, 2000) pointed out that most eCommerce websites do not do much for aesthetic design but place an emphasis on technical issues such as database and data transmission. This might induce the failure of eCommerce websites, as Young (2001) described the "moment of opportunity", he meant that web viewers show their feelings immediately about the website. If the website fails to convey information to attract viewers, they will leave the website.

Design enhancement can allow customers to have an easy and comfortable navigation around a website, that will mean that they will stay longer within the site. Dormann (1998) described that it is difficult to understand that if web design is without the visual impact of shape, colour or contrast, further links, it will not motivate the viewer to investigate the contents of the website.

Interactivity is another attraction for internet users, where they can have response synchronously. Liu (2001, pp.13) indicated that there were four important characters for different media (Figure 2.21):

Media Interactivity	Publications	Radio	TV	Internet
Active control	Some	No (passive)	No (passive)	Yes (active)
Two-way communication	Some	Some	Some	Yes
Free of choice	Yes	Limited	Limited	Yes
Synchronicity	Low	Low	Low	High

Figure 2.21 Interactivity for different media (Partly modified from Liu, 2001, pp.13)

- *Active control*: Characterised by the need for constant action and by voluntary and instrumental actions that directly influence the controller's experience.
- *Two-way communication*: The ability for interactive communication between one to one, one to many, and many to many through the media.
- *Freedom of choice*: The freedom of media users has in choosing what they see and when and where they see it.
- *Synchronicity*: The degree to which users consider their input into a communication and the response they receive from the communication to be simultaneous.

Jensen (1998) defines that interactivity is “a measure of a media’s potential ability to let the user exert an influence on content and/or form of the mediated communication”. The internet communication contains these advantages of interactivity, which enable internet users to actively control the media and receive responses immediately. This is very different from other types of media, where people do not normally have control and immediate answers. E-retailers have these new tools at their disposal which might offset the disadvantages of not having a physical shop and it is arguable that they should explore how to use them in their online shops design in order to satisfy online shoppers’ expectations.

Apart from technical issues, as far as it can be presumed that an

eCommerce website needs a good navigational mechanism, product presentation and items description in order to keep viewers exploring the website longer. Nielsen said (2000: 9) that

“The web is the ultimate customer-empowering environment. He or she who clicks the mouse gets to decide everything. It is so easy to go elsewhere: all the competitors in the world are but a mouseclick away”.

This can be understood that eCommerce companies have been constantly challenged by their competitors' websites and consumers' requirements. It is very important to keep their websites updated with rich information, reasonable navigation and proper design in order to keep the internet users in their websites longer and make their websites successful as a marketing strategy and sales channel.

The tentative studies also discovered that consumers normally expect to have the familiarity of the physical shopping experience to be available in the virtual world. Most online consumers want an interactive website that will update its information quickly and be a good source of information about products.

2.3.3 E-commerce

By the end of 2002, the USA had over 160 million internet users, Japan following with 64.8 million users and China with 54.5 million. Rounding out the top five online nations in terms of users are Germany and the UK with 30.3 million and 27.1 million users respectively (NUA, 2002). The WWW allows people to communicate simultaneously or asynchronously easily and effectively, shortening the distance and time between individuals and organisations.

In terms of selling and distribution, electronic commerce is a relatively new tool, where shoppers can buy their products without time and geographical restrictions. The major significant difference being that the customer goes through the processes electronically rather than having to go to a real shop. Armstrong (2000), who was the Chairman and CEO of AT&T, also said that *"The best definition of eCommerce is therefore the broadest definition: any transaction over the Internet involving the transfer of goods, services, or information, or any intermediary function, which helps enable those transactions."*

With the growth of commerce on the Internet, people can shop online 24 hours a day, seven days a week without any limitations. Therefore, Barwise et al (2000: 528) stated that eCommerce is a marketing strategy to look after *"how the internet is being used as a channel by firms and consumers to support the exchange process"*. The processes in electronic commerce include enabling a customer to obtain product information, select items to

purchase, as well as purchasing items securely.

To recent growth in uptake is illustrated by the example of online shopping in Taiwan: According to a study by the Institute of Information Industry in Taiwan reported by ANB · AMRO (2002), the eCommerce sales in 2001 increased to NTD⁴8.98 billion dollars (£163 million)⁵ which was equal to 130% increase from the year 2000 (Figure 2.22). Although the national Economic Growth Rate (EGR) changed from 5.86% in 2000 to -2.18% in 2001 (Directorate General of Budget Accounting and Statistic, Taiwan, 2003), more money was spent on online shopping than ever before.

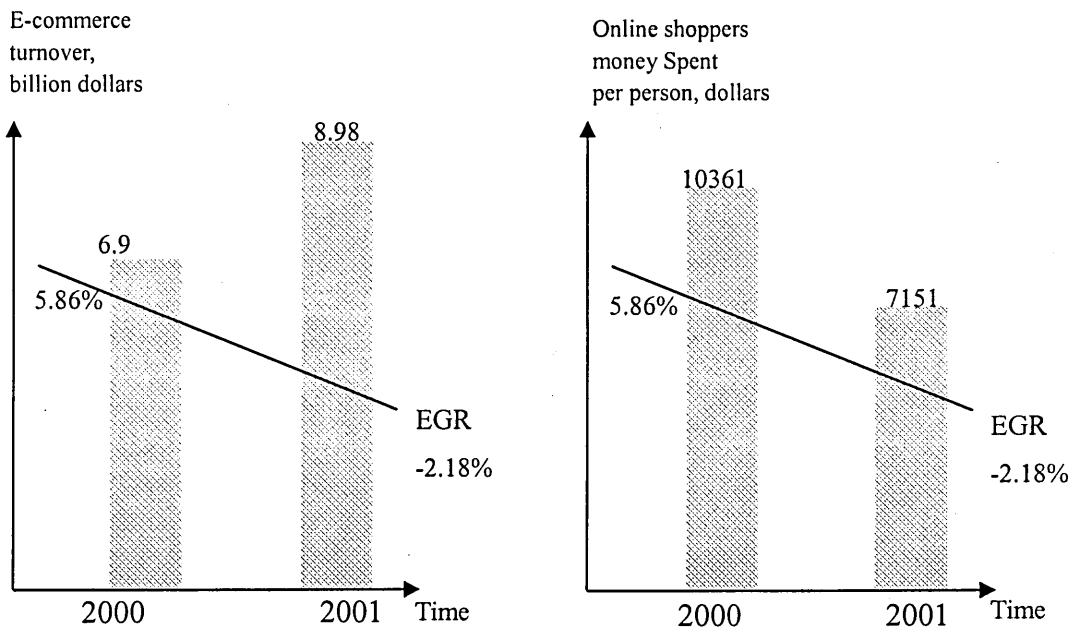


Figure 2.22 (Left): The increasing turnover of eCommerce and decreasing GRE in 2001
 Figure 2.23 (Right): The decreasing money spent on online per person and decreasing EGR in 2001

Two studies by one of the main Taiwanese portal sites (Yam.com.tw) in 2002 and 2003⁶ showed that the average spending per person had

⁴ New Taiwan Dollar

⁵ £1 = NTD55

⁶ The study in 2003 showed that over half of respondents (total 12189 respondents) had bought online goods. However, the study in 2002 did not mention the number of respondents.

decreased from approximately NTD10361 (£188) in 2000 (Yam.com.tw, 2002) to approximately NTD7151 (£130) in 2001 (Yam.com.tw, 2003) (Figure 2.23).

From these statistics we could make two observations. Firstly, eCommerce sales kept growing, although the EGR was decreasing at that time. Secondly, although total online sales were increasing, the money spent, per person, was decreasing, which meant that eCommerce continues to capture a larger percentage of internet use.

At the time of writing, traditional retailers, such as the UK supermarket chain, Tesco, was developing and building on shopping sales through online shopping. Its online shop, Tesco.com⁷, was expanding rapidly, with many traditional retailers expanding their marketing efforts on the web as well. Additionally, information available over the Internet is having an impact on consumer purchasing patterns, even when their purchases are made in traditional shops. For instance, a camcorder buyer might use the web to compare prices or gather information about different brands. Therefore online shops/information also affect and influence the sales when purchasing from a real shop. However, although this trading platform is becoming an important outlet for selling products, consumers might find it difficult (see section 2.5) to buy online, due to this virtual environment having many differences from the physical shopping environment.

Wen and Duh (2000) argued that there are some disadvantages for eCommerce: 1.) Unable to provide physical appearance and attributes of

⁷ The turnover of Tesco.com was about 288million US dollars in 2000(Craft, 2001) and was about 300million Sterling pounds in 2002 (Lansley, 2002).

products, 2) Unable to provide physical socio-interaction. Limit the services of products. Some customers prefer socio-interaction in business transactions. Only Internet users may become candidate customers, has limitation in potential customers range, and 3) Unable to provide experiential shopping. Brick-and-mortar stores can create shopping experiences.

Their arguments mainly focus on physical vs. virtual experience, and the physical experience cannot be fulfilled in the online shopping environment. Answering their arguments is relatively simple because the natures of the physical and virtual worlds are fundamentally different.

However, it cannot be denied that current online shops lack a mechanism to help consumers to transfer their physical experiences into the online environment.

The author assumed that these disadvantages could be amended, in part at least, by enhanced online packaging. In section 2.2.1, we discussed the history of packaging, it was a "silent protector" and gradually became a "silent salesman", according to the change of trading platforms, so as the same as consumers' shopping experience. Before the prominence of the modern supermarket, consumers used shops or markets where there was always a sale clerk to help consumers, then they learned how to buy in a modern supermarket where consumers are not normally served by a sale clerk in shopping aisles. Consumers are consistently learning how to buy in different trading platforms, this research considers online packaging can not only be the mechanism to help consumers to gain online shopping experience but also to minimise those disadvantages.

2.3.4 Summary

It is important for manufacturers and retailers that they do not continue to treat online packaging as a simple image and description that presents online products.

One potential advantage of online packaging is the hypertext and interactivity, which can maximise the availability of product information and presentation. The manufacturers and retailers can produce a variety of presentation and a total catalogue of information for any product, for example ingredients can be fully explained, as space is not as limited as it is on the packaging of a product in a supermarket.

E-commerce is a new marketplace, while it offers a convenient channel for consumers to buy products without time and geographic restrictions, consumers also feel that they sometimes find difficult to buy online. This research considers that online packaging can help them to transfer, at least partly, their physical shopping experience into the online environment.

2.4 The Elaboration Likelihood Model

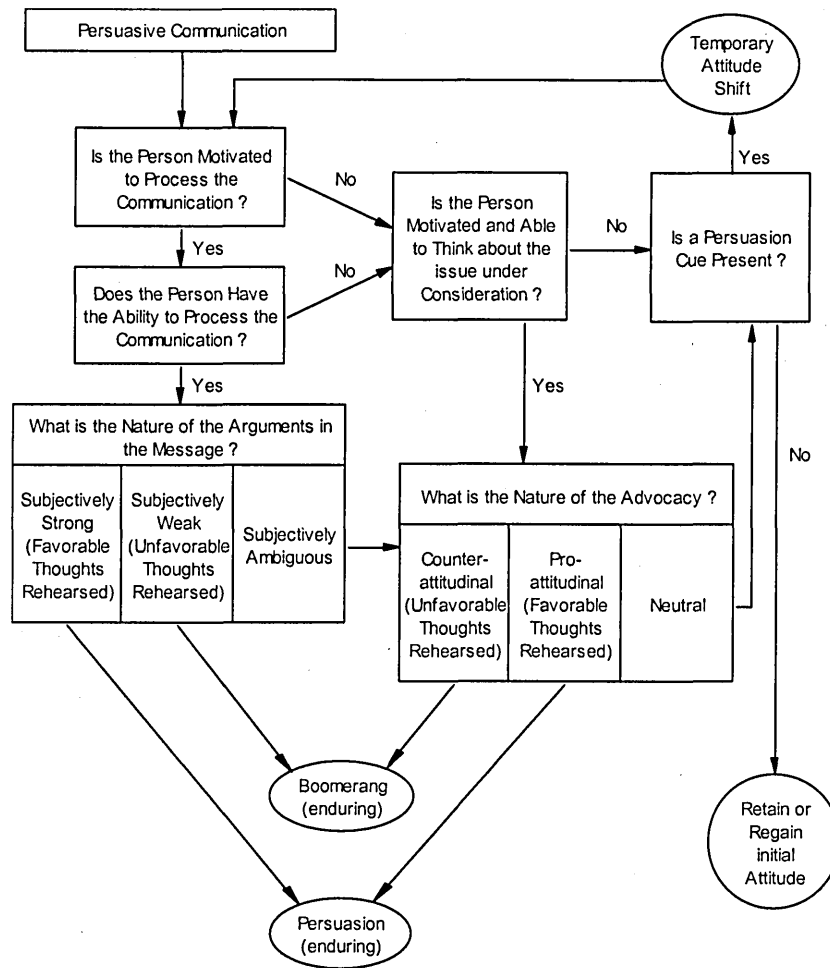


Figure 2.24 Elaboration likelihood Model, (Petty and Cacioppo, 1996, pp.264)

Sternberg (1996: 24) described that “cognition” is what people think and that “cognitive psychology” is what scientists think how people think. He also defined that “*cognitive psychology is the study of how people perceive, learn, remember, and think about information.*” This section was looking for a useful theory of cognition that would help to guide the research. The Elaboration Likelihood Model (ELM) was identified and provided both the

design guidelines of online packaging and the evaluation method for the practical work.

At the start, this research focused on the secondary functions of packaging, particularly visual communication, and Jakobson's communication model (Fiske, 1990) was considered as being potentially useful.

However, as tentative studies were conducted, the focus of the research gradually turned to identifying design guidelines for online packaging. Jakob Nielsen (Nielsen, 2000) has developed a usability engineering approach to web design offering specific instructions for designers to follow during design process whereas Donald Norman's (Norman, 1988) approach, drawing on his background in psychology gives designers insights and broad considerations to support their thinking. Given the diversity of communication problems arising in packaging design it was felt appropriate to take an approach to "guidelines" similar to that of Donald Norman, providing methodological guidance rather than design prescriptions.

In this context it was felt important for designers to understand consumers' psychology in relation to communication and cognitive psychology theories were investigated.

In a wide-ranging review of "dual message" theories, Lien (2001) established that the ELM is the most widely used of these theories in psychology, social and consumer research since 1990s. The ELM is often

employed to predict consumers' behaviour and compose persuasive messages by many researchers as discussed in later sections.

This led to tentative adoption of ELM as a guiding theory for the research, and that decision was reinforced by further reading and practical work described below.

2.4.1 A brief history of cognitive psychology

Time	Phase	School	In brief
-1920	Modern psychology	Structuralism, Functionalism, Associationism	Psychology had become a distinct field of study. Studies of how people structure and process of the mind.
1920-1960	Psychological predecessors of cognitive psychology	Behaviourism	Studies of observable links between organism's behaviour and particular environment.
1956-	The emergence of cognitive psychology	Cognitivism	The study of how people perceive, learn, remember, and think about information.

Figure 2.25: The development of cognitive psychology, based on Sternberg (1996).

Sternberg (1996) explained that the development of cognitive psychology could be divided into three phases (Figure 2.25) a) the beginnings of modern psychology, b) psychological predecessors of cognitive psychology and c) the emergence of cognitive psychology.

The history of cognitive psychology can be traced back to ancient Greek philosophers (Anderson, 1995; Sternberg, 1996). Plato and Aristotle, for example, discussed the nature and origin of knowledge, meditated on how people memorise and how people think. The Greek philosophers initially focused on the essence of philosophy; however these discussions caused a debate which lasted centuries relating to empiricism and nativism (Anderson, 1995) or empiricism and rationalism (Sternberg, 1996).

The idea that underpins empiricism is the belief that human knowledge comes from life experience and that the only way to ascertain the truth is through meticulous observation. In opposition to the empiricist's belief nativism suggests that people are born with an inherent knowledge and that the only way to ascertain the truth is through reasoned consideration. This

debate between the empiricists and the nativists was most intensive during the 19th century, when arguments frequently slipped from philosophy into the area of psychology, and specifically into issues of human cognition.

Modern psychology

By the 20th century, psychology had become a distinct field of study (Sternberg, 1996) and a number of schools sought ways to study the workings of the mind. Structuralism, focused on the structures of the mind and proposed by Wilhelm Wundt, regarded as the founder of psychology as a formal academic discipline and the first person in history to be designated as a psychologist. He believed that psychology is based on the observation of experience (Anderson, 1995). Functionalism focused on the processes of the mind. Associationism examined how events and ideas could become associated with one another in the mind.

Psychological predecessors of cognitive psychology

The focus of associationism built the way for behaviourism by understanding mental associations. In this phase, psychologists focused on observable links between an organism's behaviour and a particular environment. They studied only external behaviour and were not interested in analysing the workings of the mind that might be behind this behaviour (Anderson, 1995). Sternberg (1996) argued that these psychologists tried to understand what was going on in the mind of the individual engaging in the behaviour by observing the individual's behaviour. For example, these researchers would try to understand animals' thinking by observing their behaviour in a natural environment or a laboratory. However, the

researchers were not really focusing on what was really going on in the animal's mind.

The emergence of cognitive psychology

World War II transformed the development of cognitive psychology in many ways (Kellogg, 2000). The focuses of research were on human performance and attention, developments in computer science, especially those in artificial intelligence, and the renewal of interest in the field of linguistics. According to Anderson (1995), cognitive psychology first emerged in the two decades between 1950 and 1970. Psychologists composed a new phrase "Artificial Intelligence" (AI) in 1956. They tried to construct systems of AI to show intelligence was about the intelligent processing of information. Another notable step for cognitive psychology was the book 'Cognitive Psychology' written by Ulric Neisser in 1967 (Sternberg, 1996). Neisser described that cognitive psychology was the study of how people learn, structure, store and use knowledge. In short, cognitive psychology has been broadly used to understand human cognition through various researches in the fields of psychology. Importantly, cognitive psychology deals with various aspects of human thinking, such as mental imagery, attention, memory, perception, decision making and problem solving.

These issues are strongly related to design works and can be used as guidelines to understand target users and design subjects when designers are performing their work. In the next sections, will introduce the ELM, which is the one of the most important theories in this research.

2.4.2 An introduction to Elaboration Likelihood Model

The Elaboration Likelihood Model (ELM) was developed in the 1980's and was a theory of information processing and persuasion describing how people are influenced when they received information (Petty et al, 1983). The model explained that people's partiality to cognitively elaborate information was influenced by various conditions, such as personal preference, environmental distraction and situational variables.

Differences in brief	
Central route	Peripheral route
<i>High involvement</i>	<i>Low involvement</i>
When people are interested, or motivated, and capable of processing the information.	When people have either little motivation or ability to think of processing the information.
People scrutinise related information arguments.	People rather follow peripheral cues than scrutinise related information arguments.
A difficult way to change attitude.	Attitude change without issue-relevant thinking

Figure 2.26: The difference between central and peripheral routes

Petty and Cacioppo (and Schumann, 1983; 1986; 1996) stated that there are two routes to take account of when people receive information from a third party, the central route and the peripheral route. If a person had the ability and motive to process information he/she would be more likely to adopt the central route. Conversely, if a person had no or little ability or motive to process information he/she would adopt the peripheral route (Figure, 2.26). Additionally the central route adopted by high involvement people can be considered as a systematic method, with the peripheral route

more likely to be adopted by low involvement people being considered as a heuristic method to the processing of information.

2.4.2.1 Central Route

Petty and Cacioppo (1986) described that the central route is adopted when people are interested, or motivated, and capable to process the information. In other words, people will engage with a high level of cognitive effort to form or reform views of their attitudes towards objects. For example, when people receive information about issues of a high personal relevance, they are more motivated to conduct cognitive perception to carefully think about the information's merits or defects and are likely to see the information as criteria for personal judgement or decision making. In this situation, issue-related information arguments should have a greater effectiveness. People in central route of persuasion, their attitudes are considered enduring. It is a difficult way to change their pre-existing attitudes but their behaviour is likely to be predicted.

2.4.2.2 Peripheral Route

Opposite to the central route of persuasion, the peripheral route, provides another path for people to perceive information, when they are not interested or motivated to process information arguments. A peripheral cue would not try to persuade people by direct information arguments; instead, it attempts to persuade people by way of some issues and themes which are

indirectly related to the subjects of the information arguments. A peripheral cue endeavours to catch people's attention by encouraging them to recall or think about something they are already familiar with, where people have a positive attitude towards indirect issues or themes, such as a celebrity endorser (Petty, et al, 1983; Kamins, 1989).

There are other objects which could be used as peripheral cues, such as impressive graphics and colour impacts. These objects could be useful tools to engage with an individual or a class of people, in order to arouse a certain kind of feeling and mood towards an issue or product. People might be likely persuaded by an issue or a product based on whether they like the information source (not the content of the information arguments) or the way that the information is presented with much attraction satisfies people.

Thus, peripheral persuasion is more likely to occur when people have either little motivation or ability to think about the issue in question. Peripheral cues become important variables in attitude change and influence on the amount of information scrutiny when the elaboration likelihood is moderate (Wenger and Petty, 2001). For example, when people are not sure if scrutiny will be merited or not, peripheral cues would lead those people to start to perceive some information arguments.

This route of persuasion is effective but only for a short time period, with attitude changes considered to be relatively temporary and unpredictable behaviour (Petty et al, 1983). Interestingly, once consumers made purchasing decisions for a product caused by peripheral cues, they might feel responsible to the product and advocate their purchase decisions

because they owned it. Consumers might begin to build their positive attitudes towards the product by learning the related information of the product. This would lead the consumers to establish motivation and ability to process the issue-related information to the product in the future. Although some persuasion was made by peripheral cues in the beginning, they might end up with a more likely permanent changes through central cues (Petty and Cacioppo, 1996).

2.4.2.3 Involvement

According to the ELM, the issue of involvement is an important determinant to tell whether people have the motivation and ability to process information and which route of communicative persuasion they would take.

1) High involvement:

When people have the motivation and ability to process the issue or product relevant information, in a personal or situational way, a high involvement situation would arise. People would take the central route to process the relevant information, as they are willing and able to employ their cognitive ability on the relevant information. Thus, central cues become important to persuade people, such as argument quality, benefits claims and fact-based claims.

2) Low involvement:

Conversely, when people are short of the motivation and ability to process the issue or product relevant information, a low involvement situation would

arise. People are not interested in using their cognitive effort to process relevant information. In this situation, peripheral cues can be important to provoke their interests on the subject, such as visual impact, sound and emotional-based claims.

Sometimes, it could be difficult to identify the participants' involvement in this research. For example, in the "laboratory online shop", participant eleven had low involvement in the grape variety but a high involvement in both wine drinking history and the taste of wines. According to this mixture of high and low involvement, the identification of high and low involvement was basically evaluated by the author but based on the participants' description and behaviour, if there was no clear evidence (see section 4.3.7 procedure and data collection) for the author to place them in the right category.

2.4.2.4 Antecedent process

In accordance with the ELM, motivation and ability are determined to be very important factors during information processing, whereas antecedents can also influence the motivation and ability to process information. These antecedents were concluded by Lien (2001) as being the following six factors:

- a) Message repetition (Petty and Cacioppo, 1996), a message repetition is more likely to be recognised and to be remembered by the subject.
- b) Prior knowledge (Petty and Cacioppo, 1996), if a person has prior knowledge of an issue they are more likely to pay attention to it.

- c) Self-referencing, people would have a greater elaboration of information, when the information relates to their personal experience.
- d) Arousal, the effectiveness of arousal that might be either positive or negative to the communication of persuasion
- e) Media type, every medium has its level of involvement with people in terms of interaction. Printed media only influences the people who are willing to read. Broadcasting and TV have more opportunities to influence passive audiences. The internet provides the greater opportunity for audiences to interact with the medium and this can be seen in audiences' behaviour (Liu, 2001).
- f) Combining variables (Petty and Cacioppo, 1996), many variables can affect people's motivation to elaborate the content of the information. Sometimes, these variables would combine together, and this may cause unexpected responses.

The ELM of persuasion is a theory about the response to persuasive communications and the strength of the attitude changing, influenced by those communication processes. According to this theory, people would process information by either the central or peripheral route. It all depends on the individual motivation and ability to process the relevant information. Petty and Cacioppo (1986) defined that that motivation and ability are related to their antecedents. These antecedents, which could be anything, such as situational factors, emotional and individual factors would influence the extent of persuasive communication and the direction of decision making. These factors that might enhance/reduce the quality of persuasion are important to be manipulated as proper tools to aim at the target people.

2.4.3 The application of the ELM

The ELM is frequently used as an analytic tool or as a design guideline for research contents in many disciplines of research, such as social psychology, marketing research and advertising research, since it was introduced in the 1980's. We will review these applications in the following sections.

2.4.3.1 Social psychology:

The application of the ELM in the area of social psychology	
ELM as an analytic tool	ELM as a design guideline for research contents
<ul style="list-style-type: none"> ■ <i>McNeill and Stoltenberg</i>: to study social influence of counselling psychology. ■ <i>Gilbert et al</i>: to predict and evaluate the change of attitude. ■ <i>Kerssens and Yperen</i>: to analyse medical didactic programmes. ■ <i>Crano</i>: to better predict immediate and persistent majority attitude changes. 	<ul style="list-style-type: none"> ■ <i>Pierce and Stoltenberg</i>: to compose a programme of weight loss. ■ <i>Howard</i>: to compose quick and easily understood phrases. ■ <i>Drossaert et al</i>: used the concept of the ELM to tailor two leaflets in his research.

Figure 2.27: The application of the ELM in social psychology

McNeill and Stoltenberg's (1989) study of the social influence of counselling integrated the ELM into their research to try and account for the consistent findings within counselling psychology, which had mainly utilised cognitive psychology influenced model. They found that the ELM did in fact account for these inconsistent findings and suggested that the ELM was a new way forward for their research.

Pierce and Stoltenberg (1990) used the principles of the ELM to compose a programme of weight loss for one group of participants in their cognitive self-persuasion experiment, with the results indicating that participants in this group paid more attention and were more interested in the messages on the programme than any other group of participants, which meant that the therapeutic value was increased by doing so. Gilbert et al (1991) found that the ELM significantly predicted and evaluated the change of attitude toward sexual aggression – supportive attitudes of college men in their research.

Kerssens and Yperen (1996) used the ELM to evaluate how patients form an evaluation of dietetic care attitudes from many medical didactic programmes. Drossaert et al (1996) used the concept of the ELM to tailor two leaflets with different message cues to encourage repeat participation for breast screening programmes to test the effectiveness of the ELM in their experiment. Howard (1997) composed the effectiveness of quick and easily understood phrases (e.g. “don’t put all your eggs in one basket”) as peripheral persuasion cues based on the ELM to test his participant. He concluded that these phrases were full of persuasiveness for low involvement people.

In a study of psychological analysis on social influence by Crano (2000), the ELM was found to be a useful model that could integrate important features of social identity to better understand the process of social influence on social groups and better predict immediate and persistent majority attitude changes.

2.4.3.2 Marketing research

The application of the ELM in the area of marketing research	
ELM as an analytic tool	ELM as a design guideline for research contents
<ul style="list-style-type: none"> ■ <i>Bitner and Obermiller</i>: to predict how consumers' attitudes formed and changed for different products and services. ■ <i>Inman et al</i>: to adopt the ELM to explain some consumers' purchasing behaviour. ■ <i>Spotts</i>: to evaluated age-related issues in consumer research. ■ <i>Schmitz</i>: to explain the persuasion process of the industrial buyer-seller relationship ■ <i>O'Malley</i>: to describe the affect of product failure on emotional and behavioural instincts on consumers. 	<ul style="list-style-type: none"> ■ <i>Weilbaker and West</i>: to apply the ELM's theory to teach personal selling skills. ■ <i>Amichai-Hamburger et al</i>: to apply ELM's theory to manipulate the quality of messages.

Figure 2.28: The application of the ELM in marketing research

The ELM has also applied to a lot of different research in this field. Bitner and Obermiller (1985) discussed the ELM and its usefulness for marketing research and practice. The model, it concluded, could be a framework to predict how consumers' attitudes will be formed and changed for different products and services.

Weilbaker and West (1992) applied the ELM to teaching personal selling in their research, which demonstrated that the ELM not only provides a framework for teaching sales students, but also contributes to sales theory by further developing their understanding of the decoding process in sales communication. Amichai-Hamburger et al (2003)

applied the ELM's theory to manipulate the quality of message's argument to test their participants in their experiment.

In addition, the ELM has been frequently used in consumer research to predict consumers' behaviour formation and purchase intentions. Inman et al (1990) adopted the ELM to explain how some consumers' purchasing behaviour responded to product promotion messages without considering relative price information. Spotts (1994) utilised the ELM to evaluate age-related issues in consumer research, such as age rises leading to decline cognitive ability and the need for cognition. As aging consumers lacked a physical ability to process information, he pointed out that the need for cognition might be a dynamic factor which led to harmony within changes of age-related cognitive processes. Schmitz (1995) explained the persuasion process of the industrial buyer – seller relationship, based on the ELM, in order to understand how to improve organisational initiatives. O'Malley (1996) described the effect of product failure on emotional and behavioural instincts on consumers by the ELM in order to understand the attribution processes used by consumers when they were confronted with goods or services failures.

2.4.3.3 Advertising research

The application of the ELM in the area of advertising	
ELM as an analytic tool	ELM as a design guideline for research contents
<ul style="list-style-type: none"> ▣ <i>Schumann et al</i>: to predict the effectiveness of different strategies of advertising variation. ▣ <i>Hennessey and Anderson</i>: to explain message arguments on cognitive responses to an advertisement. ▣ <i>Helweg-Larsen and Howell</i>: to explain the persuasiveness of condom advertising. ▣ <i>Scholten</i>: to provide a sufficient framework for researching advertising effectiveness. ▣ <i>Shadel et al</i>: to offer sufficient explanation powers to assess the two competing forms of advertising. 	<ul style="list-style-type: none"> ▣ <i>Park and Hastak</i>: to create situations based on the ELM. ▣ <i>Chebat et al</i>: to design the content of experiment based on the ELM.

Figure 2.29: The application of the ELM in advertising research

Importantly, ELM is used to predict the effectiveness of commercial advertising. A variety of research has been conducted on this theme. Schumann et al (1990) performed two experiments to test the repetition-variation strategy hypotheses by predicting the effectiveness of different strategies of advertising variation. They found that a cosmetic variation strategy had a greater effect on attitudes when motivation to process the advertisement was low and not surprisingly that a substantive variation strategy had a greater influence when the motivation was high, thus their findings were consistent with the ELM.

Hennessey and Anderson (1990) performed an experiment into the effects of interaction upon peripheral cues and message arguments on

cognitive responses to an advertisement, with findings that were again consistent with the ELM predictions. The involvement is mediated by the relative use of the central and peripheral cues, with high and low involvement subjects both being affected but in opposite ways.

On the effects of involvement of online brand evaluations, Park and Hastak (1995) also found that the ELM predicted differences, in involved and uninvolved subjects within the processes mediating persuasion effects but only when persuasion occurred online during message exposure. Scholten (1996), in relation to advertising effectiveness found that the usefulness of the ELM for advertising research is derived from its heuristic rather than its integrative merits, concluding that the ELM provides a sufficient framework for researching advertising effectiveness.

Chebat et al (2001) used the theory of the ELM to design their research contents to test consumers in order to understand consumers' information processing of advertisements' messages. Helweg-Larsen and Howell (2000) analysed the effects of erotophobia on the persuasiveness of condom advertising that contained both strong and weak arguments by using the ELM to test the hypotheses that erotophobic people were less likely to take the central route in information processing, concerning sexual material. Shadel et al (2000) argued that the ELM offered sufficient explanation powers to assess the two competing forms of cigarette advertising (the potency of cigarette

advertising and the relative ineffectiveness of anti-smoking advertising), with the aim of decreasing youth tobacco use.

In this section, we have reviewed research related to the ELM. Researchers either employ the ELM as a guideline to compose messages for their research or use it as an instrument to predict people's behaviours and to measure the effectiveness of the messages. As we understand from tentative studies and section 2.5, consumers would not be persuaded by the packaging if it failed to convey a suitable message (visual or text, or both). Therefore, it is very important to understand consumer psychology and preferences, which in itself can allow designers to design a more effective packaging for their target consumers.

2.4.4 Summary

This section has reviewed the brief history of cognitive psychology and gone on to examine ELM and its applications. Those applications widely used the ELM to guide the composition of communication design, to predict people's behaviour and to evaluate the effectiveness of messages.

The ELM has been adopted in this research in two directions:

1) To provide guidelines to design different contents for the "laboratory online shop", in order to give consumers suitable cues for the content of their involvements.

2) To predict participants' behaviour as well as to measure the effectiveness of product presentation and information in order to understand online consumers' expectations and online packaging requirements for eCommerce.

From the tentative studies 4.2.5 and section 2.5, we understand that rich online product presentation and information could be very important factors to manipulate consumers' purchasing intentions. This research indicates that the ELM can be a very useful principle to guide designers to produce different messages, including visual elements, for consumers with different levels of product involvement.

2.5 Online consumers' attitudes towards product information and presentation

E-commerce provides an extra channel for companies to distribute their products and services to customers. As mentioned, traditional retailers, such as the UK supermarket chain, Tesco, is developing and building on shopping sales through online shopping, with eCommerce helping it not only to expand their market shares online but also to reinforce its company's identity to the consumers. Online shopping offers consumers a convenient environment from where they can purchase products, whilst providing a variety of information that act as the consumers' purchasing references.

Traditional business and eCommerce is similar in certain respects such as wanting to be profitable, as well as reaching out to customers and offering a product or service to satisfy individual or group needs. However, as well as similarities these two types of businesses also have certain differences like their presence in the different kinds of shop (physical versus virtual) and the method in which they communicate with their customers (face-to-face versus non-personal means) when the customers have particular questions that they need answering before they decide to buy the item that they are deliberating over.

2.5.1 Shopping agent helps online shoppers?

There was interesting research performed by Menczer et al (2002), who stated that although eCommerce is a convenient shopping environment, consumers sometimes felt frustrated when they want to find a specific product due to poor product presentation and online shop design. For their research they developed a program called "IntelliShopper", which is an intelligent agent that can help consumers to spot specific products when they are shopping online. The "IntelliShopper" is able to learn the consumers shopping preferences and automatically search for online retailers for the product which matches their choices. Budzikowska et al (2001) in IBM conversational laboratory also mentioned that consumers could not normally find their intended products; hence these researchers developed a conversational interface to help consumers to reduce time costs in finding specific products. It seems that it might even be more difficult to find a specific product online than in a physical shop without external help.

2.5.2 The need of product information and presentation

It is traditionally understood that consumers obtain product information from leaflets, past experiences and friends' recommendations. In contrast the internet allows customers to gather product information instantly when they are shopping online. Here a differential emerges for online shops. The online products' presentations are quite different from physical shops where customers are exposed to a large variety of products at the same time.

Barlas and Hoekstra (2002) stated that products sold online lack "active exposure" to the customer in an online environment and that it could reduce purchasing opportunities for unplanned products. The legibility of products can be an important determinant in satisfying different kind of customers. Research by the Dieringer Research Group (2002) showed that experienced online shoppers are more likely to have their brand opinions changed due to rich product information and inexperienced online shoppers will not purchase without rich product information. Their final analysis suggested that marketers need to be sure their websites and online interactions are consistent with the information that their companies wish to convey, which will allow online shoppers to recognise their products immediately in the online environment.

Again this allows us to consider the features of online packaging to assist e-tailing.

2.5.3 Rich information and presentation for online shoppers

Researchers have noted the phenomenon that consumers find it difficult to buy online. Hence, the issue of online product presentation and additional product information that can enhance the quality of purchase decision making has recently caught many researchers' attention. Williams and Larson (1999) suggested that using products pictures and video clips could arouse consumers' familiarity to the products sold online, additionally more accurate and complete product information could also help consumers to find those products that meet their needs.

Weitz (2000) suggests that eCommerce needs strong brand name and image, and presentation of information on the websites, these resources would build products or services recognition to the consumer's mind. Har et al (2000) described that product familiarity had much influence on shopping effectiveness online and that the presentation of product relevant pictures could increase the possibility of purchases. Edwards and Gangadharbatla (2001) suggested that a novelty 3D product presentation could shape the purchasing intention, with additional product information forming the consumers' trust in the attitude of the product.

Häubl and Pablo (2002) also discovered that interactive 3D product presentations, instead of still images, may affect some important aspects of buyer behaviour, such as purchase likelihood. According to Jahng et al (2002), consumers' personal traits affect the effectiveness of presentation of the product information. They suggested that the richness of product

information presentation has more influence on the consumers' shopping behaviour for intuition and feeling types than sensing and thinking types.

Lightner and Eastman (2002) studied that product presentation could help consumers to process product information online. Pictures could not only provide a holistic view of a product but also provide the confirmation of a correct purchase, whereas a combination of quality pictures and sufficient text could satisfy most of their participants' satisfaction levels in processing product information.

Visser (2002) noticed that packaging is an underused resource for online shopping. Hence, he signified that the internet should not act as a determinant for the design of the packaging but that packaging should utilise the advantages of the internet for extending the functions of packaging design. Although he mentioned that the traditional packaging design strategy is difficult to translate to the internet, he did not provide a solution for this predicament. Therefore the author proposes that the role of packaging should be developed with the evolution of the trading platform.

2.5.4 Summary

It can be seen in figure 2.30 that many researchers considered that novel product presentation and rich product information can encourage online consumers' shopping decisions. Since these functions are provided by physical packaging in physical shops the author proposes that it is helpful to use the concept of "online packaging" to describe the methods of providing them in eCommerce shops.

The concept of online packaging features		
Product information	Product presentation	Author(s)
	Strong brand name and image.	Weitz
	Product relevant pictures	Har et al
Additional product information	Novel 3D presentation	Edwards and Gangadharbatla
	Interactive 3D presentation	Häubli and Pablo
Rich product information		Jahng et al
Product presentation help consumers to process product information		Lightner and Eastman

Figure 2.30: The concept of online packaging features

In the section of 4.2.5 and 4.3, the author has used the general concepts suggested by these researchers to try to create product information and presentation in different ways, such as mood board animation, higher resolution images, peripheral information and rotatable product images in order to concrete the idea of online packaging. Also, these designs were considered to follow the theory of the Elaboration Likelihood Model in order for presenting contextual information through images and texts and the author tested designs that included both central and peripheral routes. These designs, experiments and results will be fully described in later sections.

2.6 Preliminary Conclusion⁸

Packaging has been comprehensively used for protection, transportation, display, and promotion for products. Due to the popularisation of internet use and the multi-choices of consumption behaviour, online shopping is becoming more and more popular. However there is no sense of touch and smell in the internet domain. In section 2.5, many researchers discovered that consumers do need rich product information and presentation to help them during online shopping trips and that increases the will of consumption and encourages engagement with impulse shopping.

Directions for online packaging thinking

It is proposed that the concept of packaging needs to be extended from the physical to the virtual, in order to provide rich information and presentation for online shoppers in this electronic age. The manufacturer, marketer and designer should reconsider the function of packaging, as a powerful tool, for marketing in the online environment. Enhanced online packaging with rich product information and presentation may help consumers transfer their physical shopping experiences into the virtual environment. The idea of reproducing a familiar experience could be one of the directions to move towards in thinking about the future of online packaging. In other words, it is important to convey an emotional value to

⁸ A conference paper was accepted in 8th International Design Conference, Croatia, 2004, based on this section and section 5.3.1. Only 250 papers were accepted from 420 abstracts.

consumers by enhancing the online packaging and exploring ways to reinforce the visual impact of a product, such as 3D presentation, animation, sound, rich information and high quality image, which will give a higher interaction and communication between the consumers and products. For example, the websites of 7-11 (Figure 2.31) and FamilyMart convenience stores (Figure 2.32) imitate a real shop's interior and exterior, which may help consumers to be immersed in a familiar shopping environment (Williams and Larson, 1999).



Fig. 2.31: 7-11's online shop



Fig. 2.32: The website of FamilyMart

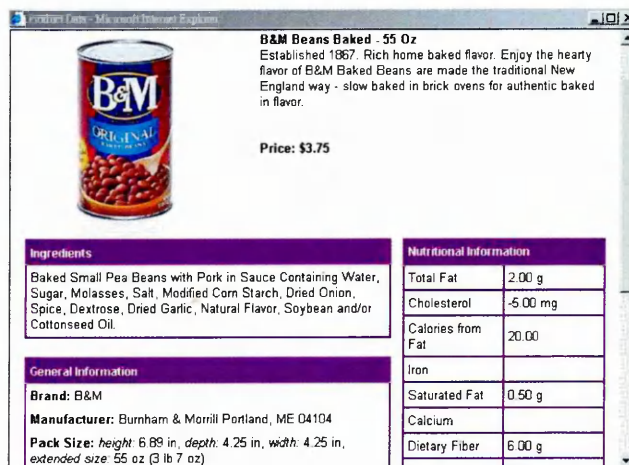


Fig. 2.33: Producer's history, Peapod.com

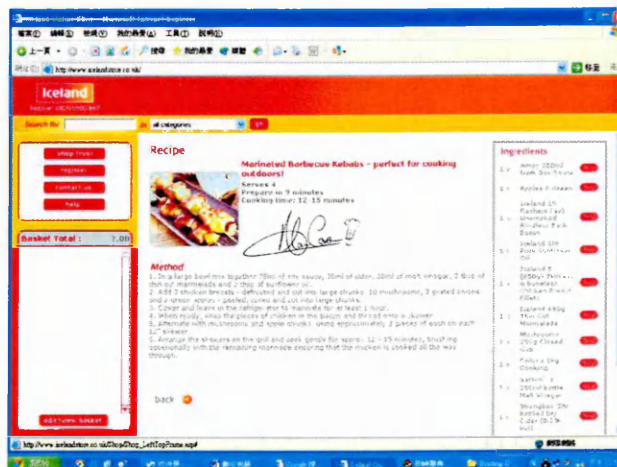


Fig. 2.34: Food recipe, Iceland.co.uk

Another important opportunity is to enhance the informative function. Physical packaging only has a limited amount of space where basic information can be printed, such as brand, price, expiry date, contents, ingredients and nutrition. However online packaging has no limitations, in the space where it can convey any information; therefore online packaging can offer a lot of extra information, such as the history of manufacturer (Figure 2.33), recipe (Figure 2.34), environmental issues and educational functions. The manufacturer can convey their stance and educate the consumer at the same time.

Research questions for the laboratory online shop

The tentative studies and the literature review in this research have found that there are some suggestions to be considered for future thinking concerning enhanced online packaging.

1) Communicative function: Product information and presentation need to be clearly stated for target consumers with different levels of product involvement.

2) Informative function: To provide rich information to consumers to help their purchasing decisions.

3) Interactive function: To provide novel product presentation to help consumers to transfer their physical shopping experience.

As we can see from the suggestions above, online packaging could become a vital instrument in influencing consumers' purchasing attitudes

after they have visually seen the packaging on the website. The questions that then arise are:

- 1) What form will online packaging take in the future?
- 2) What benefit can online packaging contribute to eCommerce?
- 3) How can this research help designers to develop online packaging?

The latter stages of this research has explored these propositions and questions through a “laboratory online shop” which was conducted by utilising a rapid ethnographic strategy and included fifteen active participants. The data collected in this “laboratory” was analysed by applying content, conceptual and triangulational analyses based on the concept of the ELM to answer the initial research questions, in order to develop the design guidelines of online packaging.

Chapter three Research Methodology

3.1 Introduction

The purpose of this study is to explore potential design guidelines for the interactive relationship between packaging design, eCommerce and consumer behaviour. The term guidelines refers to the method of research and problem finding and broad strategies for designers rather than a prescription to solve any single problem when they want to apply packaging thinking in a digital context. An ethnographic research strategy was used as a framework to collect data and the Elaboration Likelihood Model (ELM) was employed to evaluate the data. The employment of the strategy and the model will be explained later in this chapter.

It is very difficult to provide definite standard answers or complete lists of operational procedures for any design problem. Designers often have to conceive and plan design outcomes which have not previously existed and there can be many valid solutions to a design problem (Buchanan, 1992). For instance in this research, although any product sold online could be included in a general framework of online packaging, every product has its own attributes and features with all having different communication challenges. This research indicated that enhanced product presentation and information could be the key to greater value for producers, retailers and consumers for any area of eCommerce.

A design activity is a goal-centred project, with a unique outcome. There may be many complex difficulties that need to be thought through, with answers depending on a variety of situations and conditions that cannot be marked right or wrong but may be seen as being subjectively better or worse. Buchanan (1992; 6) stated that *“designers are exploring concrete integrations of knowledge that will combine theory with practice for new productive purpose.”* However, designers might not consider that they are using theory in their design practice, for example, in the section 4.2.1 designer interviews, the interviewees thought that theories were mainly used for marketing strategies, and that design theories were not normally involved in their design process. Designers might use several research skills, e.g. interview and visual research, to collect background information before they begin their design projects, but they may not be aware that they are using their background knowledge learnt during their education or through life experience, e.g. design lectures and cultural understanding, as well as academic research methods to discover a new understanding about a specific design task.

In this research, the author undertook six studies which included five tentative studies and a final “laboratory online shop” study to discover design guidelines. The following figure 3.1 explains the flow of the six studies.

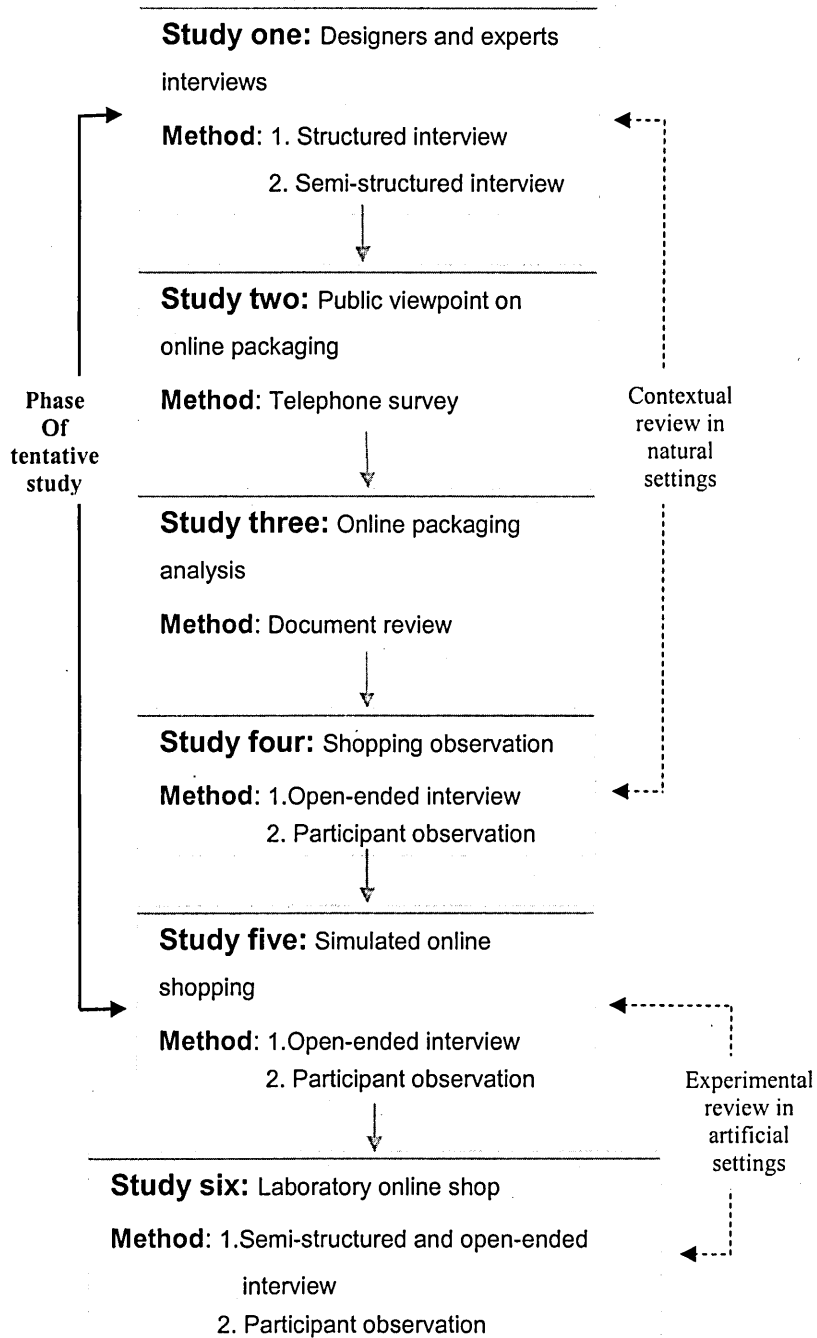


Figure 3.1: Methods employed in the six studies

Conventional ethnographic research was conducted in natural settings, differing from the last two studies of this research that were conducted in artificial “laboratory” environments. The reason for doing this was that the

author identified certain problems and findings from four early studies (contextual reviews) in natural settings and that he used these findings to create “prototype” online environments which could not be found in one current online shop, in order to evaluate the findings from the early studies. Through the prototype, research methods could be employed, the assumptions could be tested, the prior findings could be evaluated, the data could be gathered and finally the design practice and theory could be combined for discovering online packaging enhancement.

In this chapter, the research methodology will be reviewed and the research methods will be discussed to propose an appropriate research strategy. The review of research methodology provides a broad understanding of methodological theory and the use of research methods. The research strategy which is a rapid ethnographic strategy refers to the research methods used during different phases of the study, with the methodology mainly adopting exploration research proposed by Rubin and Babbie (2001), to assess the different phases of empirical investigation. There are three kinds of research which are normally used in social science research work – exploration, description, and explanation (Rubin and Babbie, 2001). They stated that the exploration study is normally used to explore a newly developed research issue or a new issue which has rarely been studied. The main purpose of this sort of study is valuable when researchers try to make a new issue or phenomenon into a serious research topic, hence a new or a relatively unaccepted concept can be introduced to the public. The description study is used to describe phenomena or events,

researchers observe and describe the data they have. The main purpose of such a study is to report a big sample survey, such as census survey. The explanation study sets out to explain a phenomenon, such as to explain the high rate of teenage crime in a town.

Their statements for the exploration study would fit the main theme of this study – packaging design for eCommerce, which does not appear to be recognised in the professional or academic field.

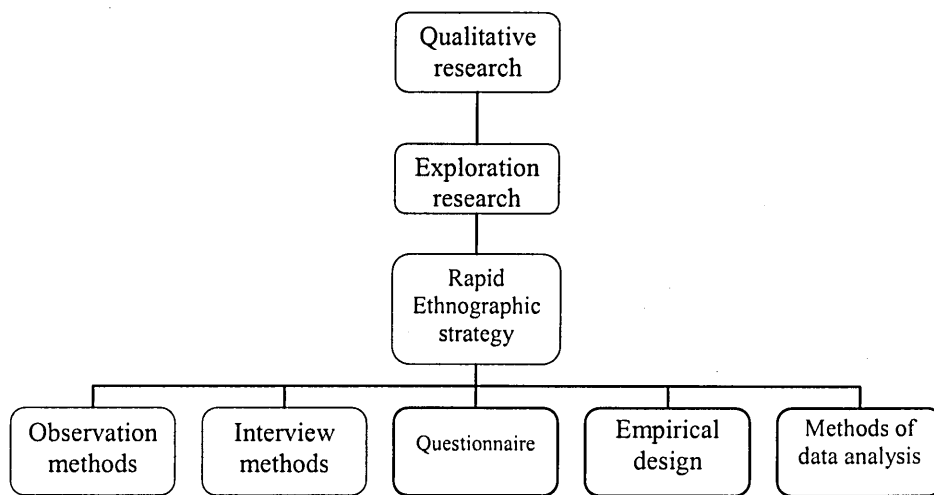


Figure 3.2: Research strategy and methods of this research

As Burns (2000: 3) states, “*Research is a systematic investigation to find answers to a problem*”. The research method is an array of processes and techniques used in order to gather and analyse data to form a theory or model to help better understand the acquired knowledge.

This study was basically a qualitative research and the data collection employed different research methods, including literature reviews, interviews, questionnaires, observations, and empirical design. The data

analysis used the theory of the ELM as a starting point for conceptual, content and triangular analysis. Meanwhile, the validity and reliability of employed research methods, data collection and analysis was also considered all through this study.

3.2 The methodology

A significant difference between qualitative and quantitative research is that qualitative research is an inductive study that is mainly carried out in text format, even though that it includes visual elements and other research materials, whilst quantitative research is a deductive study that uses measurements. In qualitative research, a hypothesis is not required at the beginning of the research because it can be started with either a concept or a question. However, quantitative research also requires a hypothesis before the research can begin (Creswell, 2003).

Crotty (1998) described that the methodology is a strategy or plan of action, and that this research strategy shapes our research design and use of particular methods, linking them to the desired outcomes. The methodology also serves as an account of the rationale, as it provides for the choice of methods and the particular forms in which the methods are employed.

As mentioned in the introduction, this was an exploration research with six studies that utilised rapid ethnographic approach (See figure 1.1 and 3.1) to discover the design guidelines for online packaging. These studies involved observation, interviews, surveys and empirical design, which all offered discoverable insights into consumer shopping behaviour and attitudes towards online packaging. These research activities and the rapid ethnographic strategy created interactive environments which allowed researchers (designers) to understand the consumers, through direct contact in helping to enhance the design or to create solutions to a unique design task.

3.2.1 Ethnographic strategy

Ethnography, a research technique which originated from anthropology, became recognised by other fields of academic professionals in the 1970s and started occurring in design community discussions in the late 1980s (Ireland, 2003). The purpose of ethnographic research is to uncover phenomena or events in our society or culture, but the definition of the term ethnography has been subject to dispute by researchers (Atkinson and Hammersley, 1998; Burns 2000; Bryman, 2001). Burns (2000: 393) broadly described ethnography as a technique that *“encompasses any study of a group of people for the purpose of describing their socio-cultural activities and patterns”*.

Atkinson and Hammersley (1998: 110) provided some practical features of the term ethnography as following:

- A strong emphasis on exploring the nature of particular social phenomena, rather than setting out to test hypotheses about them.
- A tendency to work primarily with “unstructured” data, that is, data that have not been coded at the point of data collection in terms of a closed set of analytic categories.
- Investigation of a small number of cases, perhaps just one case, in detail.
- Analysis of data that involves explicit interpretation of the meanings and functions of human actions, the product of which mainly takes the form of verbal descriptions and explanations, with quantification and statistical analysis playing a subordinate role at most.

The ethnographic research method has been popularly used in many fields of study, including health-care research into the understanding of patients' and clinicians' worlds (Savage, 2000), ethnographically informed

systems design for air traffic control (Bentley et al, 1992) and educating primary school teachers (Frank and Uy 2004). Furthermore, this method has also been frequently applied in the field of design to understand the background of the users' environment and interactions that is a key to design innovation and development and we will discuss this in next section.

3.2.2 The problem of ethnographic research for designers

The most notable case of applying ethnographic research to enhance design occurred in the late 1970's. A Japanese company, Xerox, its Palo Alto Research Centre employed anthropologists, who conducted ethnographic methods for photocopying machine research and provided the findings to engineers. These findings helped the engineers to re-evaluate and redesign photocopiers in a way that made them user-friendly. Hughes et al (1995) pointed out that the use of the ethnographic method could obtain sufficient understanding of the nature of the work to help support the development of interactive system design. Millen (2000) introduced the idea of an ethnographic method that is a data collection method that could help to provide a reasonable understanding of users in order to enhance design development. Plowman (2003) stated that ethnographic research is suited to enhancing design practice. In addition to this, the relationships established between designers and ethnographers were mutually beneficial in the field of design practice research.

In most studies, researchers first conduct data collection and then analyse them. However, ethnographic researchers need to concurrently collect and analyse data, in order to discover new findings or research themes (Fetterman, 1989; Burns, 2000). Conceptually, ethnographic research is very time-consuming, in that it has to be studied between a few months to a year, or more (Fetterman, 1989; Bentley et al, 1992). For example, ethnographic researchers need to immerse themselves in a

community for at least several months if they want to study the inhabitants living style. However some ethnographic researchers do not have much time to conduct their research, due to time or budget restrictions.

Rapid ethnography (Millen, 2000; Kluwin et al, 2004) was gradually developed under these restrictions. Due to designers having to respond to their projects or clients in a matter of hours or days, not months or years, time is often a critical factor. However, it is essential to conduct research on the design subjects before their design projects begin. Rapid ethnography could enable designers to perform their research in an efficient and economic way that will support their professional work.

Although the time pressures on designers do not apply on this PhD study, this study would like to provide a useful strategy for designers to use in their design project. This research method which is usually used for academic research has gradually transformed for designers as a practical tool in their work in order to better understand consumers and products in the design process. Thus, it is necessary to consider the research method that can be practically used by designers as the priority.

3.2.3 Rapid ethnographic strategy

Rapid ethnography is employed with the same assumptions about culture or a research as conventional ethnographic study. However, Kluwin et al (2004) thought that rapid ethnography could enable better-directed data collection than the very broadly-targeted data collection method of a traditional ethnographic research, focusing on certain areas of data collection which directly reflect the research themes. To do so, the researcher does not need to be constrained by conventional ethnographic understanding, e.g. the length of studying period.

Millen (2000) stated that rapid ethnography is based on some ideas which were adopted in this research as following: 1) Narrow the focus appropriately before conducting the field research. Traditional ethnographic research normally applies a very wide-range lens on the research. 2) Use more interactive research approaches as auxiliary research tools, such as interview and contextual inquiry, in order to more rapidly understand user behaviour in the field research. He also emphasised that rapid ethnography demands speed, without sacrificing the quality of the work and it is not an easy task to meet both demands. The researcher has to carefully go through all processes in a study, such as focused observation, settings selection and data analysis.

There are two things that need to be explained. The reason that the author called this a “rapid ethnographic strategy” instead of “rapid ethnography” was that:

1) Rapid ethnography is conducted in natural settings environments, however, this criterion was amended for this research, due to the ideal “venue” not being found in current online shops for these experiments. Thus, creating a new artificial setting is an essential part of this kind of research, it’s not just a problem of not being able to find a suitable existing setting – by definition that does not exist. In this research, the author had to create a “laboratory” for participants to evaluate the idea of online packaging.

2) Ethnographic researchers normally take on the role of “participant-as-observer” during their research. In other words, the researchers take a place in another’s activities to observe people’s behaviour. However for this research, in the studies of 4.2.5 and 4.3, the participants were invited to conduct online shopping trips in artificial settings. Logically, the laboratory was created by the author and this research was his “activity”. Therefore, the author should not be seen as a “participant-as-observer”. However, once the participants were conducting their shopping trips, the shopping trips became their activities and the researcher was participating in their activities. Thus, the researcher could still be a “participant-as-observer” in these two studies.

Robson (2002: 487) explained that *“the ethnographic approach is typically an exploratory study. It is a strategy of discovery, well suited to the study of the unfamiliar and the new”*. The rapid ethnographic strategy and exploration study is used in the author’s research, as the issue “packaging design for eCommerce” is a relatively new issue and has not been fully studied.

3.3 The methods of this research

3.3.1 Interview

The Interview is one of the most commonly employed methods in qualitative research. Burns (2000: 423) defined

“an interview is a verbal interchange, often face-to-face, though the telephone may be used, in which an interviewer tries to elicit information, brief or opinions from another person”.

He and Robson (2002) categorised three forms of interviews: 1) open-ended (unstructured), 2) semi-structured, and 3) structured. However, Mason (2002) had a different method of categorisation. She considered that there are only two types of qualitative interviewing, 1) in-depth, and 2) semi-structured or loosely structured. She also thought that the terms of open-ended or unstructured are misnomers due to logical problems that any research and method employment must have been logically structured by the researcher. The author considered that previous categorisation to be more commonly used in the field of qualitative research and that the difference between the two means of categorisations is only in the naming. Hence, the introduction of each type of interview method will be discussed in the following section:

1) Open-ended interview

The interviewer has a wide area of interest and concern and does not have a fixed list of questions for the interviewee. The interviewer will follow interviewees' conversations and allow it to develop in the frame of a wide

area which is a free floating domain and relies on the quality of the conversation between them. In practice the interview has to combine structure and flexibility, the "structure" refers to sticking to specific key issues and topics (Legard, et al, 2003). The interviewer sometimes receives unexpected findings or develops another interesting concern from the conversation. However, the interviewer has to consider the problem of validity, especially if the conversation goes beyond the theme or if the interviewee is not willing to talk. This situation is considered as a major disadvantage of open-ended interview technique (Burns, 2000). The use of this method will be described in later sections.

2) Semi-structured interview

This interview is employed either as part of a structured interview and open-ended interview. An interviewer has pre-set questions or fairly specific topics which are often referred to as an "interview guide" (Bryman, 2001), but the questions are more or less open to the interviewees' responses and the situation of the interview. The interview process is flexible, in that the interviewee can freely answer the questions. Also the questions can be specifically tailored to the individual interviewee and situation during the process. However, comparability between interviewees is difficult in this kind of interview, due to the flexibility of the process. Not every interviewee may be asked the same questions. Nevertheless, this difficulty could be reduced by the consistent use of an interview guide, which could increase the credibility of the results (Flick, 1998). The use of this method will be described in later sections.

3) Structured interview

This type of interview has predetermined questions with fixed wording which are usually used in surveys and opinion polls. The data gathered is consequently a quantitative analysis. However, the use of open-response questions can be considered as qualitative data, as it is also an essential difference from a survey questionnaire (Burns, 2000). The use of this method will be described in later sections.

3.3.1.1 The application of interview method in this research

Research Phase	Research Method	Aim
Tentative Study	<ul style="list-style-type: none"> ● Structured with designers ● Semi-structured with experts ● Open-ended with consumers 	<ul style="list-style-type: none"> ● To gather designers and experts' opinions on the possible use of packaging design in online shops ● To estimate the potential functions of packaging can be applied for eCommerce.
Laboratory Online Shop	<ul style="list-style-type: none"> ● Semi-structured with consumers before the experiment ● Open-ended with consumers after the experiment 	<ul style="list-style-type: none"> ● To understand consumers' packaging requirements and expectations when buying a specific item. ● To see if online packaging can help consumers during shopping processes. ● To know their expectation from online packaging and computer interactivity.

Figure 3.3: The use of interview methods in different phases of studies

Figure 3.3 shows the different type of interview methods which were used in different phases of the studies and the aims of using each method.

As previously mentioned, this study begins with a concept but without any great volume of literature to refer to. Therefore, in the phase of the tentative studies, face-to-face interviews with senior designers and experts were conducted, to gain special insights from the packaging design industry and academia (See section 4.2.1). Another type of interview was conducted, together with observational method in the practical work of “shopping observation” (See section 4.2.4) and “simulated online shopping” (See section 4.2.5). Darlington and Scott (2002) pointed out that the observation and interview methods can be used together, in order to work out what are important issues during research. These interviews helped the author to explore the direction of the development of online packaging and help to detect what features of packaging thinking could be incorporated within online shops. The following sections will introduce how this method was used in the different studies as follows:

3.3.1.2 Interviews with designers and experts (Phase of tentative studies)

The first interviews (Structured, see section 4.2.1) took place in London for the purpose of a general enquiry, to ascertain what could be included as successful packaging for a product and their opinions for packaging to apply on digital media. The second interviews (Semi-structured, see section 4.2.1), which were conducted in Taiwan⁹, aimed to explore the possibilities of using packaging thinking for eCommerce. Due to packaging design for

⁹ The expertise of these experts and designers were described in section 4.2.1 and how they were chosen in section 3.5.3.

eCommerce being a relatively new concept, some of the interviewees were able to recognise the idea but some could not, hence the author had to briefly introduce the idea of online packaging first, in order to allow them to understand the idea before asking the questions. The introduction of the idea did not intend to influence their thinking, conversely the interviewees could provide feedback to the idea in helping the author to refine his online packaging thinking, once the interviewees understood the concept of “online packaging” in their own interpretation. The focus of this interview was to collect opinions from traditional packaging experts about: 1) whether the concept of “packaging” can be used online? and 2) what kind of packaging functions can be used for online retail?

These interviews with designers and experts were conducted face-to-face. Robson (2002: 272) stated that this type of interview could give the *“possibility of modifying one’s line of enquiry, following up interesting responses and investigating underlying motives”*. Face-to-face interviews allowed the author to see the interviewees’ facial expressions and gestures, to better understand their feelings and interpret their expressions. Audio-recordings and notes were taken during the process, to support analysis of the interviews at a later date. Agre (2003) explains that consulting experts is a valuable way to identify trends at the start of research. The author also found that it was useful to conduct expert interviews when the research objectives were not clear. Interviewees might not point out a direction to follow, but they would give their opinions, experiences and

judgement on the topic and was thus valuable for the interviewer to think about, especially in the early stages of this study.

3.3.1.3 Interviews with consumers (Phase of tentative studies)

These interviews (open-ended) were conducted during the processes of the “shopping observation” (Section 4.2.4) and the “simulated online shopping” (Section 4.2.5). The author also found that it was useful, as mentioned, to apply an interview while performing observational activities, in order to ascertain the subjects’ own interpretations of their behaviour, so that the observer would avoid misinterpreting what they were observing. It also provided the subjects with a chance to explain their behaviour.

The “shopping observation” was conducted in genuine physical and online shopping environments with four participants. The participants were asked to write a shopping list before the trip and then went to a physical Tesco supermarket, followed by a visit to Tesco’s online shopping website (See section 4.2.4). The aim of this kind of interview was to try and understand the consumers’ own thoughts behind their behaviour. For example, once consumers picked up an item from the shelves which was not on their shopping lists, they would be asked the reason why they picked up this item and not another. At this point participants could explain their considerations, such as tastes, brand, price, attractive packaging and the information on the packaging.

The final study of the tentative studies was to design a “simulated online shop”. Twenty participants were divided into two groups: 1) high involvement people who have had more experience with wines, and 2) low involvement people who have had less experience with wines (See section 4.2.5). This division was based on the ELM (Petty and Cacioppo, 1986), participants in the high involvement category had a high personal interest and high product involvement with the wine, and vice versa. An online wine aisle was created with enhanced product presentation features (See section 4.2.5) by the author and was used to test whether “online packaging” can affect the participants’ purchasing decisions. When the participants had completed their wine shopping tasks, they were asked questions about their feelings and expectations of “online packaging”. Their behaviour was also noted during these talks.

Notes were taken during the conversations (See appendix D). By doing so, the author could understand their concerns and interests better than if only a pure visual observation activity was utilised. It was found that enhanced online packaging could possibly influence the consumers purchasing decision. This was a great help to the author in constructing a framework to transfer packaging functions and thinking into the virtual environment.

3.3.1.4 Interviews with consumers (Phase of laboratory online shop)

This “laboratory online shop” (See section 4.3) was the final experiment in this research. There were fifteen participants in this experiment. They were asked to carry out four shopping tasks from the laboratory online shop. Interview methods were mainly used before and after the shopping task (See appendix E for transcript). Semi-structured interviews were used before the experiment to obtain information on the consumers’ preference, experience and attitude of both online shopping and wines in order to understand: 1) consumers’ expectations of product presentation and information, and 2) consumers’ cognition of online product presentation and information. This pre-interview helped the author to understand their background, behaviour and thinking on both wines and online shopping and also gave the author clear clues to interpret and analyse their shopping tasks.

Open-ended interviews were used after the shopping tasks in order to obtain the participants’ viewpoints on online packaging requirements, their expectations of online packaging and whether this shopping experience raised future expectations of online packaging.

In the tentative studies, the author found that enhanced online packaging could possibly affect consumers’ purchasing decisions. Hence in this main experiment, the emphasis of the interviews was to identify the features and benefits that could attract consumers’ attentions in order to help them to make purchasing decisions. On the other hand, consumers’ interests and considerations also could give designers a direction to consider when designing enhanced online packaging.

3.3.2 Questionnaire

This research method is commonly used in quantitative research, especially for descriptive and explanatory research. It can also be an efficient tool for obtaining research data for qualitative research (Burns, 2000). The reason for conducting this questionnaire survey by telephone rather than by face-to-face was due to the considerations proposed by Bryman (2001) who pointed out that there are some advantages for telephone over questionnaire interviews: 1) Savings in time and cost of travel. 2) Easy to maintain the process, interviewers ask questions in the same order, the same wording and even in the same tone of voice during the interview process, so respondents are answering within the same conditions. 3) Bias avoidance, in personal interviews, sometimes interviewees' responses can be affected by the interviewers' characteristics, such as ethnicity or age. Similarly, interviewers' questioning may be influenced by the interviewees' characteristics. So in a telephone survey, these potential biases can be likely removed.

However, there were also some disadvantages for a telephone survey that the author had faced during the survey: **1) Sampling limitation:** Not everybody's telephone number is shown in the telephone directories. More and more people choose not to have their telephone numbers listed. **2) No visual aids:** a telephone survey can only be communicated through conversations. Interviewers cannot express questions via images or charts,

and they cannot obtain additional information by observing interviewees' behaviour or gestures (Robson, 2002; Bryman, 2001).

Indeed, these advantage and disadvantages were reflected in this telephone survey when it was conducted. Besides, the author also found that due to economic growth and lifestyle changes, people are not always staying at home during the evening or weekends. Although phone calls have been made, reaching the respondents is another difficulty for a telephone survey.

3.3.2.1 The application of questionnaire method for public viewpoint on online packaging (Phase of tentative studies)

Research Phase	Research Method	Aim
Tentative Study	<ul style="list-style-type: none"> ● Telephone survey 	<ul style="list-style-type: none"> ● To gather the point of view of online packaging from the public.

Figure 3.4: The use of questionnaire method for telephone survey

The telephone survey was the second study that the author conducted in the tentative studies phase (See section 4.2.2). In the first study (Section 4.2.1, experts and designers interviews), opinions varied greatly. For example, Dr. Chen thought that online packaging should have the potential to be developed for online shopping, but Mr. Lin did not believe in the existence of online packaging. Mr. Tian took the middle ground that he considered that online packaging should be deeply studied before making a judgment, however he had no idea what online packaging would be. Therefore the author wanted to know the opinions from the public on this.

The main point of the survey was to understand how consumers see online packaging and whether they have any awareness as to the existence of “packaging” functions online? Consumers might not be aware of online packaging in the sense that this project proposes. Also they are not reliable sources on “professional” issues like design of packaging, but they can tell us about their experience of packaging. Hence, the author did not treat this survey as a real quantitative survey and did not analyse the data using a statistical computer software, because:

1) Although 117 phone calls were made, there were only 24 valid samples which was too small a sample to be analysed.

2) Although this survey was involved with numbers, the author mainly wanted to understand their awareness of online packaging from the big picture.

3.3.3 Observation

Observation methods can be applied to a variety of different research. Jorgensen (1989) pointed out that observation methods can be suitably applied for many research issues; especially issues focusing on the relationship of interactions between people and their environment. He also suggested that the following situations are especially fit for observation methods: 1) When there is limited knowledge of a phenomenon in an exploration study, such as a newly formed activity or behaviour, 2) When there is a very different concept between insider and outsider, such as same sex marriages or religious ceremonies, and 3) When the phenomenon is rarely visible to the public, such as criminal behaviour and drug abuse.

However an observation method does not suit every kind of research, such as research that is involved with numbers or a big sample survey, as they need another method to provide them with more valid and accurate answers.

The observer's role is to record people's interactions and behaviour during the observational studies. Gold (1969) suggested that researchers could act out a role in four ways during an observational study. They are completed participant, observing-participant, participant-observer and neutral observer. Similarly, Jorgensen (1989) also divided researchers into three categories of roles during observational studies, observing-participant, participant-observer and neutral observer.

Completed participants do not want other people to know that the researchers are within a group. They pretend that they are an individual member, not a researcher within the group. Hence, researchers have to act as natural as possible, even if the researcher is not interested in all of the activities of the group, in order to successfully play the role, such as an undercover policeman.

Observing-participants already have a position in a group before taking on the role of observer. They have to consider their subjectivity and bias that might lead researchers to misinterpret or misunderstand people's behaviour, such as a researcher studying the relations between colleagues in his/her office.

On the other hand, participant-observers try to become part of a group and act out a role as a participant. They have to be aware that they do not influence any of the group's activities, whilst maintaining people's behaviour as being consistent with their usual behaviour, such as a journalist covering an event.

Neutral observers do not participate in a group. People in their studies do not know that they are being studied by observers, such as researchers who observe consumer shopping behaviour in a supermarket.

3.3.3.1 The application of observation method in this research

Research Phase	Research Method	Aim
Tentative Study	<ul style="list-style-type: none"> ● Neutral observation ● Participant-observation 	<ul style="list-style-type: none"> ● To understand consumer behaviour in online and physical shops. ● To compare/gather the difference/same of behaviour between these two trading platforms. ● To see the effectiveness of enhanced online packaging.
Laboratory Online Shop	<ul style="list-style-type: none"> ● Participant-observation 	<ul style="list-style-type: none"> ● To understand consumers' expectation from online packaging. ● To discover their special behaviour in an online shop. ● To see if online packaging encourages purchases.

Figure 3.5: The use of observation method in different phases of studies

During the practical work of this research, observation methods were employed to obtain insights into the views of consumers' purchasing behaviour, to ascertain how both the virtual and physical packaging affects their purchasing decisions.

3.3.3.2 Physical and online shopping observations (Phase of tentative study)

During the tentative phase of this study, three kinds of observational activities were conducted. The first one placed the author as a neutral observer in real supermarkets to observe consumers' behaviours at informal

occasions. The focuses were on 1) how did they interact with the products?, and 2) do they normally read the packaging on the products before making a purchase? These observations increased the author's understanding of both consumers' behaviours and the effectiveness of the packaging on the consumers. Meanwhile, these observations could also be compared with text books to see whether packaging is a "silent salesman" or not.

The second observational activity was shopping trips (See section 4.2.4), in both brick-and-mortar and online supermarkets with four voluntary participants. These participants were asked to write a shopping list before the trip and then went to a physical Tesco supermarket, followed by a Tesco's online shopping website. The author took a role of participant-observer during this trip. The purpose of the observational activity was to find out: 1) How can packaging attract consumers? 2) Which part of the packaging does the consumer place their attention?, and 3) can packaging affect the consumers' shopping decisions?

The third observation involved the author creating a simulated online shopping and recruiting twenty participants to take part in an online wine shopping experiment (See section 4.2.5). Again, the author took a role of participant-observation to place focus on: 1) Can enhanced online packaging encourage impulse shopping? 2) How do participants interact with online packaging? 3) Do participants show any interest in enhanced online packaging? 4) Does enhanced online packaging help them during online shopping?, and 5) Can enhanced online packaging persuade high involvement consumers?

In these tentative studies, twenty four participants' shopping behaviour was formally observed, with many other consumers observed less formally in supermarkets by the author during these tentative studies. It was found that these observational activities could help the author to understand consumers' shopping behaviour, to assist in the identification and refining of the research questions.

3.3.3.3 Online shopping observations (Phase of laboratory online shop)

There were fifteen participants who were asked to carry out four wine shopping tasks in the "laboratory online shop" which was designed by the author (See section 4.3).

From the literature reviews and the tentative studies, the author discovered that product presentation and information, which belonged to the functions of packaging, could be transferred from the physical to the virtual. In section 2.5, those researchers also discovered that the issue of online product presentation and additional product information can enhance the quality of purchasing decisions. This was also concluded in the preliminary conclusion of the tentative studies.

However, this was not a "proven" or "unproven" research. The author wanted to explore the resolution beyond the "proven" issue, in order to work out the design guidelines for applying packaging thinking to eCommerce. Therefore, the main focuses of this observation were: 1) How do they behave online? 2) What can manipulate their purchasing decisions? 3)

What do they need from online packaging? 4) How online packaging can help consumers to avoid making the wrong purchase or misunderstanding of the product? 5) How online packaging can bring benefits to consumers?

According to the findings from the literature review and the tentative studies, it was understood that product presentation and information could be the direction where online packaging could make an impact on eCommerce. Thus, during the shopping tasks of the laboratory online shop, task 1 and 2 were mainly designed on various presentations of wines to observe how the participants interacted with those presentations and task 3 and 4 contained a different amount of information for wines to test how the information influenced their purchasing choices.

3.4 Design practice oriented research

Universities around the world have been paying attention to design research for the past 20 years. Universities and Polytechnics in the U.K. have been awarding research degrees in design since the 1980's. In 1991, the Illinois Institute of Technology's Institute of Design launched the first Ph.D. programme in design in the U.S. In the year 2000, several universities in Taiwan have started design programmes for Ph.D. qualifications.

So why has design research become important in recent years? McCarron (2001: 29) explained the need and importance of research in design. He believed that

Design researchers are pushing the boundaries and defining new areas of design, such as the assessment of corporate design policy and strategy, how people use technology, and the design's impact on economic and cultural issues. These all meet unmet human needs and untapped opportunities for design that will both enrich and improve people's lives.

Design research has a strong connection to social sciences and must consider the processes and methods of social science research. However, as design is more like a practice oriented subject, do traditional social science methods have any value for design research? Buchanan (2001) stated that design research will grow strongly in the future, although it is still in its formative stage. The difficulty is to identify the nature of design knowledge and the relationship of research and design practice, because of some fundamental differences of philosophic perspectives and vision, e.g. the result of a design research is more likely to be applied to design practice or adopted by designers than a pure academic theory. Buchanan also

thought that design research has reached a turning point in its development as a field of recognised knowledge: In this research, the author believes that traditional research methods can be employed but the research strategy and research design can also reflect design's nature as a practical pursuit, which can enhance people's lives and make healthy profits for manufacturers.

McCarron (2001) also mentioned that Patrick Whitney, one of the members who started the Ph.D. programme at the Illinois Institute of Technology's Institute of Design, believed that more rigorous methods will help designers to develop and finalise projects in less time and with a guaranteed higher end product quality. Cooper and Press (1995) had similar opinions in that they considered that the employment of design research and management could find a way to efficiently control the complexities of the design process and the enhanced design strategy employed. Law schools have their own research process or strategy to perform their experiments or studies, as do medical schools. Every professional field has its own ways of developing research and growing a capacity of knowledge, which can be a very strong backup in giving practitioners or researchers sufficient working guidelines.

Research in the design field, is relatively new in relation to other areas of knowledge, as it is necessary to develop and build up its own research ways that will allow the advancement of design knowledge to support design research and practice.

The need for new theoretical, methodological, and ethical frameworks in design research to guide current design practice in collaborative research is often described. Sato (2000: 1) observed that

“design research does not yet have its own well established methodology, Ph.D. students need to make their own conscious effort to construct a consistent structure of research methods and knowledge in the domains of their research concern, in order to gain a perspective of design research.”

Pizzocaro (2003) had similar opinions in that she thought that it is very complex in design research fields which do not depend on one particular area of study but are also places which can produce and gather design knowledge. However design research has to develop its own research strategy, which can be in accord with design demand and people's needs.

In Korea, Lee and Lee (2003: 6) did a survey with 400 designers and managerial level designers about design research and practice. Their study suggests that *“doctoral education in design should be further fully developed in order to extend education to the research level so that the authentic discipline of design can be established.”* Therefore we need to integrate the establishment of understandings in traditional research methods with new design practice oriented research methods, as we consider carefully the implications for research design and empirical studies, and for programme development and evaluation. A corpus of empirical studies and collaborative research could provide the foundation for a design research appropriate for design academia and industry. Rust (2003: 8) said

“the members of the design research community might need to focus inwardly on what they can do to improve research degree practices in their own institutions and outwardly on sharing their practices to help build a foundation for theory development”.

The beginning of this study was formed by a simple concept: ***how to transform the functions of packaging into the virtual environment to assist online sales?*** In the literature review chapter, very rich research was

found for every single field of packaging design, the use of the internet and online consumer behaviour. However there were very limited resources which directly pointed out the use of the packaging function for eCommerce. It seemed that there was no connection and an overlap area among these fields, regarding the use of the packaging function for eCommerce, which proved to be an obstacle during the beginning of this study because it was very hard to judge the practice of the study and formulate a research question. Hence the literature review and practical work research was employed simultaneously (See figure 3.1), in order to identify research questions as well as seeking for theories which support and distinguish the main research direction from the various distractions.

As mentioned before, the design profession is a special subject due to the nature of the practical orientation and there is no well established design agenda for every specific area of design activity. Design researchers need to try to find a way or direction for their research during the processes. Meanwhile they also need to consider that the results of their research can enhance design practice and build a body of knowledge to enrich design research.

This research has set out to inform design professionals and introduce research methods to practice, and this work has employed a mixture of conventional research methods from social science and methods that employ creative design practice to create a setting for the investigation.

3.5 Data analysis

3.5.1 Methods of data analysis

One of the most difficult tasks in an ethnographic study is to analyse the “unstructured” data collected from the empirical works. During an ethnography study, there was no one single form or procedure to analyse the data. Data analysis can be applied in every stage of the study, and the result of data analysis can feed back to the next stage of the study (Taylor, and Bogdan, 1984; Fetterman, 1989; Hammersley and Atkinson, 1995). In this research content, conceptual and triangulation analysis were mainly used to analyse the data based on the concept of the ELM, even though there were many other methods that could be employed to analyse an ethnographic study, such as patterns, key events and statistics. Furthermore, Hammersley and Atkinson (1995: 205) also thought that the stage of data analysis is not a distinct stage for ethnographic research. They said

“In many ways, it begins in the pre-fieldwork phase, continues through to the process of writing reports, articles, and book. Formally, it starts to take shape in analytic notes and memoranda; informally, it is embodied in the researcher’s ideas and hunches. And in these ways, to one degree to another, the analysis data feeds into research design and data collection”.

To develop the ethnographic work in this study, the author provided a series of papers (Huang et al, 2003; Huang, 2003; Huang and Rust, 2004) which provided a vehicle for reflecting and formatting the ideas that were emerging from the research.

Although there were several papers written during the process of this research, there are some analytic skills that were mainly used in this research that have to be carefully considered for data analysis.

1) Content analysis: The searching-out of underlying themes in the research materials, such as papers, records and visual elements (Bryman, 2001). Researchers are in the role to construct the meanings of texts and documents in order to develop categories. For example, in section 4.2.3 “online packaging analysis”, where this skill was employed to analyse current online packaging.

2) Conceptual analysis: A way to establish patterns of thought, action, and behaviour through unwritten forms of resources (Robson, 2002). Researchers could understand an event or phenomenon by observing and analysing the subject. For example, this method was employed in section 4.2.5 “simulated online shopping” to analyse the participants' purchasing behaviour patterns.

3) Triangulation analysis: A way to keep the reliability of the research which is needed to examine one datum source or information against another (Fetterman, 1989). In this research, observational and interview methods were used to gather the participants' behaviour and thinking, in order to compare the consistency and difference between these two data sources.

The concept of the ELM was used in the context of data analysis, for more analytic discussion, see chapter 5.

According to the ELM (Petty and Cacioppo, 1996), it was understood that the consumers' attitudes were formed from central persuasion cues, which will have a greater influence on behaviour, as they are long lasting and difficult to change. Their attitudes are more likely to be changed by central cues of information which are issue-relevant to cognitive activities. Information in the central route refers to more details and strong arguments that can be scrutinised by high involvement consumers. If this central route of information is exposed and communicated to the consumers and the results show favourable thoughts, then this kind of information will have a strong effectiveness on the consumers via this route. On the contrary, the peripheral persuasion cues endures a short time of effectiveness for consumers, since these cues use non-argument components to evoke low involvement consumers' favourable thoughts

From the ELM and its application, that has been performed by many researchers (See 2.4.3), it has been shown that it was important to consider the basic merits and generic features for a specific product before its design. These components would convey both central and peripheral information cues to all target consumers and should therefore result in favourable thoughts for the product.

On the other hand, the ELM was also a tool that was used to predict the consumers' behaviour and measure the effectiveness of the message (central and peripheral cues). This helped the author to analyse the patterns of shopping behaviour for low and high involvement consumers and evaluate the design guidelines for online packaging.

3.5.2 Validity and reliability

In social science studies, the issue of “validity” and “reliability” is concerned with the examination of whether the methods have been properly applied to the study and whether the results have been accurately obtained from the methods employed.

Validity is concerned with the integrity of the conclusion which is yielded from the research. There are several types of validity which are normally used to examine the validity of a piece of research work. Bryman (2001) proposed four types which are as follows: 1) Measurement validity: This type of validity is mainly applied to quantitative research and concerns whether a measure that is designed from a concept answers the concept that the researcher supposes to understand. 2) Internal validity: This kind of validity is concerned with the issue of causality between the independent variable and the dependent variable. 3) External validity: This factor relates to the issue of whether the result of the research can be generalised and applied to another case. 4) Ecological validity: This form of validity focuses on the question of whether the findings of social science can be applied to people’s lives.

Reliability is concerned with the issue of whether the results of a study can be replicated by other researchers and is based on two presumptions during a study (Burns, 2000; Bryman, 2001). The first one is that the study can be repeated, so that other researchers can replicate the research steps and procedures of the original study. The second one is that other

researchers can have a similar interpretation of the research by carefully following these steps and procedures. Due to the nature of qualitative research, validity and reliability do not carry the same assumptions as they do in quantitative research (Creswell, 2003).

Qualitative researchers use reliability to check for consistent patterns between what they record as data and what actually occurs during their studies. In ethnographic studies, researchers record and analyse people's natural behaviour in their environments, so it is almost impossible to replicate the same situation. Additionally, it is too difficult for ethnographic researchers to replicate their findings of another's research. However, Burns (2000) provided some ways to enhance the reliability of ethnographic research: 1) Researchers plan the reason of the study and point out some major question that they want to discover. 2) Researchers clearly express their perspectives of the question and their assumptions of the study. 3) Researchers explain the procedures of data collection.

In this research, reliability has been considered, 1) the main research questions has been described in section 4.3.2, 2) the main purposes of this research has been explained in section 4.3, and 3) the procedures of the experiment and the data collection has been described in section 4.3.7. According to Burns's suggestions, his considerations have been applied in this research.

Validity is recognised as strength of qualitative research, but it only suggests whether the findings are accurate from the viewpoint of the researcher or the participants (Creswell and Miller, 2000). In ethnographic

research, validity can be yielded from the data collection and analysis methods employed by the researcher (Burns, 2000). In other words, to avoid a participants' dissemblance or over-reaction to the topic and the researchers' misinterpretation to the data analysis, is a way to increase the validity of the research.

In section 4.3, the "laboratory online shop" study, it described that the author tried to build a "natural" environment as much as possible, in order to deal with this problem. In section 3.3 the method of this research, 3.5.1 methods of data analysis, 4.3.7 procedures and data collection, and chapter 5 the analysis and discussion, the author described how different research methods were employed to collect different sources of data to avoid the author's bias and misinterpretations of one single source of data. Burn's concepts have been applied into this research in order to obtain valid research results.

3.5.3 Sampling

Some sampling methods were selected for the different studies, based on their attributes in this research. They were 1) systematic sampling, 2) convenience sampling, and 3) snowball sampling (Bryman, 2001; Robson, 2002).

Study	Sampling	Method	Number of sample
Designer and expert interviews	Convenience	1.Structured interview 2.Semi-structured interview	5
Public viewpoints towards online packaging	Systematic	Telephone survey	117
Shopping observation	Convenience	1.Open-ended interview 2.Participant observation	4
Simulated online shopping	Snowball and convenience	1.Open-ended interview 2.Participant observation	20
Laboratory online shop	Snowball	1.Semi-structured and open-ended interview 2.Participant observation	15

Figure 3.6: The sampling method and the number of sample for each study.

Figure 3.6 explains the method of sampling in this research. The choice of sampling has to fit the nature of research method and research aim in order to obtain valid and reliable data.

In qualitative research, the size of sample investigated depends on the aim of the study and researchers' judgments (Burns, 2000), for example, in an ethnographic study, one case could be used to investigate a phenomenon (Atkinson and Hammersley, 1998).

In this research, the size of the sample used in the final experiments, was identified through the experience of the early practical work.

After a study of “shopping observation”, the author considered the number of participants was too small, so he decided to increase the sample to twenty people for the first “simulated online shop”. The results from different sources of data (interview and observation) were found to be broadly consistent with the predictions of the ELM. This, together with the outcomes of the other four tentative studies (See figure 4.1), contributed to confidence in the results of the later work and led to a decision that a sample of this scale may be appropriate

In the final “laboratory” experiment, data analysis and the experimental work were conducted concurrently. The author again used triangulation of a variety of sources of data within the experiment. The results for each participant were generally consistent with the ELM theory to the extent that the work was considered sufficient when fifteen subjects had taken part.

It is also important to point out that the aim of the research was to discover relevant phenomena in this situation, rather than arrive at a robust demographic picture.

1) Systematic sampling: was employed to help select respondents for a telephone survey in the study of public viewpoints towards online packaging. For this sampling method, researchers choose a starting point and then choose every 10th person, for example, as a unit from a sampling frame. In this research, respondents were selected from the Sheffield telephone directory as the sampling frame, with the starting point being the first and last telephone numbers on the first page, and every 5th page being

used as a unit. Thus, the first and last telephone numbers on every 5th page were selected for this survey.

Unfortunately, there were two difficulties in finding target respondents and reaching respondents. Not everybody's telephone number is showed in the telephone directories. More and more people choose not to have their telephone numbers listed. This resulted in telephone calls to many pensioners, most of them who were not internet users, instead of the target respondents- internet users. Another difficulty was reaching the respondents. Although 117 phone calls were made, only 40 calls were answered. Due to the economic growth and lifestyle changes, people are not always at home during the evening or holidays. Robson (2002) suggests attaining a full list of the target respondents from a related organisation, for example, a better sampling frame for this telephone survey can be a list of customers' telephone numbers from an internet service provider. However getting this list can be very difficult.

2) Convenience sampling: was employed to select respondents for the studies of the designer and expert interviews, shopping observation, and simulated online shopping in this research. For this type of sampling, researchers choose the nearest and most convenient people who fit the criteria of the research.

Robson (2002) states that this sampling might be one of the most frequent methods for sampling, but it offers little satisfaction. This sampling is not suitable for a big sample survey, particularly in quantitative research, which involves statistics but it can be used for a pilot study for testing

research questions or a questionnaire. Additionally, Bryman (2001) argues that this sampling is very commonly employed in non-probability research and social research, due to this type of research not needing a big sample. The data from this sampling will not be able to produce definitive results because of the generalisation problem. However, the results can provide arguments for discussion and further research.

The author considered that although this sampling provides an easy gateway to access respondents, it also needs to carefully select respondents, e.g. target users, for research. This sampling was used in the early stages of this research, with participants being carefully chosen, for example, interviewees in the study of designer and expert interviews had much experience in the packaging industry. Every study during this early stage all offered findings for the next study, providing research questions for the further research stages to follow.

3) Snowball sampling: was employed for the study of the simulated online shopping and the laboratory online shop. This sampling could be another form of convenience sampling (Bryman, 2001). Researchers use the people that they have been involved with in their research to identify more people as participants for the research.

This sampling is unlikely to represent the population. Although the number of respondents can get bigger and bigger, it still lacks a total coverage of all the population. However, the author considers that the original respondents can recruit participants from friends or relatives, who are willing or interested in participating in the research. The background of

the participants in the “laboratory” experiment included different age, gender, culture background, profession and education. For example the subjects included people in their ages of 26 to 42 (See appendix F for participants’ details). This might result in more valid and reliable findings for the research, rather than some random participants who might have a greater chance of not being willing to answer or dissimulate themselves, when compared with the participants from the snowball sampling who are selected by the original participants.

3.6 Summary

This chapter reviewed the importance of methodology and introduced a research framework and the methods which were employed during this research. Besides, the issue of design practice oriented research was discussed due to the issue that this relatively new academic subject has not yet been established in its own research disciplines and methods. Importantly, it was explained that the ethnographic strategy was employed for this research and the difficulty of data analysis.

The ELM was mainly used for two purposes; one was for the design guidelines of the laboratory online shop to create central and peripheral cues for both high and low involvement consumers, and the other one was as an analysis tool to predict participants' behaviour and measure the effectiveness of online packaging.

Observation and interview were the main method employed to collect the data. However, it cannot be assessed by conventional judgements of validity and reliability, due to the nature of ethnographic research being different from conventional research. Nevertheless, there are some techniques, e.g. triangulation and critical data collection that ensured that the validity and reliability for ethnographic research would not be sacrificed.

Chapter Four Practical Work

4.1 Introduction

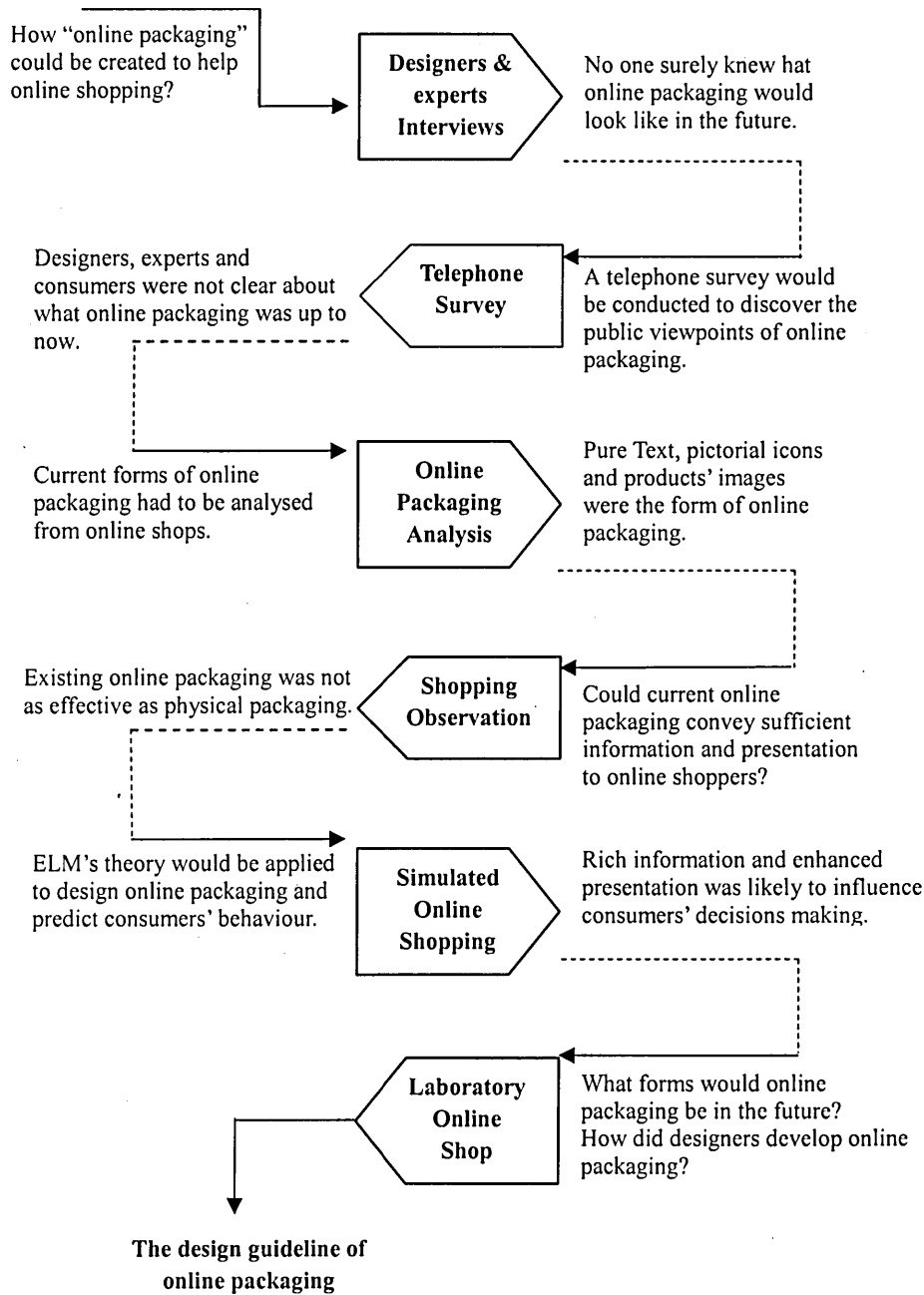


Figure 4.1: This research was a sequence of six studies

This chapter presents the practical work conducted in this research. This practical work was divided into two major parts: the **tentative studies** and the **laboratory online shop**. The practical work was a sequence of six studies for finding and refining research questions (see figure 4.1). These studies were also used to evaluate the research methods. The laboratory online shop was the final experiment of this research. It was performed to evaluate the findings of the tentative studies and gather additional understanding of the research topic, in order to conclude the design guidelines of online packaging.

These practical works were a very important stage of this research and the tentative studies were a milestone in the whole PhD study, allowing the research to move into a more confident stage as “online packaging” is not an established idea.

At the start, the author had no strong idea what the potential of online packaging can or could be for eCommerce. The author gradually gained an insight and had fresh ideas about the nature of online packaging, as the research developed; two experiments (See 4.2.4 shopping observation and 4.2.5 simulated online shopping) yielded results and some important characteristics of online packaging, such as varied presentation, rich information and interactive features, which informed the laboratory online shop. Findings of tentative studies and the literature review are combined together for the preliminary conclusion in section 2.6.

The laboratory online shop is the final practical work and a goal-directed experiment to explore consumers' interaction with online packaging and the use of the ELM for design, as well as the design guideline of online packaging. The author employed the findings from the tentative studies and the literature review to design an online shop. The research questions from the preliminary conclusion were also tested in the laboratory. The rapid ethnographic approach is also employed in this laboratory for observing how consumers interact with online packaging and interview consumers for their ideas, opinions and expectations about online packaging. This data will be analysed in chapter five.

4.2 Phase of tentative studies

4.2.1 Designer and expert interviews

As described in the literature review, packaging provides a lot of support for product sales. However, online packaging is in the cyberspace environment where customers cannot touch and feel a real thing. They can only see a small picture on the computer screen or a pure text description. In these circumstances, it seems that packaging can be hardly used as a "salesman", because a small and blurry product picture or no picture at all would not increase sales. So how can we design "packaging" to attract customers by these pictures/texts? With this in mind, interviews were conducted to try to discover the potential of online packaging from the interviewees' viewpoints.

Interviews with two senior packaging designers were conducted in London and interviews with three leading traditional packaging experts in Taiwan were conducted to try to discover how the future of online packaging could be developed.

4.2.1.1 Interviews with designers

Location: London

Time: May/2002

Interviewee:

A. Ms. Keren House, Creative Director, Siebert Head Design.

B. Mr. Sean Fortune, senior packaging designer.

Questions: (See appendix A for transcript)

Q1: Can you tell me your background and what design projects you have done?

Q2: Do you think there is a design theory involved in your design projects? If so, how does it work? If not, why?

Q3: What do you think packaging design innovation is? How does it occur?

Q4: How do you think successful packaging design that be measured?

Q5: What kind of role do you think that packaging can play in digital media?

These were structured interviews and they all answered to the same questions. These issues were asked because at the time of these interviews, the idea of “online packaging” was the very beginning of its infancy. The author wanted to gain ideas from these senior packaging designers to measure the worth of discovering the “theory of online packaging”. Whether the “theory of online packaging” could be utilised by designers, if the theory came true.

Hence, the author wanted to understand how they measured the value of design theories when doing their packaging design projects, and their ideas of “online packaging” that would have physical packaging functions but could virtually exist in a digital context.

4.2.1.2 Interviews with experts

Location: Taiwan

Time: August/2002

Interviewees:

A: Mr. Tian, a lecturer of a university and packaging consultant for 25 years.

B: Dr. Cheng, President of Design Innovation Management Institute, 30 years experience in packaging research.

C: Mr. Lin, specialist in packaging, Design Promotion Manager of Taiwan External Trade Development Council.

Questions: (See appendix B for transcript)

Q 1: Do you think that online packaging could be developed or not?

Q 2: Does online packaging have potential for internet shopping in the future?

Q 3: Do you think there is any different between “on shelf packaging” and “online packaging”?

Q 4: What is the advantage of “online packaging” for internet shopping?

Q 5: Is the online packaging “what you see is what you get”? In other words, should customers receive the parcel with the same packaging as shown on the computer screen?

These interviews were semi-structured interviews and were conducted three months later than the previous designers' interviews. Although the author received some feedback from the designers' interviews, the concept of “online packaging” was still unclear at this time. However these interviews were the first step to evaluate the concept of “online packaging”.

4.2.1.3 Findings

Online packaging is a relatively new issue in terms of traditional packaging. It is not difficult to understand that somebody cannot understand that the concept of online packaging comes from traditional commercial packaging design.

Especially, the turnover of eCommerce is increasing and more internet users are getting used to shopping online. Although no one knows what online packaging will look like in the future, this research believes that the characteristic of the internet, hypertext and interactivity, can make the future of online packaging very different in presentation from the current physical and online packaging.

It could be said that designers held positive opinions for online packaging in the future and two of these experts had awareness that current online packaging can be improved for better presentation. However, it was still unclear what kind of packaging functions could be transferred into the online environment. Some of them pointed out that branding could be online packaging or a product's animation could be online packaging, the author considered these functions could be included in online packaging but they were not representative of all the functions of online packaging.

With this in mind, the author proposed to do a telephone survey to discover the public viewpoints of online packaging.

4.2.2 Public viewpoints towards online packaging

This study was to gather public viewpoints of online packaging, what it looks like to them and how it can be used / developed in the future.

4.2.2.1 Sampling

Telephone numbers of respondents were selected from the phone book for the Sheffield area (U.K.) by systematic sampling. The numbers were selected by choosing the first and last phone numbers of every five pages.

4.2.2.2 Procedure

Phone calls were made in the evening hours between 6:30 to 9:00 from 18/11/02 to 22/11/02. When the phone calls were connected, the author would introduce himself first, tell them that this is an academic research for online packaging design; then they would be told their information was confidential and asked if they would like to participate in the questionnaire. It took approximate 8 minutes to complete each questionnaire (See appendix C for the questionnaire).

4.2.2.3 Outcomes

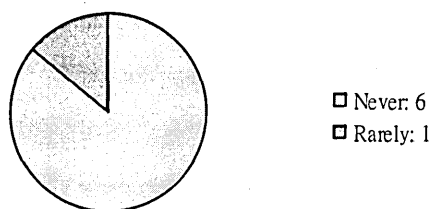
Total phone calls made: 117. Total respondents: 40.

It seemed that the respondent rate was not too bad. However 16 of the respondents were pensioners who have never used a computer, therefore they did not fit into the target group. The rest of the 24 respondents, 5 were not internet users and 19 were internet users, with 7 of those 19 people having bought online before.

4.2.2.4 Questions for online shoppers:

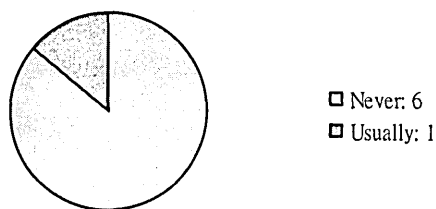
Q1: How closely do you look at the packaging when you buy online?

Outcomes: Most online shoppers do not even notice the existence of packaging when they are buying online.



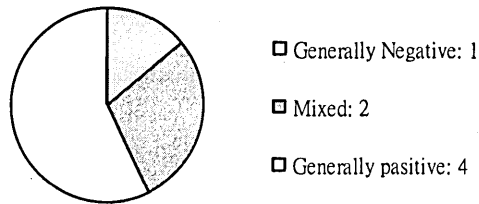
Q2: How often do you buy something online according to its attractive packaging?

Outcomes: The effectiveness of packaging is minimal online. Therefore a product might lose an advantage to attract consumers online.



Q3: If there is an interactive packaging apart from still photos when you buy online, can it reinforce the brand image in your mind?

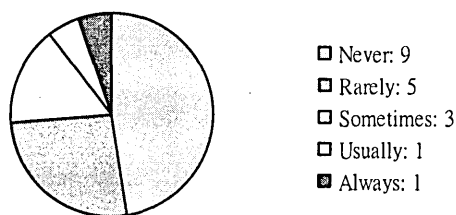
Outcomes: Most participants had a positive attitude towards the online packaging that had a varied presentation design, which would be of benefit in increasing the possibility of potential sales.



4.2.2.5 Questions for internet users:

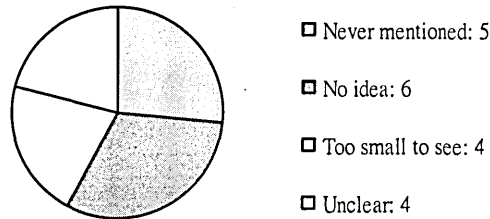
Q1: Have you ever noticed the packaging of the products shown on the screen?

Outcomes: About half of the participants never noticed the current online packaging. The problem of current online packaging might be either too insignificant to see or the manufacturer / retailer do not have the awareness to see that they need to put in the effort to modernise online packaging. However there would be a big opportunity for them to notice online packaging if there was an enhanced online packaging.



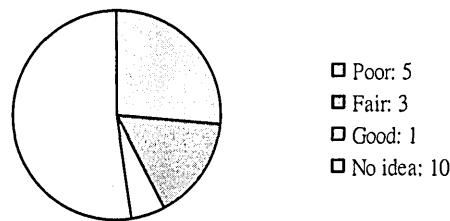
Q2: What does the packaging of the products look like to you on the screen?

Outcome: It seems that all participants might agree that online packaging is underused and that it needs to be improved in order for people to recognise, understand and be persuaded by online packaging.



Q3: What do you think of the communication design of the packaging on the internet?

Outcomes: There was only one person who believed that they could obtain enough visual information through online packaging. In contrast, most participants do not consider that current online packaging had adequately exploited its communicative function.



4.2.2.6 Findings

Due to such a small sample, this telephone survey lacked reliability (See section 3.3.2 for the discussion of this method). Nevertheless, it provided very useful opinions in considering how internet users treat online packaging. Here is a summary of the findings:

1. Consumers did not consider that online packaging could be a factor in influencing their purchasing decision in terms of physical packaging.
2. Consumers had a positive attitude towards good packaging presentation online.
3. Current online packaging lacks attraction for internet users.
4. The communication function of packaging was underused for eCommerce.

Apparently, designers, experts and consumers are not clear about what online packaging is up to now. Everybody has their own imagination or proposal of online packaging. In the next study the author will analyse the forms of current online packaging from online shops.

4.2.3 Online packaging analysis¹⁰

From previous two studies, interviewees, questionnaire respondents and the author were not very sure about what online packaging was. Thus this study will analyse current “online packaging” in order to identify the state of the art.

These observations mainly focused on the presentation of online packaging and not the technical and functional aspects of the websites. The author chose 10 supermarket chains that had internet shopping websites from Taiwan, the UK and the USA. The online supermarkets from the UK and the USA were the worlds eight leading chains based on their annual turnover (Craft, 2001). The review set out to discover how visual and emotional elements are used today.

4.2.3.1 Three formats of online packaging

Normally, there were three different formats, 1) Pure text, 2) Pictorial icons, and 3) Product’s real image, (Visser, 2002; Huang, 2003) of online packaging among these online shops. These formats were co-existent to each other within most of the online shops. No online shop had only one format of online packaging presentation.

¹⁰ A conference paper was presented in 2003 eCentury Design Creativity Conference, Taiwan, 2003, based on this study and section 2.2.1.

1) **Pure text**, such as Tesco.co.uk (Figure 4.2). This was the simplest format in which to present a particular product, with drawbacks including that it had no effective “visual stimulation”. There visual elements only provided a basic assistance, such as the use of colour, branding or shape, in assisting consumers to remember, recall and store knowledge for specific products. At the least, consumers could guarantee whether they purchased the correct item by looking at it on the website.

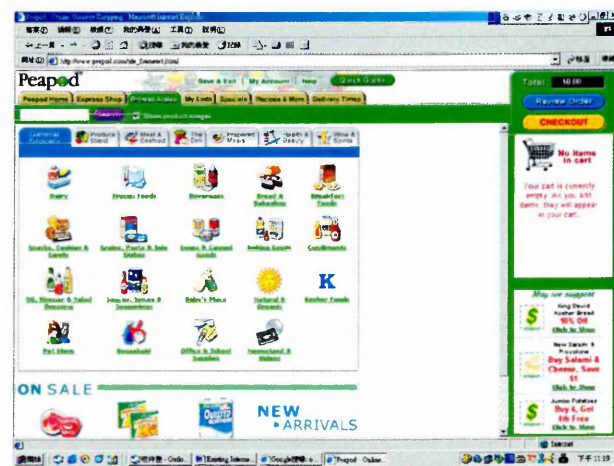


Fig. 4.2: An example of pure text for products' description. Fig. 4.3: An example of pictorial icons description

2) **Pictorial icons**, such as Peapod.com (Figure 4.3). Certain online shops utilised pictorial icons to display related categories for a specific product, e.g. milk bottles representing dairy products and the sun representing organic foods. Nyiri (2003) argues that pictorial icons could sometimes be a useful communicative vehicle even if they are not accompanied by texts, as long as those icons have their own background, conventions and cultural meanings. By using this form of online packaging could contribute to the addition of only using pure text, even though it did not have a powerful visual impact. Therefore consumers could not fully obtain an individual product's visual information with this method alone.

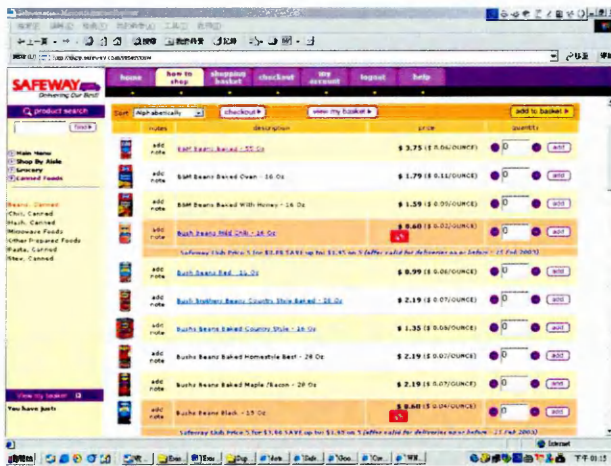


Fig.4.4: Products' real images in "aisle"

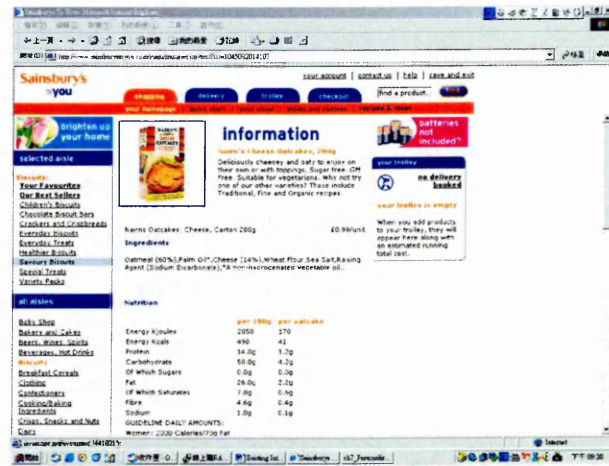


Fig. 4.5: Requested product's information

3) Product's real image, such as Safeway.com (Figure 4.4). Basically, this format allows consumers to simply browse products after they have logged on to the online shops. The Safeway example also demonstrates the "virtual aisle" principle as a metaphor for a real shopping aisle. Therefore, consumers could see a product's real image instantly as the products were stocked in "aisles". The image also provides a convenient "button" for access to deep information, arguably, this is more intuitive than a text link and helps consumers (Figure 4.5) to transfer their physical shopping experience into the virtual.

4.2.3.2 Findings

From this study it is clear that the main elements of online packaging today are texts, pictorial images and products' images, usually of the product. In this study, it was observed that products sold online had visually consistent elements of products, such as branding, colours, logos and representative characters were important for shoppers to help them to

recognise products online. They could also help customers to make purchasing decisions by ensuring that customers would obtain the correct items that they would like to purchase. Nevertheless these basic elements were not presented well online. If the manufacturers and retailers can make online packaging better, online shoppers would have more benefits from online packaging.

How do we know that online text and images observed in this study can effectively convey products' messages, such as features, branding, to online consumers? The next study, made a comparison between physical and online shops, by observing consumers shopping behaviour.

4.2.4 Shopping Observation

The author had conducted many informal shopping observations in supermarkets' wine aisles before and after this tentative study. The following figure 4.6 could be a piece of evidence that demonstrates that a product's packaging could influence shoppers' purchasing behaviours.



Figure 4.6: An un-labelled wine sold in a supermarket

A bottle of "Vodka" was sold in a supermarket without proper packaging and its price was reduced from £7.99 to £5.99. During 3 hours observation of the un-labelled Vodka, some consumers were attracted and physically manipulated the Vodka. However, nobody purchased the un-labelled Vodka during the observation. Although there was no solid evidence of reasons for this, it revealed that consumers were likely to have physical contact with the product and investigate the product's packaging for details before making their purchasing decisions.

Subsequently, in the “laboratory online shop”, it was recognised that “high involvement” consumers needed peripheral cues (eg. the products’ images) to re-assure that even they had paid most attention to the central cues (eg. grape mix). This real world observation is an example of consumers being willing to trust the central information on the supermarket’s small price label without the re-assurance of the packaging label.

To understand different “packaging formats” in online and physical shopping environments, we need to understand how consumers behave in both real shops and online shops. As described in section 2.3.3, online shoppers are increasing, so we can picture that internet users are becoming more familiar with shopping online. However, this is demographic information and lacks an insight into the actual behaviour. This part of the investigation set out to observe the “dialogue” between shoppers and online packaging.

4.2.4.1 Research Design

Four participants were recruited for this study. Two of the participants have never shopped online, while the other two bought something online occasionally. None of them had shopped at Tesco online before. They were chosen by convenience sampling.

The author followed them when they were shopping. There was no time limitation for shopping. The author could talk, question and discuss with the participants during the process as participant-observer, when the author

could not understand their behaviours or when the participant wanted to explain their behaviours.

4.2.4.2 Procedure

They were asked to write a shopping list, typical of their usual shopping, before they went to a Tesco supermarket and a Tesco online shop. Starting with the physical shop, in the supermarket, each participant was unrestricted when they were shopping. They then immediately went back to the subject's home to shop on Tesco's online shop. During the observations the author took notes on paper.

4.2.4.3 Participants in the physical shopping trip

Participant \ Group	Proposed items	Unplanned items
A	10	7
B	12	8
C	6	1
D	8	3

Figure 4.7: Results of the participants' purchases

In the supermarket participants bought items, which were divided into two groups. One is a proposed items group which meant that the participant proposed to buy those items beforehand. The other was the unplanned items group which meant participants made a decision when they saw the items in the supermarket.

When participants selected an item which was not in their shopping lists, the author would ask them why they bought this item. There were patterns that could be observed within the unplanned item group. If participants did not have a budget limitation but retain a strong brand loyalty, they were sometimes attracted by the packaging of a product which was stimulated by an unplanned purchasing motive. Or if they wanted to buy a certain item without a proposed brand, the packaging could be an important role to induce their purchasing motives. The participants mentioned that colour, brand, picture of contents could arouse their curiosity or desire to pick up the item for a closer look.

4.2.4.4 Participants in the online shopping trip

Participant \ Form	Pure text	Small pictures in aisles	No picture in aisles but request by click on
A		preferred	
B		preferred	
C		preferred	
D		preferred	

Figure 4.8: Participants' preference of online packaging in Tesco online shop

Participants A and B have bought online before but they still needed some time to get used to the website. Inexperienced C and D took longer than A and B. But they all could find their proposed items in the end. There are three forms of packaging on the websites.

According to participants' responses, although they needed text description, they also wished for pictures, which acted as a strong reference. With the pictures in the aisles, the participant could find the item

quicker than by a pure text description alone. Participant A said: *“although it is too small a picture to see, I still can make sure that is what I want, by the colour and graphics of the packaging. I do not need to read the text description A to Z.”*

However participants mentioned that it was difficult to buy some unplanned item online, because they cannot see the item clearly. In this study, participants never put any unplanned item in their shopping cart online; they just bought the proposed items.

4.2.4.5 Discussion

It has been suggested by one of the interviewees (Mr. Lin) in section 4.2.1.2 that existing online packaging is sufficient for eCommerce and that there is no need to make it more complex than it already is. However, this investigation indicates that existing online packaging does not stimulate impulse shopping or the emotional responses common with physical packaging. So it is necessary to take a fresh look at online packaging. This relatively small-scale investigation indicates some concerns for future research.

1. All participants' reacted negatively to text only “packaging” at their first sight when they browsed online shopping aisles.
2. Products could be easier recognised and found with an image. So we can propose that proper presented online packaging can help consumers to maximise their recognition for products.

3. There was no online impulse purchasing during this experiment.

4.2.4.6 Findings

As a result of this observation and other tentative studies, it could be found that existing interfaces are not as effective as physical shops for other than the most functional shopping – they hardly add value for the manufacturers and retailer in the ways that physical shop features and packaging do. It may be that reproducing some of the features of physical shops or packaging in the online environment would be helpful. It is also very likely that ELM would provide useful guidance in providing a more effective form of presentation. These are the two possibilities that will be explored for online shop investigations in the later sections.

Is it true that we have to reproduce the physical store shopping experience for internet shopping? It might not be totally necessary to reproduce the physical store shopping experience. However in the observations, none of the participants put any unplanned online item into their shopping carts. In other words, no impulse shopping occurred. This phenomenon is quite different from the physical shopping in this experiment, as we know that 53% of consumers are shopping impulsively in physical supermarkets (Kotler et al, 1996) and 54% of consumers employ product display and packaging as virtual shopping lists (Blackwell et al, 2001). Packaging plays a very important role for helping consumers' shopping trips, thus the author considers that poor online product presentation caused no impulse shopping in this experiment.

The ELM tells us that if shoppers' motivations and abilities are low, they are either not willing or unable to process the messages of products. The peripheral cues, such as colour, image, animation, humour and sound, can affect shoppers' behaviour. Those attractive sources of peripheral cues are lacking for existing online packaging. On the other hand, if shoppers' motivation and ability are high, they will be able to process the messages of products. The central cues can be effectively to persuade consumers, such as product's features, technical knowledge.

The ELM explains consumers' psychology and this resource could play an important role for internet shopping as an effective marketing tool by designing online packaging in order to build shoppers' positive attitudes towards products. Thus, in the next study, this research will try to employ the ELM's principles to enhance online packaging to ascertain the effectiveness of online packaging.

4.2.5 Simulated online shopping¹¹

To test the idea that enhanced online packaging would have a positive effect on customers' purchasing decisions; this tentative study was designed using a virtual shopping "aisle" selling a single type of product. A number of products were considered, including cosmetics, gifts and wine, which were thought to be products where customers would take some care in making their choice. Wine was selected for the trial because it is relatively uniform in its physical packaging, despite the wide range of styles and brands available.

Some wine consumers have a technical knowledge of the subject and will tend to be strongly influenced by origin, grape variety and other factors. It was anticipated that these people might be less influenced by the packaging and might therefore form a control group for the experiment.

4.2.5.1 Overview of this study

This tentative study recruited twenty people by convenience and snowball sampling to participate in this experiment. They each carried out an online shopping task and were then individually interviewed for approximately 30 minutes after the experiment had concluded.

¹¹ A conference paper was presented in 6th Asian Design Conference, Japan, 2003, based on this study. According to this paper, the author was selected in "Who's Who in Asian Design", Japan, 2003.

A webpage was developed to simulate a simple online wine aisle (Figure 4.9), which was similar to existing online wine shops. It contained four kinds of wine with brief text descriptions.

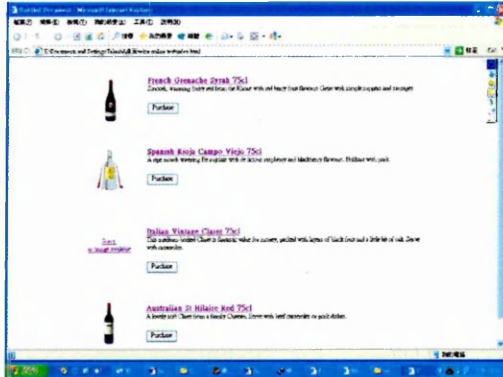


Figure 4.9: A simulated online shopping aisle

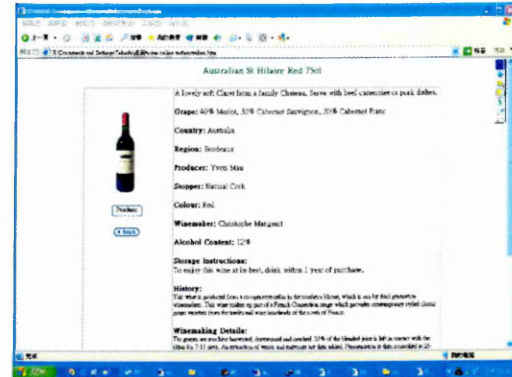


Figure 4.10: Requested information of Australian

The main information was online packaging and national origin, with the four wines being from France, Spain, Italy and Australia, with a brief indication of grape variety or region.

The French and Australian wines each had a small static picture on the aisle as well as a bigger picture (Figure 4.10) where more information could be requested by clicking on its image. The sizes of the static pictures were approximately 25X85 pixels for the smaller pictures and 50X170 pixels for the bigger pictures.

The Spanish wine had a specially designed online packaging presentation in comparison to the other wines'. Firstly, although the size of the image of the Spanish wine was the same as the other wines, the Spanish wine had colour changing animation for the wine bottle (Figure 4.11). Secondly, there

was a big rollover picture for the wine's label. When the cursor moved over the wine's animation, the big wine label would automatically pop-up. Thirdly, a big static picture (170X280 pixels) could be requested by clicking on the links (Figure 4.12). Fourthly, there were four animated pictures underneath the big static picture. These animated pictures were represented as a metaphor for harvest grapes, wine storage, food and cheers (Figure 4.13). The purpose of these pictures was to raise viewers' curiosities and desires about this particular wine.



Figure 4.11: Colour changing animation of Spanish wine bottle

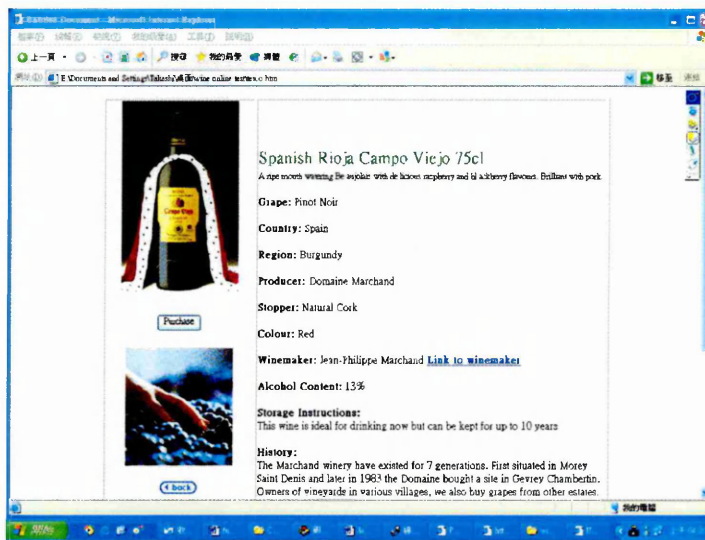


Figure 4.12: Requested information of Spanish wine

The Italian wine was without any visual packaging online presentation at all and had only text descriptions. Participators were told that this experiment was to understand how people purchased wine online. They were also told to focus mainly on the online packaging presentation and country of origin whilst the experiment was taking place. Therefore,

participants should not consider other factors, such as price, sales, brand of online shop, online transaction security, privacy protection, down loading time or website design.



Figure 4.13: Metaphor of animated pictures

4.2.5.2 Participants' Involvement with wine

The division of the involvement was based on the ELM (See section 2.4.2.3). High involvement people are interested, or motivated, and capable of processing the information of the wines. Conversely low involvement people have either little motivation or ability to think of processing the information of the wines.

Ten participants in the high involvement category were the control group. They were confident that they had enough knowledge of wines and had been drinking and buying wines at least once every two weeks for several years. The author anticipated that this group would be influenced by the information of the wines origin. Ten participants in the low involvement category were the test group. They did not know much about wines and had drunk and bought wine infrequently.

4.2.5.3 Procedure

The author visited the participants homes at prearranged times with a laptop. Before participants logged on the simulative aisle they were asked to behave like it was a normal online shopping trip and to be themselves if they had not had any previous online shopping experience. Participants were asked to buy one bottle of wine for the low involvement category, with the participants in the high involvement category invited to make a second choice. They normally took under 5 minutes to finish the “shopping trip”. After this the authors asked them questions for interviews (See appendix D for questions and notes taken).

4.2.5.4 Independent variables

In this experiment, the independent variables were country of origin and online packaging presentation. Although pricing was a very important factor in influencing consumers' judgements, it is also another marketing issue and has been for this reason excluded from this study. Therefore, the authors wanted to know how consumers were influenced by these two factors only.

4.2.5.5 Outcomes

	France	Spain	Italy	Australia
High involvement	3	3	0	4
Low involvement	3	6	0	1

Figure 4.14: Participants' purchasing decisions

1) High involvement

The participants in the high involvement category had a high personal interest and product involvement with the wine. From the point view of the ELM, the “central route” was used to process information due to high product relevance, high personal motivation and high cognitive communication. Therefore, they might have already known what wine they were going to purchase when they wanted to consume some wines.

Three participants in this category chose the Spanish wine as their first choice but two of them had drunk it before and knew it was a nice wine. Actually, only one of participant’s purchasing decisions was influenced by the online packaging presentation. Nevertheless those two participants who had already had a favourable encounter with the Spanish wine said, that the attractive online packaging presentation had suddenly recalled their good time, concluding that they would like to buy it again. However, in this experiment, the authors found that 9 out of 10 participants said that the visual information did have a positive influence over choice. This was because it had visually confirmed that this was the correct wine that they would have purchased.

2) Low involvement

In the “peripheral route”, consumers have low personal interests and low product involvement. Therefore, their attitudes were difficult and refused to be changed by the product’s descriptions and statements but were more

influenced by peripheral cues e.g. visual-stimulating, gaze-catching and curiosity - provoking. This is because consumers do not want to engage with the information with which they do not have the abilities and interests to process. In other words, the "peripheral route" is an alternative way to allow low involvement consumers to be persuaded by the packaging.

Participants in the low involvement category, usually buy wine for special occasions only. They do not normally have an idea when they want to buy wines, so many factors can influence their purchasing decisions e.g. word of mouth, packaging and other people's recommendations. However, there were 6 out of 10 participants who said that they would like to buy the Spanish wine, because there were many animated pictures which made the wine more desirable than the other wines. There were three participants in the low involvement category who said that they would like to buy the French wine because they already believed that the French wine had a good reputation and were thus uninfluenced by either packaging or flavour.

The Italian wine was the only wine that no participant chose. As it had no online packaging presentation this result was significant. The interviews concluded the following:

a) Although people are getting used to buying online, they need a familiarity to help them match up their in-store shopping experience. They generally dislike the product with no online presentation which could not help them to transfer their tangible shopping experiences into an intangible world.

b) People were more likely to touch on the products before they were purchased. Visual images provided a certain level of compensability at least for real products. Therefore, people were more likely to pay money for products with the support of online packaging presentation.

4.2.5.6 Discussion and implication

Jeandrain (2001) divided internet shoppers into two groups from the results of her research. One was the utilitarian group who thought of shopping as a task and wanted to finish shopping as soon as possible. The other group was experiential consumers who enjoyed shopping and wanted to explore products. However, no matter what kind of Internet shopper accesses online shopping websites they all have an equal opportunity to view the products on screen. In this case two situations occurred.

a) Shoppers found the product they already wanted to buy. But will they click on another product with attractive packaging?

b) Shoppers do not have a planned product beforehand. What sort of product presentation will encourage them to click on and request more information?

According to the ELM, shoppers will be persuaded if they are able to process information extensively. Hence the most important factor to click on a product is the level of involvement with information. It seemed any level of involvement could potentially persuade.

1) Implication for high involvement consumers

	France	Spain	Italy	Australia
High involvement 1 st choice	3	3	0	4
High involvement 2 nd choice	3	5	0	2

Figure 4.15: The second choice of the high involvement participants

This was a simple test, so we did not explore ways in which to engage the high involvement consumers, other than treating them as a control group. However, if participants in the high involvement category were allowed to have a second choice, five out of the ten participants would like to try the Spanish wine because they were attracted by the enhanced packaging presentation. From the interviews it was apparent that:

- 1) They enjoyed the enhanced presentation.
- 2) The presentation had indicated the quality of wine.
- 3) The presentation caught their eye.

The aim of persuasive communication is to make the consumer purchase. There are several steps considered to approach the aim in the ELM, such as awareness, attitude, preference and action. Therefore, we could assume that they might not have any reaction when they saw the wine for the first time but that the memory of a product may change their thoughts gradually and convince them to purchase the product in the future.

Hence, the enhanced online packaging presentation also has its value for this type of consumer and future research in this project will explore their behaviour in more complex situations and over a longer period of time.

2) Implication for impulse shopping

Impulse shopping occurs quite often in the real in-store shopping experience. By contrast it was very hard to engage impulse shopping in terms of existing online packaging presentation, according to our prior research. In this experiment the author found that the enhanced packaging online presentation can increase the possibility of impulse shopping.

There were only two participants in these interviews who said that they would never be stimulated by packaging presentation, when impulse shopping, because they believed that packaging was always a business trick. The rest of the participants held a positive attitude towards enhanced online packaging presentation.

From these twenty interviews it was found that sometimes it was not easy for people to make purchasing decisions in their daily life. Peoples' considerations were more complex than yes or no. For instance, most participants thought that enhanced online packaging presentation had a chance to trigger their impulse shopping but not always. They still had something to consider e.g. price, spouse's opinion, service quality. To sum up, enhanced online packaging presentation was better than small, blurry or no picture presentation at all. Eighteen out of the twenty participants said that they would be more likely to shop impulsively if there was an enhanced online packaging presentation.

4.2.5.7 Findings

In this tentative study, a situation was created to test the different kinds of presentation and information that would strongly influence different involvement consumers. This study indicated that the predictions of the ELM were likely to be confirmed, that is that the high involvement consumers will have a number of “technical” factors that will influence their purchasing e.g. country of origin, type of grape and year. But the low involvement consumers might be more susceptible to online packaging presentation.

However, it is acknowledged that there were two major defects in this study:

1) Limited wine choice: There were only four choices of wine in this tentative study. It might be rare that there are only four wines in a real online shopping aisle. The participants' behaviour might be restricted by only having a few choices. However, the author observed that the participants would not normally browse every wine, even when they only had limited choices.

2) Obvious enhancement: Only the Spanish wine had animation, the rest of the wines had either a still picture or no picture at all. The participant could easily have their eyes attracted by the enhancement, as it did have some influence on certain participants' purchasing decisions.

However, there were some useful outcomes that the author also gained from this study.

1) Participant recruitment: Many participants in this study offered contacts, such as their friends or relatives who were willing to be involved in this study or further studies. These contacts extended the database of sample which increased the reliability and validity of both the results and the sampling.

2) Involvement identification: It could be identified that based on both the participants' description and behaviour, a single resource (their description or behaviour) sometimes was insufficient for placing the participants in the right categories.

3) Interview structure: A single interview, either before or after this tentative experiment, was insufficient for the author to comprehend the participants' background knowledge and behaviour. Therefore, in the further study, pre- and post-interviews they would be conducted to understand the participants' antecedents for their wine experience and shopping behaviour.

4) Shopping task development: it was found that product presentation and information both had a great influence on the participants' behaviour. However, one single shopping task could not further explore the influence of product presentation and information. Thus, more tasks would be developed for further study.

5) Shopping behaviour: some shopping behaviour was observed in this study, such as play behaviour and impulse shopping, that raised questions for later study.

Also, three primary empirical outcomes were found in this tentative study. Firstly, it was not easy to persuade the high involvement consumers to change their original ideas. However they might be persuaded by frequent exposures to online packaging presentation. Secondly, the enhanced online packaging presentation can positively stimulate impulse shopping online. Thirdly, high involvement participants were likely to scrutinise product information, and conversely, low involvement participants were unlikely to carefully read the information.

These findings are mainly consistent with the ELM's prediction and this study also indicates that the ELM's two message route is a useful tool for designers to help them to develop their designs for consumers with different product involvement. Additionally, these findings will be evaluated and the ELM's principles will be also employed in the next study the "laboratory online shop", in order to develop the design guidelines of online packaging.

4.3 Phase of laboratory online shop

This was the major experiment of this research. In the literature review chapter and the tentative studies phase, certain issues could be identified, e.g. internet users are growing rapidly and the growth in eCommerce is mainly due to the growth in the volume of purchase by new users, the role of packaging as a salesman at a sales point and online shoppers need a “mechanism” to help them in the online shopping environment.

The purposes of this study was to explore 1) possible designed features that would affect the performance of online packaging; 2) functions of the packaging that can satisfy consumers shopping online, and 3) possible strategies for the design of online packaging.

Importantly, this experiment was not only to test the idea of online packaging but also to evaluate the findings from previous tentative studies. The aim of this “laboratory” experiment was to gain an insight into online shoppers’ requirements and expectations of online packaging and what it could provide to them in the online shopping environment.

Wine was selected as the product to be sold in the “laboratory online shop” because wine had some characteristics which suited the experiment, such as 1) Technical information, 2) No dominant brands, and 3) Limited variety of physical packaging. Therefore variables could be controlled.

4.3.1 Overview of experiment

Fifteen people were recruited by snowball sampling to participate in this experiment. They were interviewed before carrying out four online shopping tasks and were then individually interviewed after the experiment had concluded. Figure 4.16 shows the progress of this experiment.

Step	Activity	Aim
1	Pre-observation interviews	To understand participants' background knowledge of wines, wine shopping experience and behaviour.
2	The "Laboratory" experiment	To observe: 1. How participants interact with product presentation and product information. 2. How participants explore the depth of information. 3. Where participants pay their attention. 4. The relative effectiveness of different presentation strategies.
3	Post-observation interviews	To understand whether participants' future online behaviour (online packaging expectation) have been affected by the experiment or not and their comments about online packaging.
4	Data analysis	To propose online packaging design guidelines

Figure 4.16: The progress of the "laboratory" experiment

4.3.2 Research questions

In section 2.6 the preliminary conclusion, provides three research questions:

1) What online packaging features are needed to be effective in the future?

This question sets out to discover methods and to best use the advantages of hypertext and interactivity for online packaging.

2) How can online packaging influence shoppers' behaviour?

This research question is concerned with transferring physical packaging functions into the online environment.

3) How can this research help designers to develop online packaging?

This research question is setting out to discover design guidelines for the process of online packaging development.

4.3.3 Structure of the laboratory

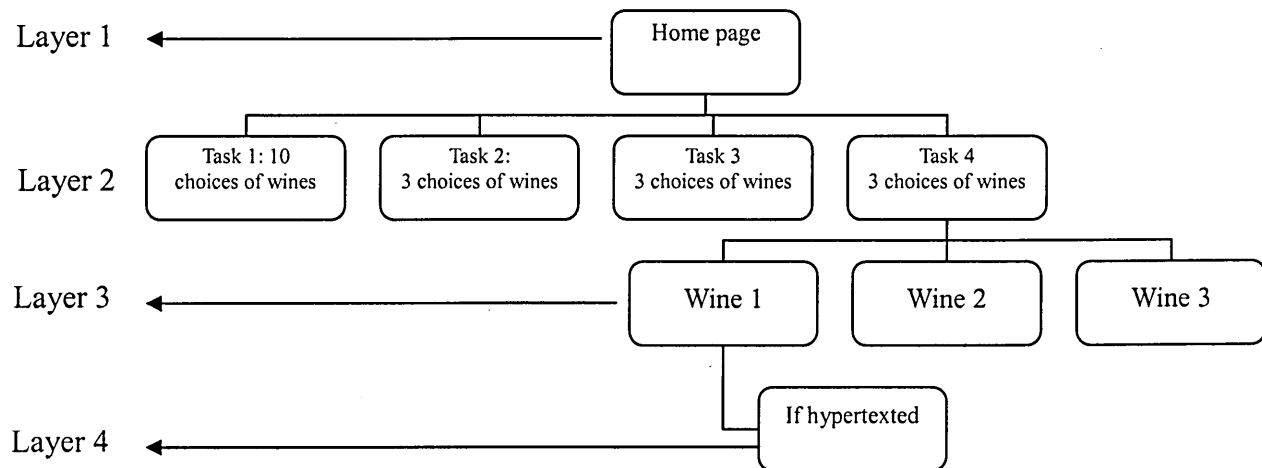


Figure 4.17: The structure of the “laboratory online shop”

The author developed an online simulation shop as a “laboratory” to perform the experiment. The laboratory contained four layers of webpages. The first layer was the homepage, which was similar to a normal shopping website because this research focused on online packaging and not the homepage. The second layer contained several bottles of wine with the same country of origins, the same region and the same price. The reason to use the same country of origins for the wine and have the same price was to avoid the variables which would be likely to blur the main focuses and were not discussed in this research. The third layers contained much information which was linked to the second layer of each wine. Each hypertext in the second layer had a corresponding webpage in the third layers. In other words, each product in the second layer has several links to further layers.

For example figure 4.17, three wines in task 4 had their own corresponding page at layer 3. The wine 1 in layer 3 had hypertexts which could link to the other pages and vice versa.

4.3.4 The design purpose of each task

	Purpose of each task	Product information	Product presentation
Task 1	To observe whether enhanced product presentation can attract participants at first sight.	Consistent for each wine.	No image, small and big pictures, animation, 3D, rollover images
Task 2	To observe how participants interact with enhanced product presentation.	Consistent for each wine.	No image, small and big pictures, interactive images
Task 3	To observe how product information affects their decisions	Limited, moderate, abundant	Consistent for each wine.
Task 4	To observe how they interact with enhanced product information	In site, with hypertexts, expert recommendation	Consistent for each wine.

Figure 4.18: Main purpose of each task for the “laboratory”

Each task dealt with a specific issue (Figure 4.18), although it was very difficult to say that each task only had one purpose. The design guideline of this “laboratory” was the ELM discussed in section 2.4 and 3.5.1. The ELM predicts that high involvement people would not be easily influenced by peripheral cues and low involvement people might buy a product but not because of the strong issue-related arguments. Visual elements and text description were used to create appropriate central and peripheral cues. The term of “enhanced product presentation” refers to the use of presentation features, such as those identified in section 2.5.

Tasks 1 and 2 were paired to test the participants’ reaction to product presentation, so their product information was equal to each other. The

shopping “aisle” of tasks was designed to be different from a “traditional” one. In a traditional aisle, images of the products are not likely to attract consumers due to small and blurred images (See section 2.5, online consumer behaviour and section 4.2.4, shopping observation). If consumers did not carefully read the text description of the products, then they found it difficult to make their purchases, with a strong possibility that they may make an incorrect purchase. In other words, consumers could buy products instinctively online, as they would normally do in a physical shop.

Task 3 and 4 were mainly designed to discover how participants’ purchasing decision could be affected by different levels of product information and how they placed their interests in different kinds of information. As mentioned (See section 2.2.2 functions of packaging), in the physical world, designers could only choose limited information to hit specific categories of consumers, however in a virtual shop, designers could use all the relevant information about the product, to allow consumers with different levels of knowledge about the product, to choose the wine by themselves.

The product presentation was in the same style for each wine in task 3 and 4, but the level of product information was different in each task (See section 4.3.5, features of online packaging in each task). The author wanted to observe how product information affected participants’ purchasing decisions in task 3 and to observe how they interacted with enhanced product information.

4.3.5 Features of online packaging in every task

In task one, ten wines were placed in the shopping aisle. These wines occupied the length of two webpages and were long enough to simulate a real online shopping aisle, according to real world observations of wine shopping websites.

In task two, three and four, the amount of wines was reduced to three items. The reason for doing so was: 1) Task two, three and four have different aims to task one, and 2) According to the tentative studies, it was observed that participants did not normally click on all the wines for details, even though there was only a few wines in the shopping aisle. The following sections will introduce the features of online packaging for each wine in every task.

4.3.5.1 Online packaging features of task one

In this task, participants were asked to make two rounds of shopping trips and in each trip they were asked to make three choices. During the first round of the shopping trip, the participants were asked to click on the first three wines which attracted them most, thus indicating the most immediate recognition and effects of “active exposure” (Barlas and Hoekstra, 2002) to online shoppers. In the second round of the shopping trip, participants were asked to act as if it was a normal online shopping trip where they could make three purchasing choices.

a) Product presentation of task 1

In layer 2, there were ten Spanish Rioja wines in the shopping aisle for task 1 (Figure 4.19, wine 1 to 10, from top to bottom). Apart from wine 3, every wine had a small picture of approximately 85 x 85 pixels. Wine 1, 4, 5 and 7-9 had the same style of pictures. Wine 2 only showed a part of a tilted bottle with a label on it. Wine 5 had a whole tilted bottle with background colour in its own column. Wine 10 had an animation which changed the wine from a bottle shape into its own label (Figure 4.20).

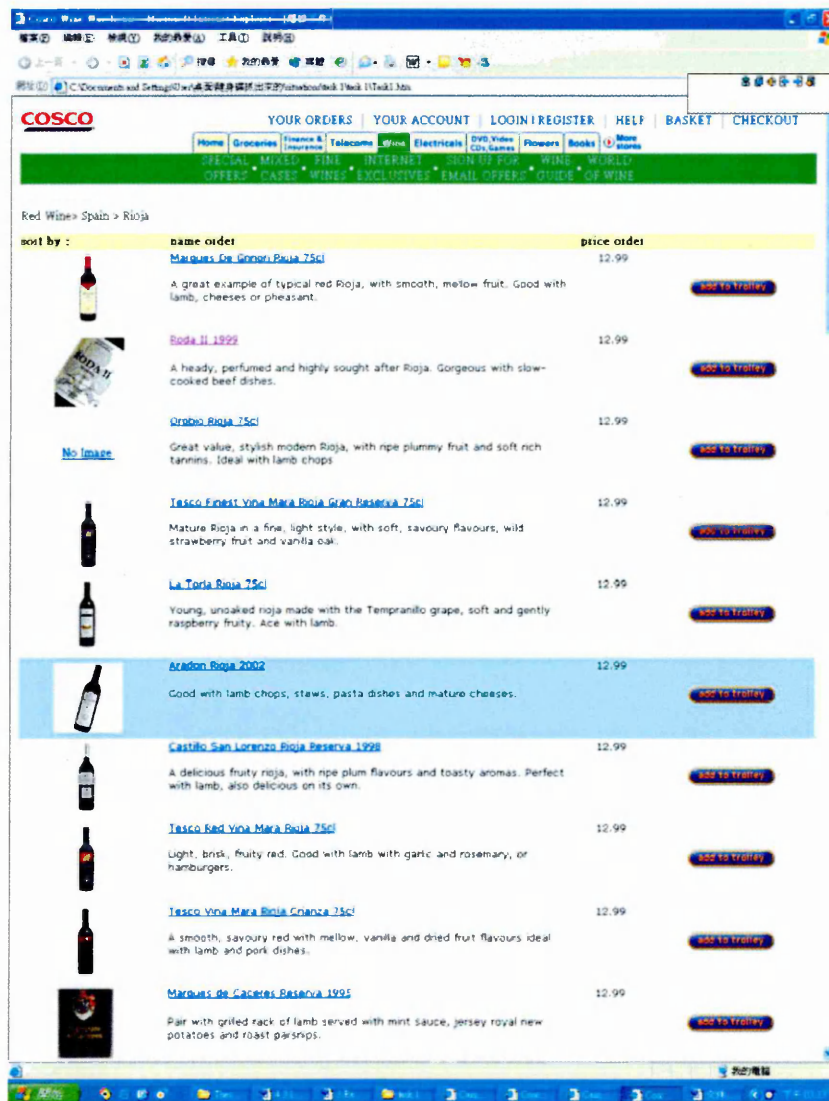


Figure 4.19: Wine 1- 10 in task one.



Figure 4.20: animation for wine 10

In layer 3 of task 1, there were 10 pages corresponding to layer 2. Again, apart from wine 3, every wine had at least one larger picture (40 x 165 pixels) than in layer 2. Wine 1, 4, 5 and 7-9 had the same style of still pictures (Figure 4.21). The bottle of wine 2 could be rotated 360° (Figure 4.22).

Wine 10 in layer 3 had two features of presentation (Figure 4.25). One was a rollover image of the bottle which could be replaced by a clear picture of the label if the participants moved their cursor over it. Another one was an animation mood board. These animated pictures would seek to raise the participants' curiosities, desires and offer a sort of immersive environment for this particular wine.

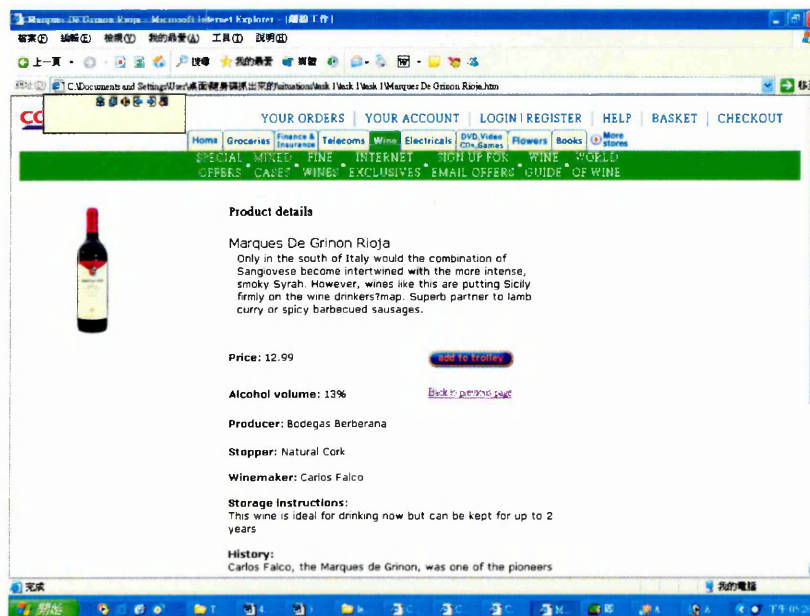


Fig. 4.21: Style of pictures for wine 1,4,5,7,8,9

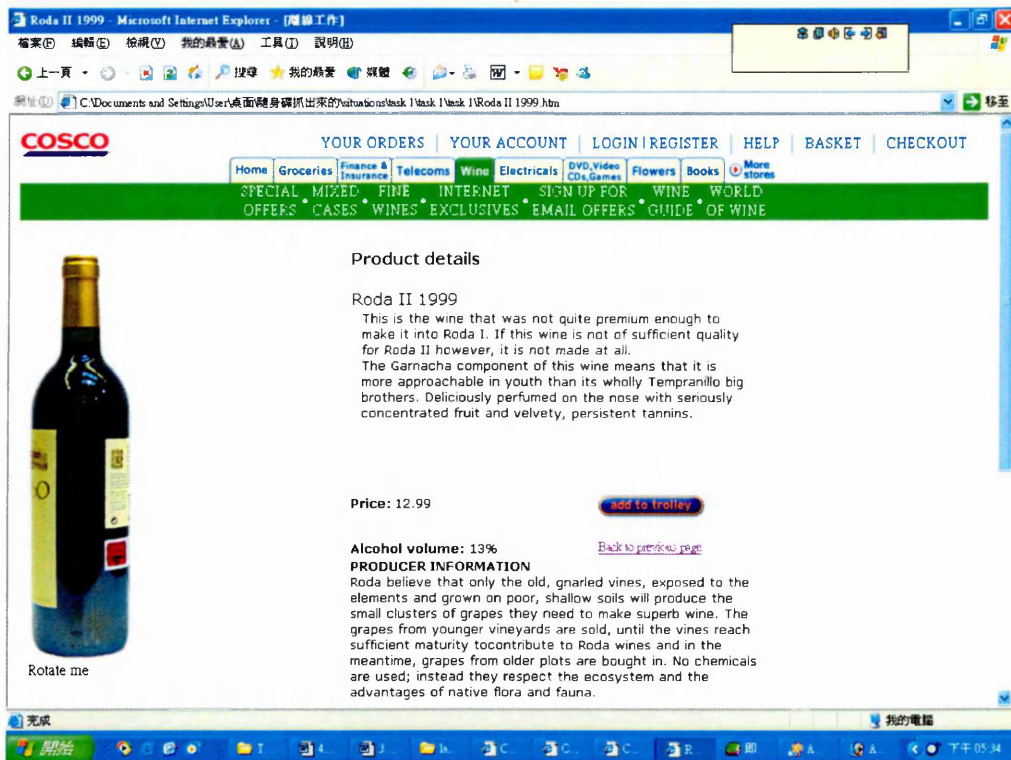


Fig. 4.22: Wine 2, 360° rotatable bottle

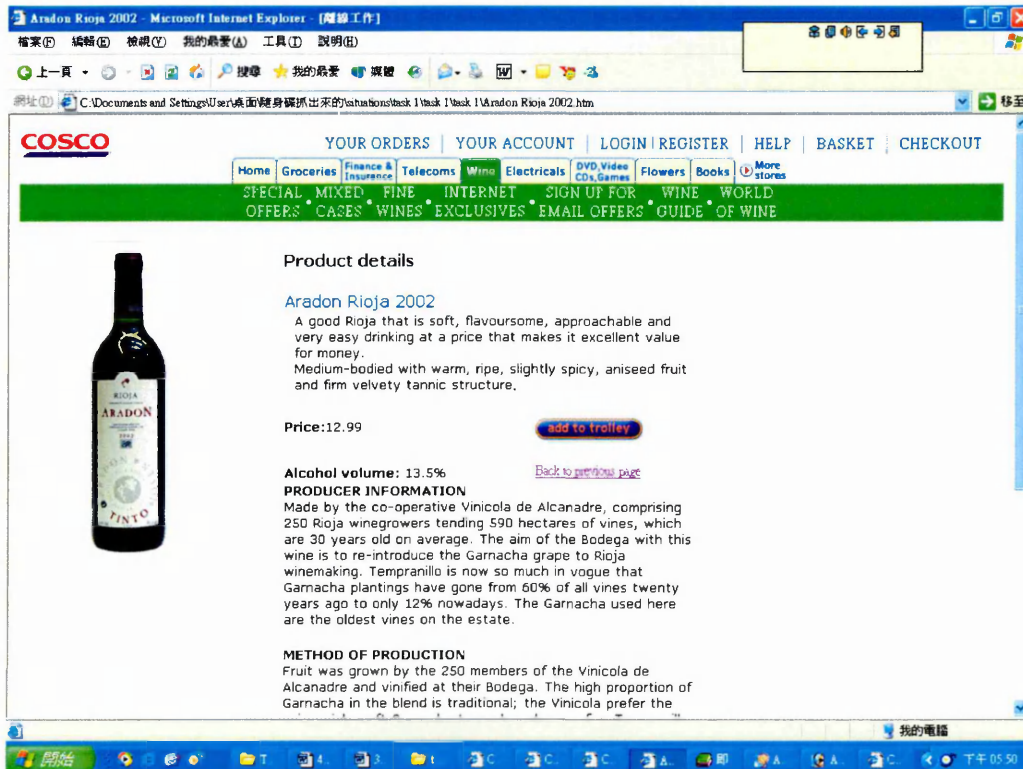


Fig. 4.23: A front rollover image for wine 5

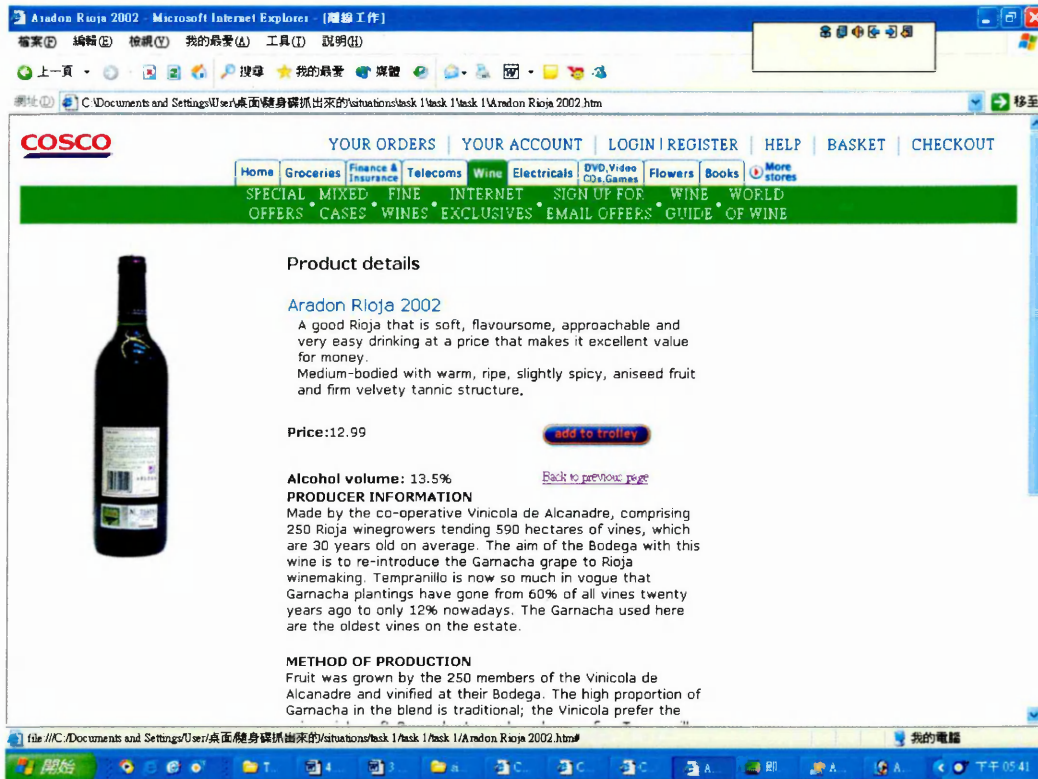


Fig. 4.24: A back rollover image for wine 5

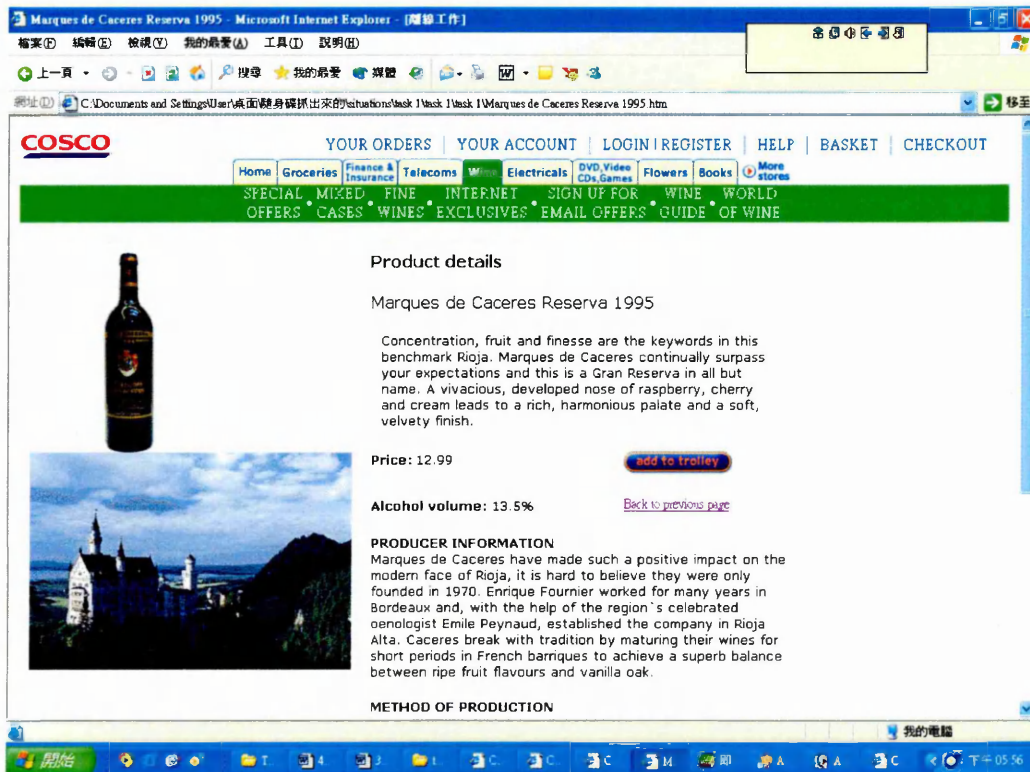


Fig. 4.25-1: A rollover image and animation mood board for wine 10.

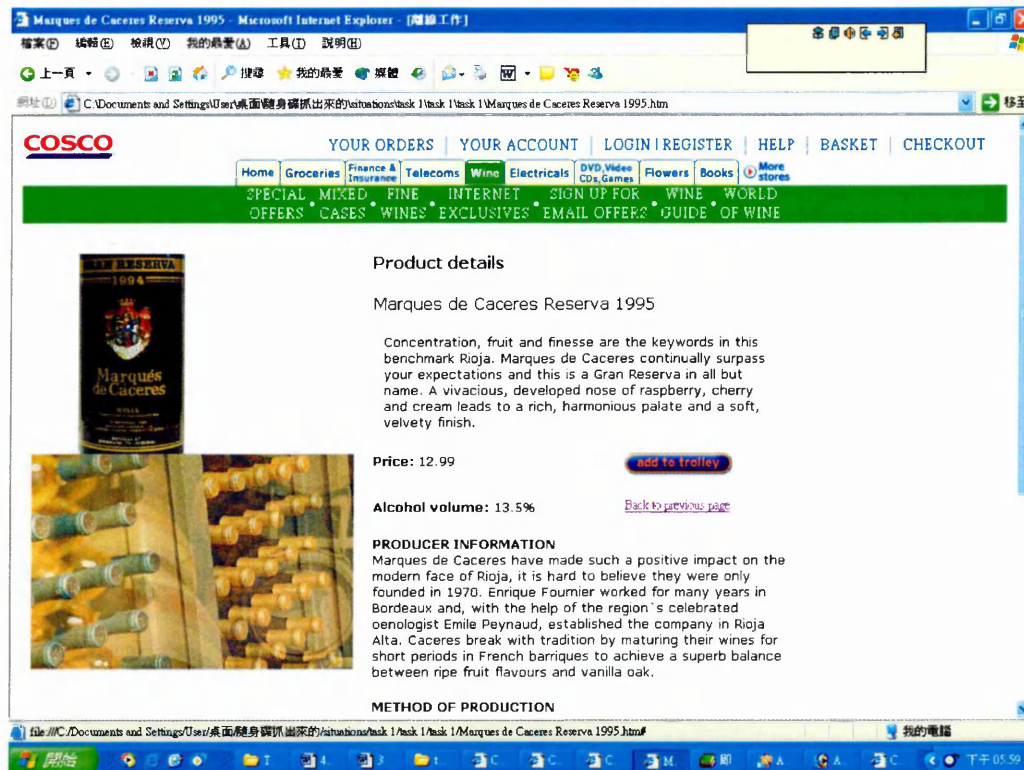


Fig. 4.25-2: A rollover image and animation mood board for wine 10.

b) Product information of task 1

This task was designed to mainly observe the participants' behaviour and reflections for different styles of presentation. Therefore, all the information descriptions of these wines had equal weight. In layer 2, each wine had a simple product description, such as flavour and accompaniments of food. In layer 3, each wine had sufficient product description, in terms of current online wine shops' product descriptions, which included product details, price, alcohol volume, producer's information, method of production, cellar potential and grape mix.

4.3.5.2 Online packaging features of task 2

In this task, participants were asked to carry one shopping trip and place a purchase among three wines with different presentations. This would allow the researcher to observe how they interacted with different online product presentations.

a) Product presentation of task 2

There were 3 Spanish Rioja wines presented in the layer 2 of task 2 (Figure 4.26). The first one (from left) showed the part of the label (80X200 pixels) instead of the image of whole bottle, but there was a rollover image of the wine bottle (60X200 pixels) (Figure 4.27) if the cursor was moved on the label. The second one had an image of wine bottle (60X200 pixels). The third one had no image.

In layer 3, the first one was presented by front and back images of the wine (100X400 pixels) (Figure 4.28). Additionally, it had 3 interactive images (Figure 4.29-31). If the cursor was moved onto the images of the whole bottle, there was a pop-up image alongside this wine. In other words, if participants wanted to see any label for this wine, they could simply move the cursor onto the label and they would be shown a larger image corresponding to the movement.

The second wine only had a larger still image (110X400 pixels) in layer 3 (Figure 4.32). The third wine had no image at all (Figure 4.33).

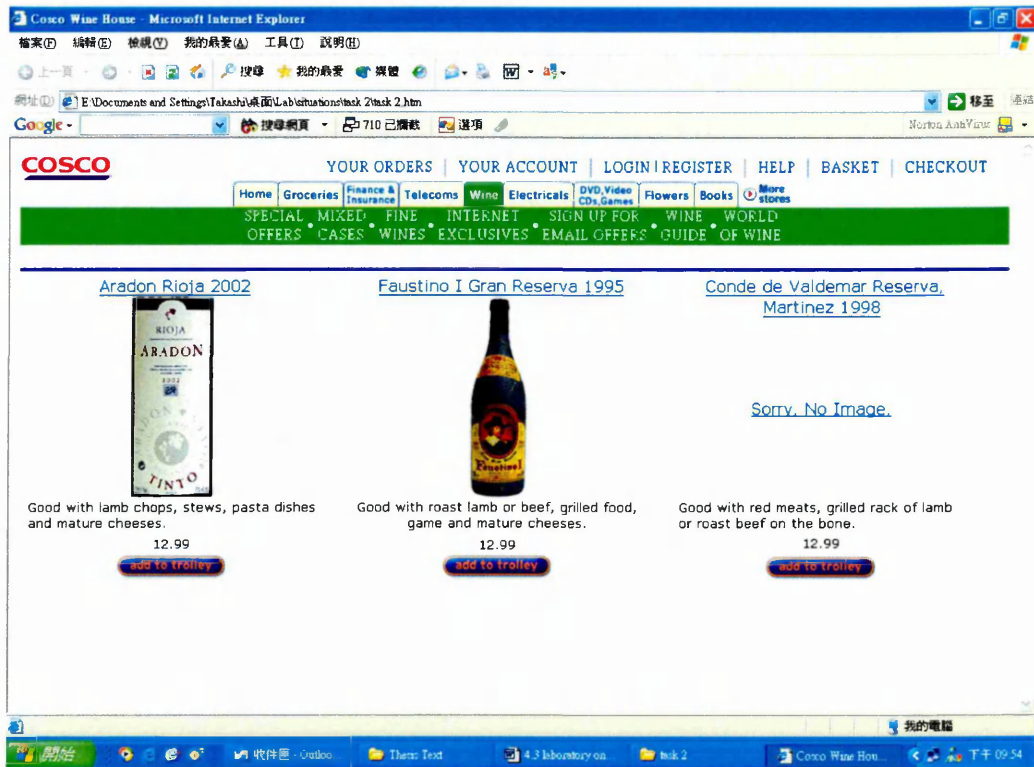


Fig. 4.26: Wines in the layer 2 of task 2

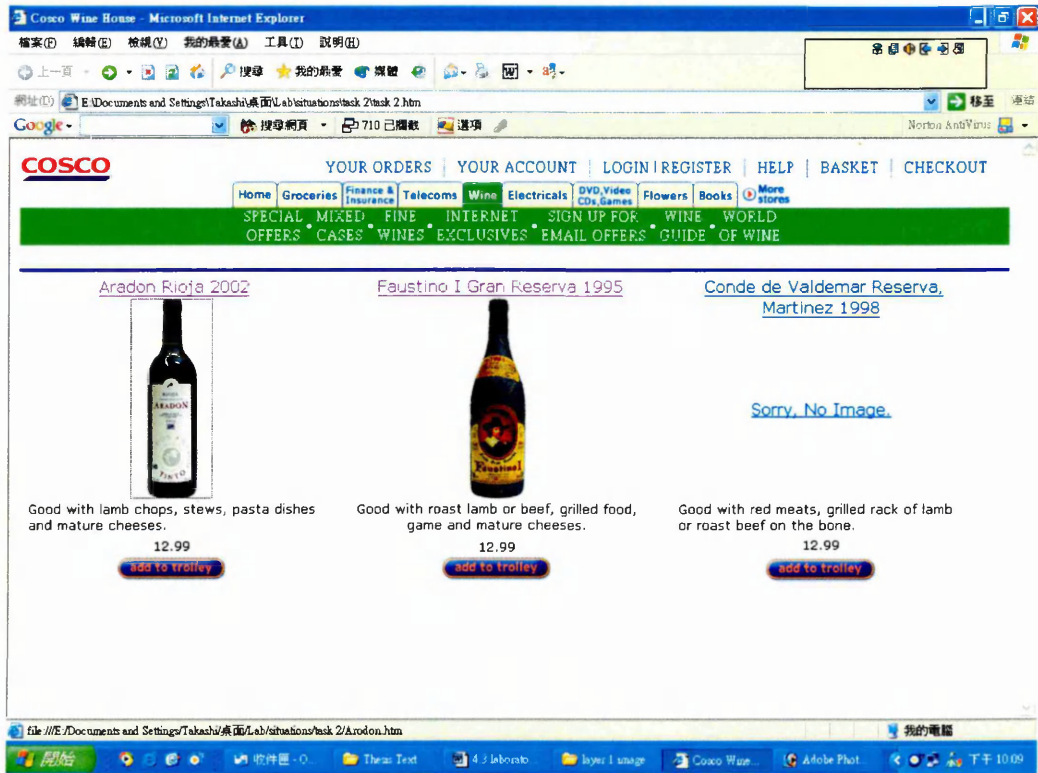


Fig. 4.27: A rollover image for wine 1

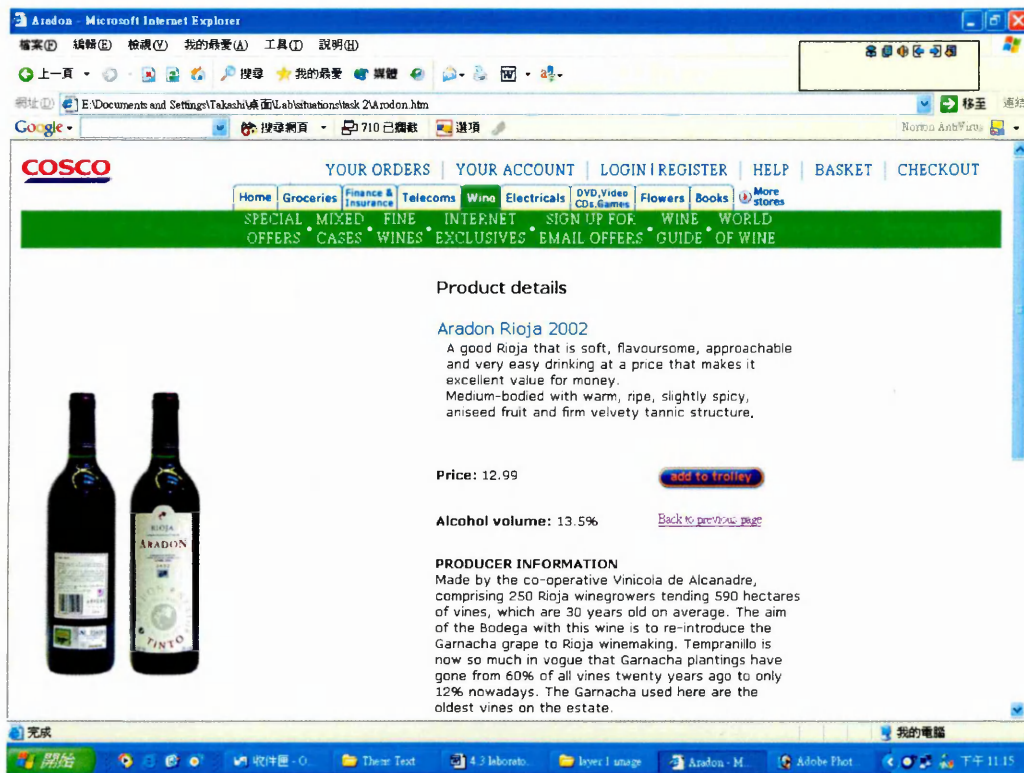


Fig. 4.28: Front and Back images for wine 1



Fig. 4.29: A pop-up image for a larger label



Fig. 4.30: A pop-up image for a larger label



Fig. 4.31: A pop-up image for a larger label

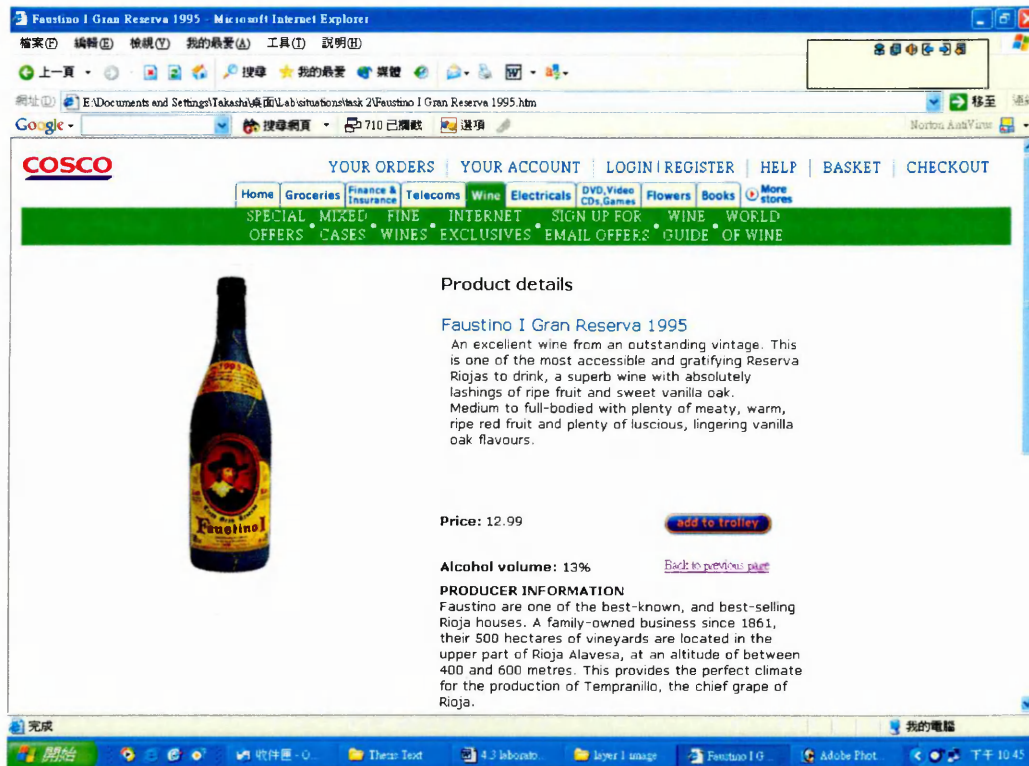


Fig. 4.32: A larger still image for wine 2

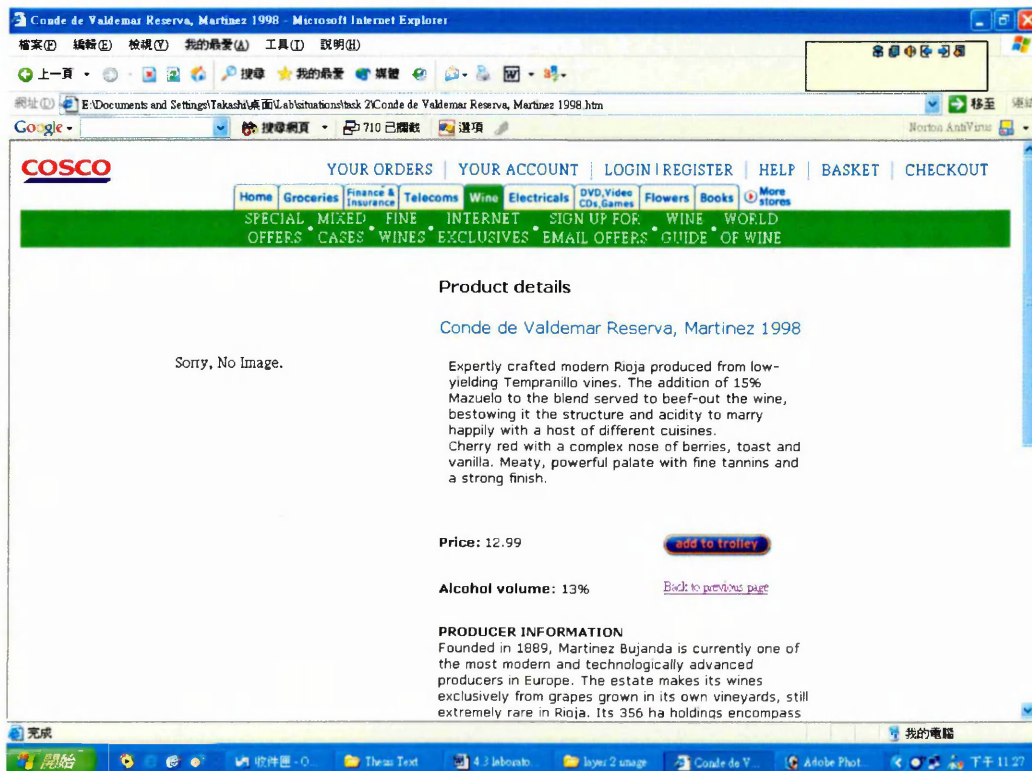


Fig. 4.33: No image for wine 3

b) Product information of task 2

Again, this task mainly wanted to test the participants' reaction with the visual elements. Hence, production information was treated with equal weight for each wine. In layer 2, each wine had its own product description, including brand, price, tastes and food accompaniments. In layer 3, the description included product details, price, alcohol volume, producer's information, method of production, cellar potential and grape mix.

4.3.5.3 Online packaging features of task 3

In this task, participants were asked to purchase a bottle of wine from these three wines which all had different levels of text information. This would allow the author to observe how they interacted with the text information and to understand what information they liked to read.

a) Product presentation of task 3

In this task, there were 3 wines in the shopping aisle (Figure 4.34). The purpose was to observe how product information could affect participants' purchasing decisions. So, 3 wines were represented in the same style of still images (50X200 pixels) in layer 2. In layer 3, again, each wine only had a larger still image (75X300 pixels) (Figure 4.35, 4.36 and 4.37).

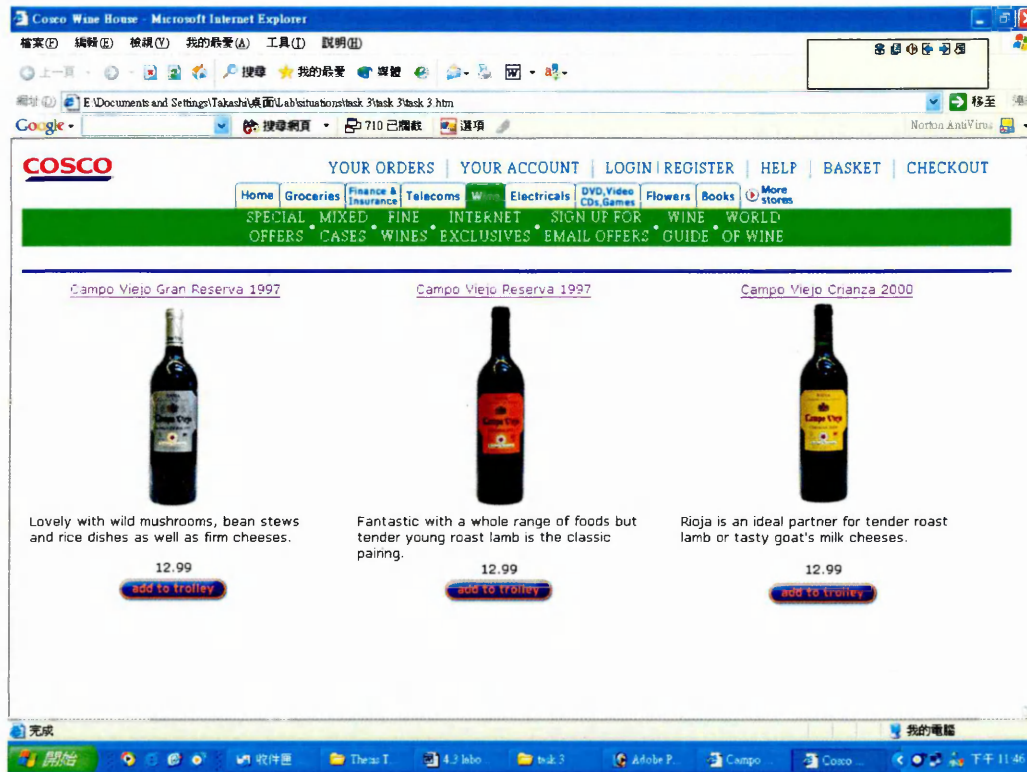


Fig. 4.34: Still images for wines in task 3

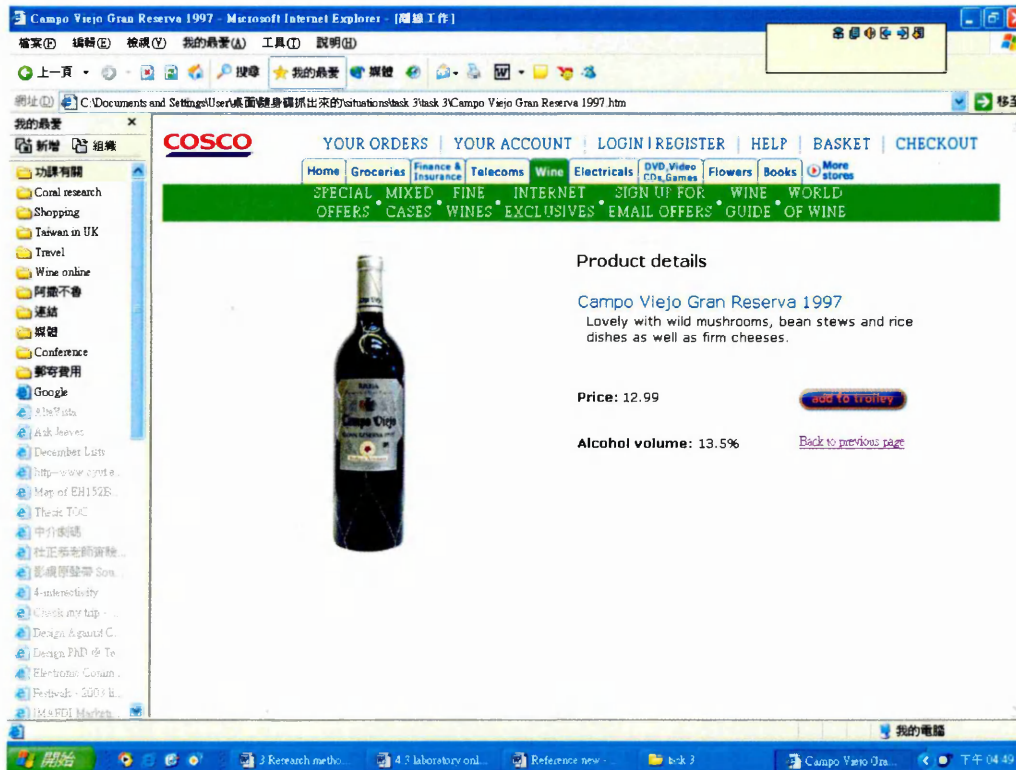


Fig.4.35: Limited information for wine 1

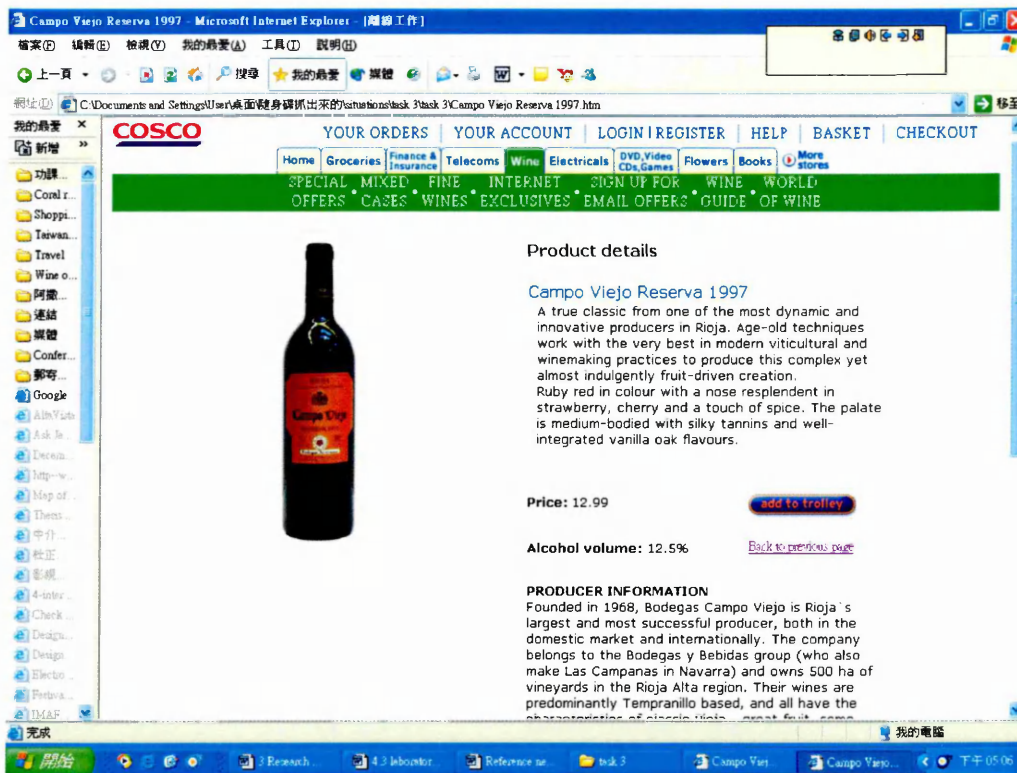


Fig.4.36: More relevant information for wine 2

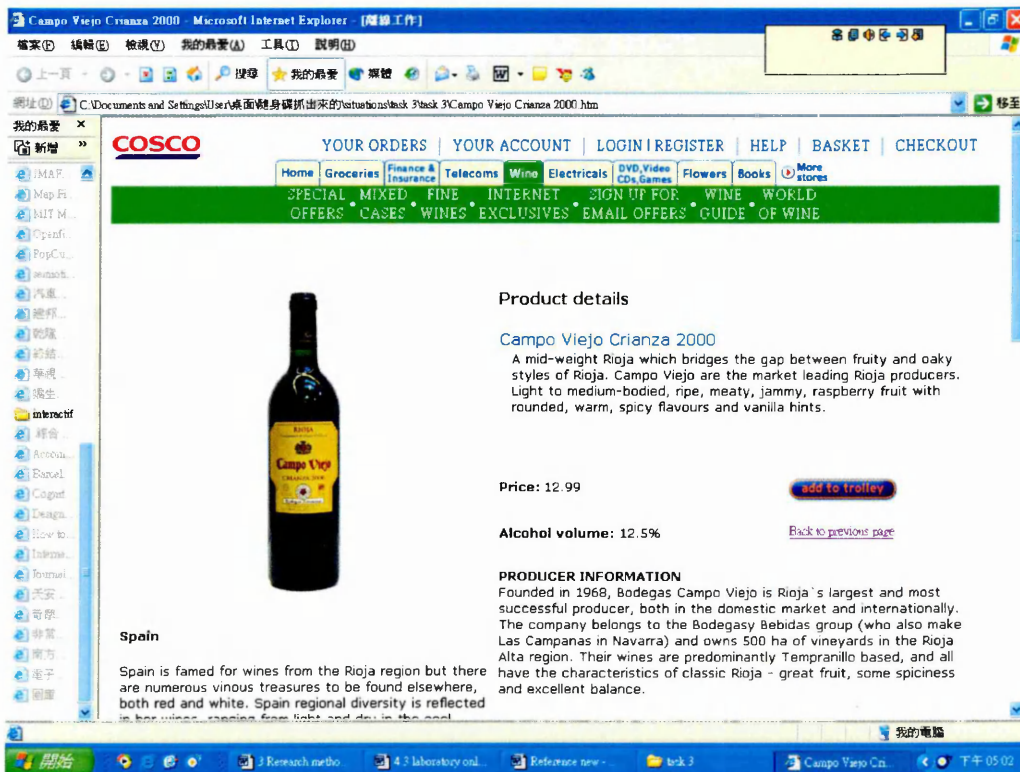


Fig. 4.37-1: More extra information for wine 3

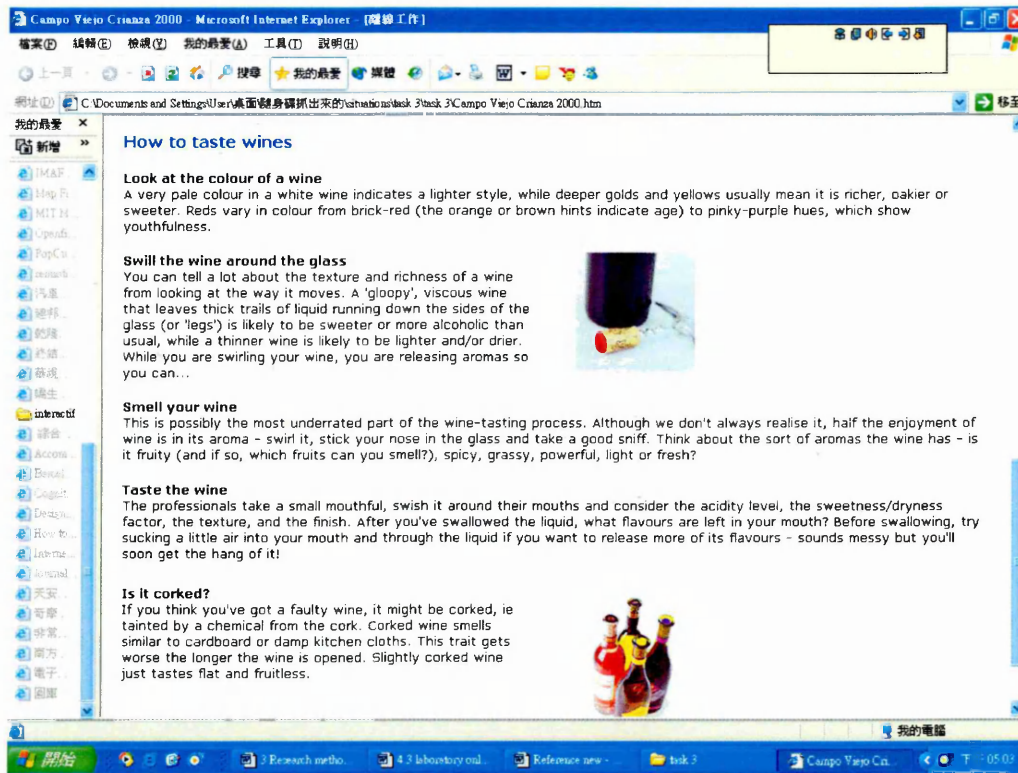


Fig. 4.37-2: More extra information for wine 3

b) Product information of task 3

In layer 2, each one had equivalent information to each other, including name of product, brand, price, taste and food accompaniments. However in layer 3, each wine had different levels of production information. The first wine (Figure 4.35) only had limited information; alcohol volume was the only added information, when compared to the previous page .

The second wine (Figure 4.36) had more relevant information including product details, price, alcohol volume, producer's information, method of production, cellar potential and grape mix. The third wine (Figure 4.37) had much more information than the previous two wines. Apart from the information that the second wine had, it not only provided information about

Spanish wines and introduced the Rioja region but also offered information about how to taste the wine, e.g., how to look at the colour of the wine, how to smell the wine and how to choose glasses for the wine.

4.3.5.4 Online packaging features of task 4

In this task, participants were asked to purchase a wine among these three wines which all had different forms of information. The researcher could observe how they interacted with different forms of information and their preferences for the information.

a) Product presentation of task 4

This was the final task of the “laboratory”. The main purpose of this task was to understand the participants’ preferences to the type of information presentation, e.g. in site and with hypertext. The presentation of these 3 wines was in the same style. In layer 2, each wine had a still image (50X200 pixels) (Figure 4.38) and a rollover image of the back label (85X200 pixels) (Figure 4.39), if participants moved the cursor onto it. In layer 3, every wine had a larger still image (75X300 pixels).

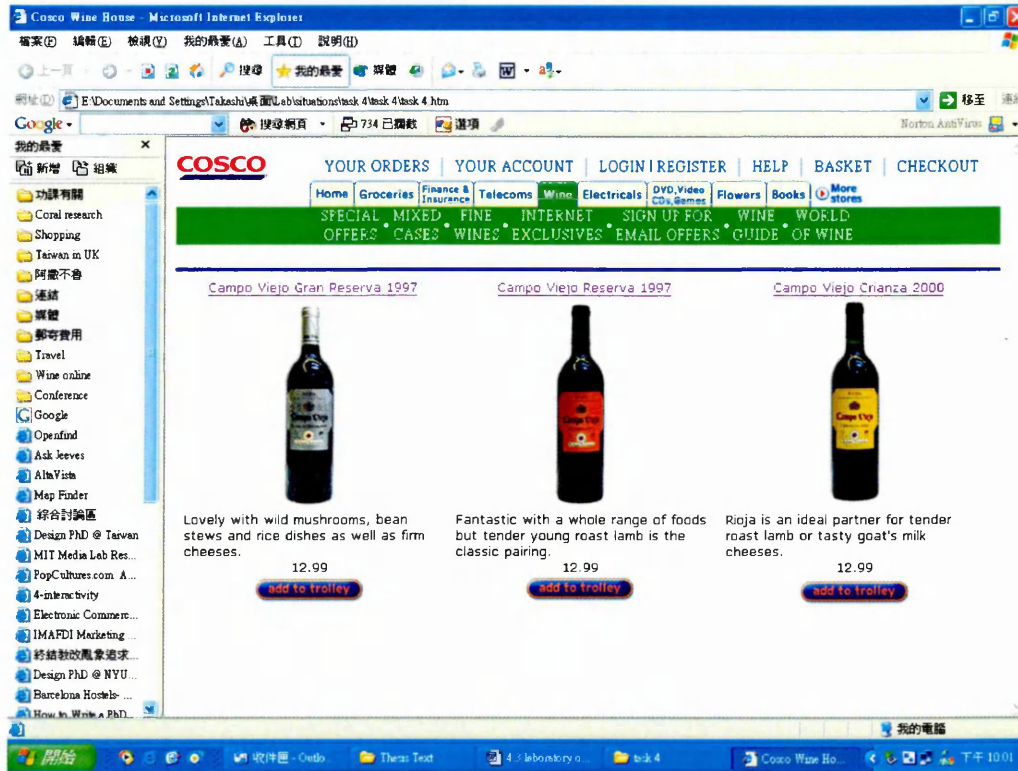


Fig. 4.38: Still images of each wine

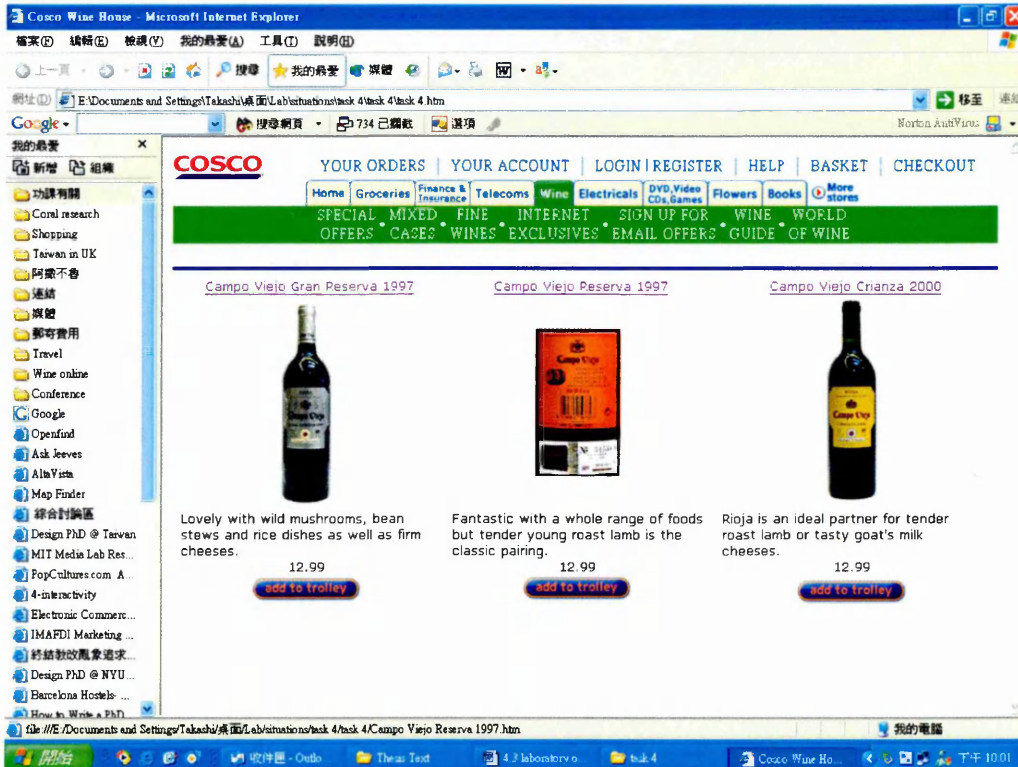


Fig. 4.39: Rollover images for each wine

b) Product information of task 4

The first wine (Figure 4.40) had not only basic information about the wine in that webpage but also had some hypertexts linked to additional information. The basic information included product details, price, alcohol volume, producer's information, method of production, cellar potential and grape mix. The hypertext had two parts for links (Figure 4.41), with the first part including: producer's webpage (Figure 4.42), how the wine is made, how to read a wine label, how to store the wine, how to serve the wine, how to taste the wine, countries of origin and the grapes introduction, with the second part including: food accompaniments guiding principles, cuisine matching, how to choose the wine, and wine accompanied with spicy food. These hypertexts would have a pop-up window (Figure 4.43) if clicked on.

The second wine (Figure 4.44) had basic information including product details, price, alcohol volume, producer's information, method of production, cellar potential and grape mix and it also featured experts' recommendation and previous customers' ratings. These features would give consumers references to consider and enhance their desire to purchase this wine.

The third wine (Figure 4.45) was mainly "insite" information without any hypertext. The information included product details, price, alcohol volume, producer's information, method of production, cellar potential and grape mix. Furthermore, it not only provided information about Spanish wines and introduced the Rioja region but also offered information about how to taste the wine, e.g., how to look at the colour of the wine, how to smell the wine and how to choose glasses for the wine. This abundant information was

provided as a long page (approximate 3 pages of length on a 1024X768 resolution screen) to observe participants' interaction with this kind of information presentation.

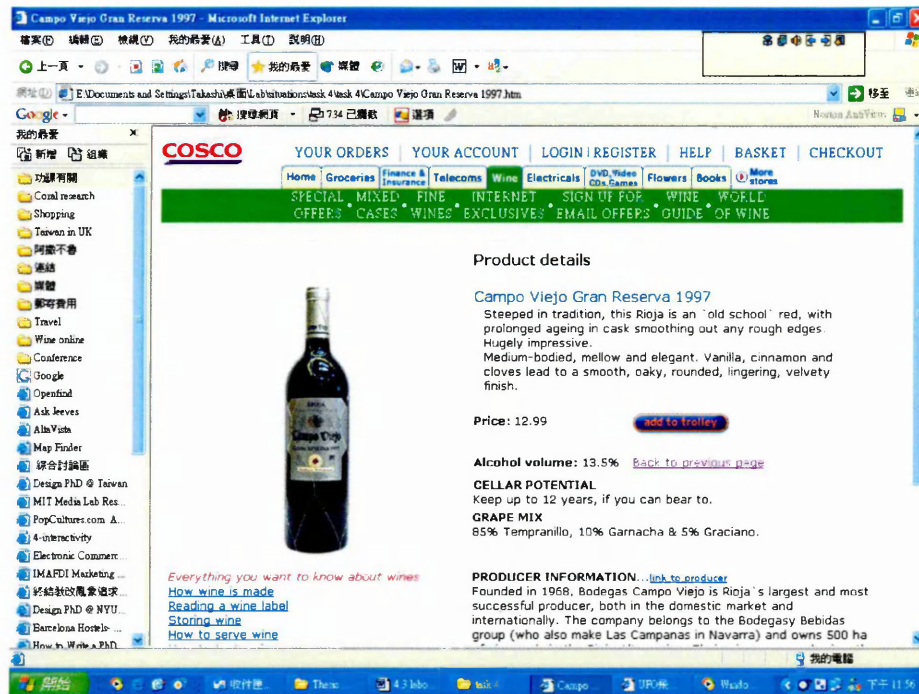


Fig. 4.40: Basic information and additional links for wine 1

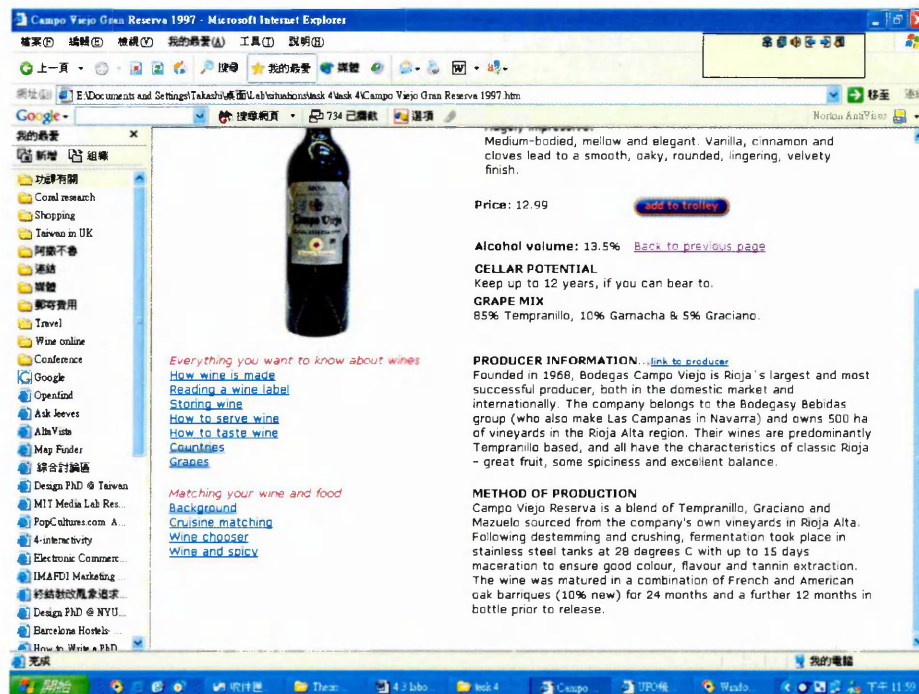


Fig. 4.41: The links have various information for wine 1

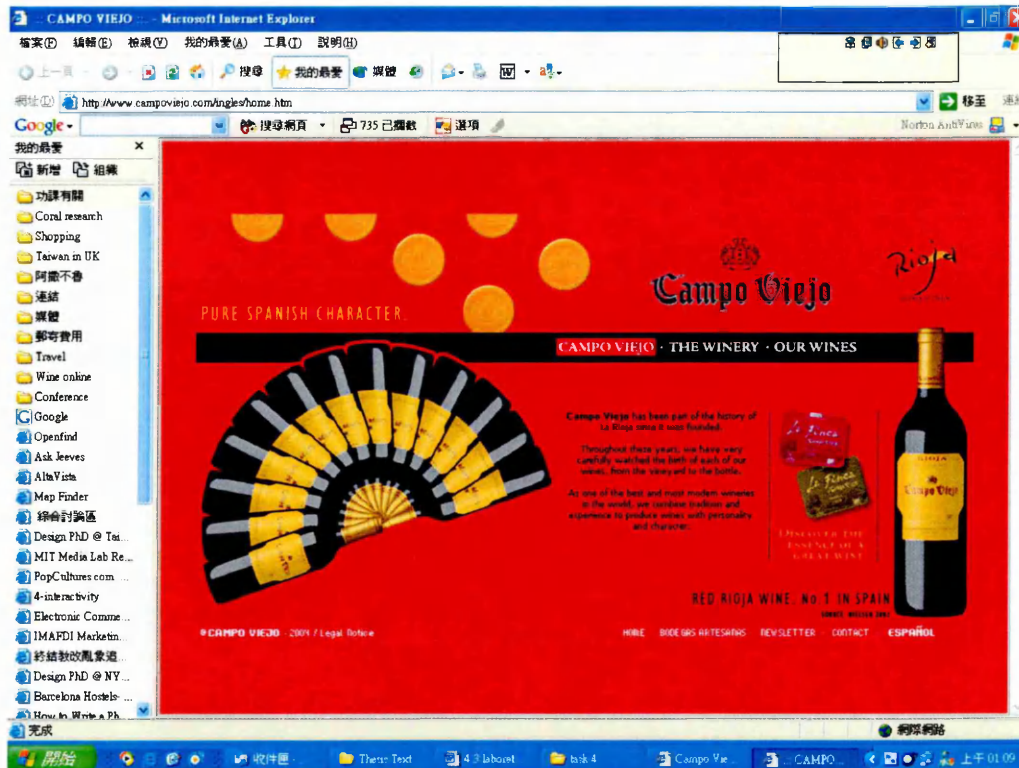


Fig. 4.42: Linked to producer's website



Fig. 4.43: Pop-up windows for various information

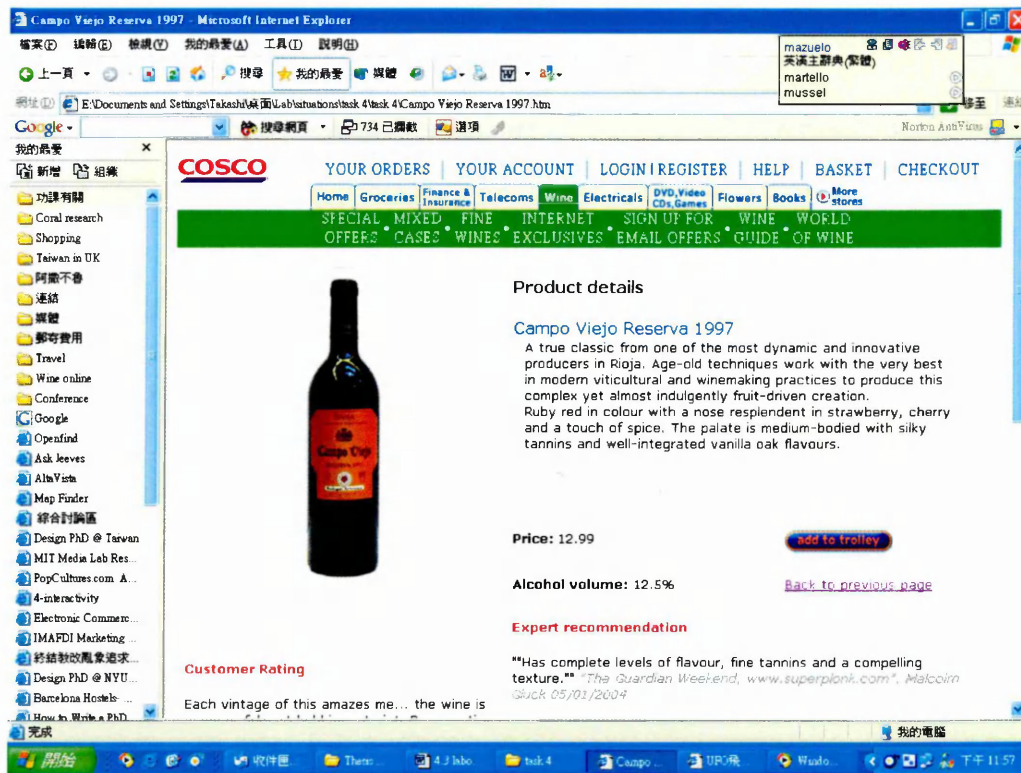


Fig. 4.44-1: Wine 2 has basic wine information, recommendation and ratings

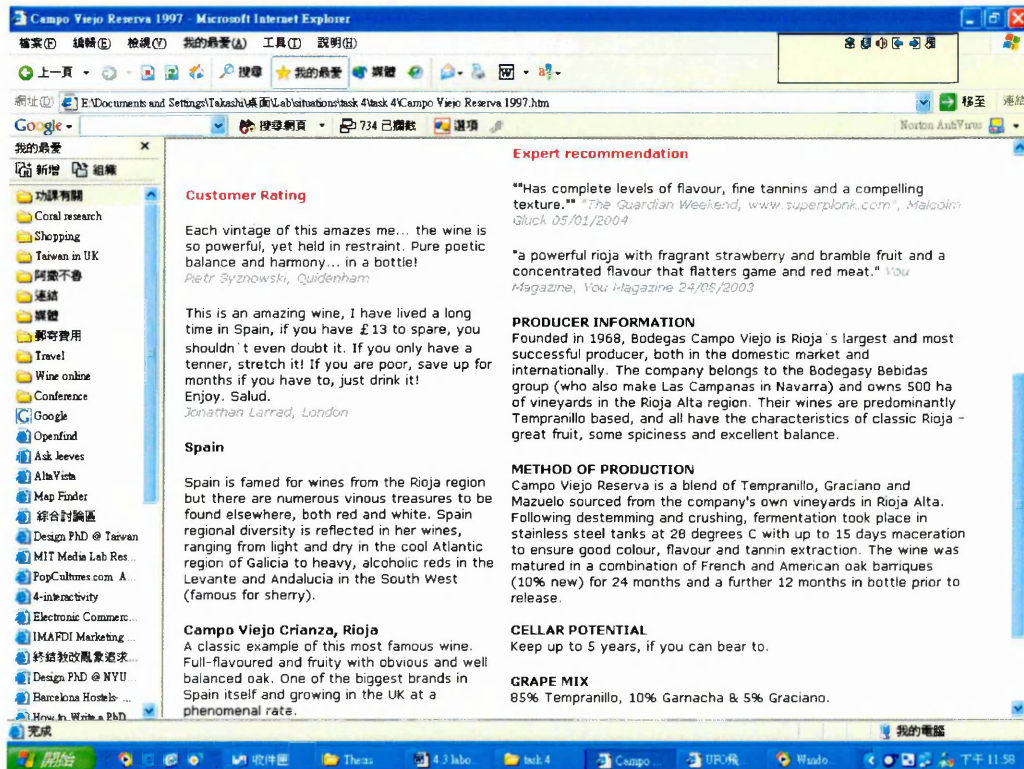


Fig. 4.44-2: Wine 2 has basic wine information, recommendation and ratings

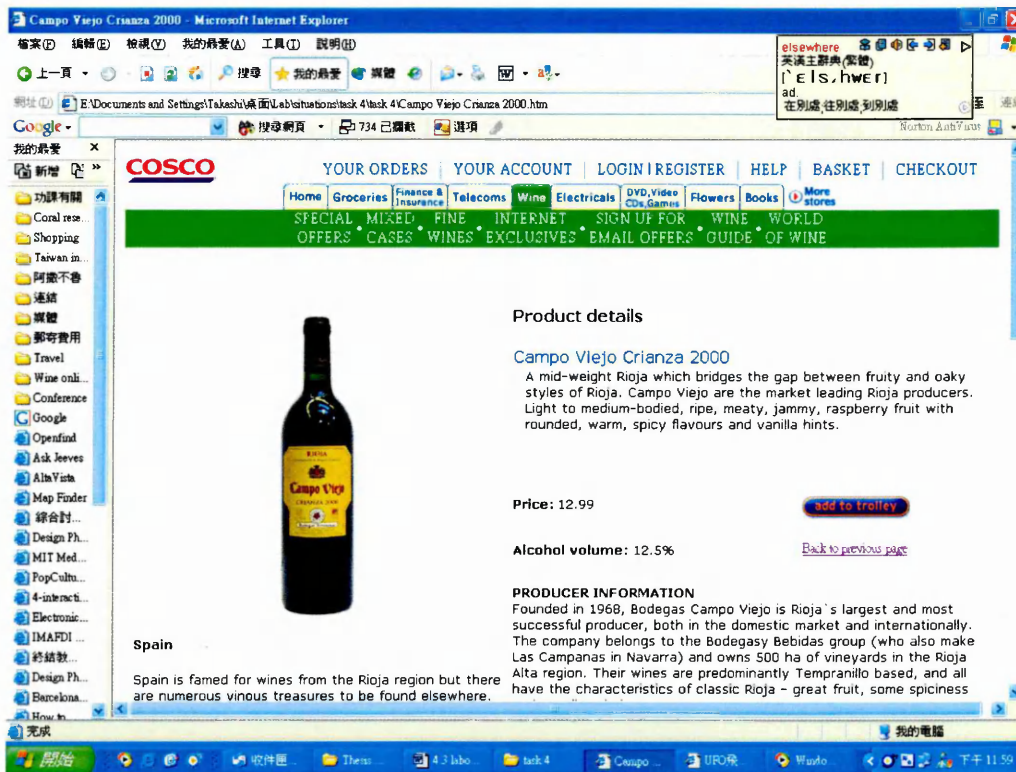


Fig. 4.45-1: Wine 3 has a long webpage which contains rich information

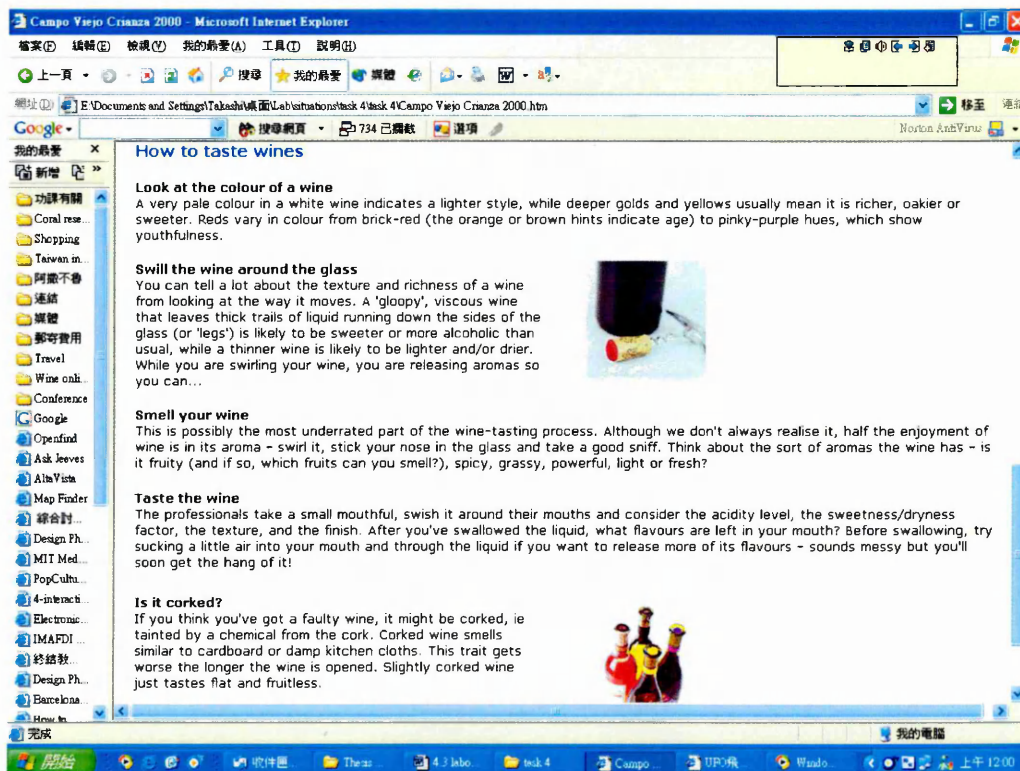


Fig. 4.45-2: Wine 3 has a long webpage which contains rich information

4.3.6 The use of theory

One of the most important features of this research wanted to discover the “design guidelines” rather than the “proven truth” for the functions of packaging to be utilised for eCommerce. The main theory was the ELM, which explained the consumers’ behaviour and their attitudes towards online packaging, in order to understand the consumers’ requirements. The theory also provides a lens to inspect how enhanced online packaging can persuade the consumers.

As discussed in section 2.4 and 3.5.1, the ELM was the backbone for two purposes in this research: 1) To provide design principles for content that will appeal to both high and low involvement consumers. 2) To anticipate participants likely behaviour.

The use of the theory also helped the author to analyse the pattern of shopping behaviour for low and high involvement consumers and evaluate the design guidelines for online packaging and other implications.

4.3.7 Procedure and Data recording

According to this “laboratory” experiment, interviews and observations were the two main research methods used during this process, aiming to collect valid data from these participants. Fifteen participants were recruited from a variety of people by snowball sampling (see 3.5.3). These observations and interviews took place in the participants’ houses, where the participants were familiar with the environment. This would help them to keep their normal online shopping behaviour.

1. Pre-observation interviews:

Semi-structured interviews were conducted before the experiment. A list of pre-set questions (See appendix E) was prepared as an “interview guide” (Bryman, 2001). Participants were asked to represent their true behaviour as apposing their aspiration or tell the author what they think the author wants to hear in order to avoid misinterpreting them. The author wanted to understand the participants’ background, concerning their interactions with wines and their packaging requirements and expectations when buying a specific item. To do so, it would help the author to categorise their involvement for the analysis of the ELM and compare their behaviour to ensure the validity for the data analysis.

2. The observation:

These observational activities were conducted right after the interviews. Participants were explained the purpose and shopping

tasks of the experiment and asked not to pretend an ideal self or tell lies. Again, to behave normally was a crucial factor for the research to gather high reliable data. This was why the author had a 20-30 minutes pre-interview with each participant, aiming to build a "friend" relationship via conversation as the author was introduced by their friends or relatives and why the experiment were conducted in their houses and on their computers which they were familiar with, to ensure they acted naturally.

The author would observe 1) How participants interacted with product presentation and product information, 2) How participants explored the depth of information, 3) Where participants paid their attention to, and 4) What product presentation and product information the participants were interested in.

During the observation, participants were often asked questions about their behaviour and thoughts by the author, who wanted to understand their thoughts more, as well as to avoid misunderstanding their behaviour. This also gave the participants opportunities to reflect on and discuss their behaviour.

3. Post-observation interview:

These interviews were conducted right after the experiment. The author wanted to understand whether the experiment affected their online shopping behaviour, e.g. would they expect a real online shop to have online packaging with enhanced presentation and a variety of

information. This was an open-ended interview, where participants could say anything about their wine, shopping and the internet experience, or something that they omitted from the observation and the previous interview.

Participants took on average 45 minutes to complete the whole process. The shortest one took less than 30 minutes, the longest one took 80 minutes. Normally, the high involvement participant had much more to say than the low involvement participants. Note taking and voice recording were used during the process of the observation and the interview.

4.4 Summary of chapter four

For this chapter, tentative and laboratory studies were conducted. These studies had causality; one study was not only evaluated against the findings of the previous study but also provided new research questions for the next study (See figure 4.1).

In the study of designers and experts interviews, the author and interviewees had no clear ideas about what online packaging should be, but the author gradually realised that packaging has potential to play on the screen as a “silent salesman”.

From the telephone survey, online shoppers often complained that products' images were too small to see and that products' information was limited. During the online packaging analysis, it was recognised that text, image and pictorial symbol were the main forms of presentation for online packaging.

During the activity of shopping observation, it was found that consumers normally transferred their physical shopping behaviour to within the online environments directly. However, current online shopping environments could not satisfy their expectations. So consumers might find difficulties buying online.

During the tentative study of simulated online shopping, it was discovered that online packaging could help consumers to recognise products and also encourage impulse purchases. Varied product presentation and rich product

information would have a positive effect on the influencing of the consumers' purchasing decisions.

The laboratory online shopping was designed and based on the findings of the tentative studies and the literature review. The findings helped the author to understand the consumers' expectations and the theory of the ELM helped the author to construct the content of the laboratory, as well as the predicted consumers' behaviours and measured the effectiveness of online packaging. Finally, the field data of the laboratory will be analysed and discussed in the next chapter.

Chapter five Analysis and Discussion

5.1 Introduction

The data from the laboratory online shop will be analysed and discussed in this chapter. The ELM is used as a framework to analyse the participants' shopping behaviour, concurrently the contents of interviews and observations of a participant were compared to better evaluate the outcomes. During this stage content and conceptual analyses were also employed.

In the part of the analysis, there were three main focuses to discover:

1) Online packaging contributions to eCommerce, which was related to the functions of packaging and the forms of online packaging for meeting online shoppers' requirements.

2) Consumers' involvement and patterns of shopping behaviour, which were analysed by the ELM in order to construct comprehensive packaging thinking for eCommerce.

3) Impulse shopping and play behaviour, which could conclude that computer interactivity was an advantage to be utilised for online packaging.

In the part of the discussion, there were three main findings:

1) The form of online packaging – to provide some ideas for the design direction of online packaging development.

2) The innovation of packaging thinking – to argue that packaging functions need to be transferred to the online environment.

3) The design guidelines of online packaging – to provide four principles for designers who want to design online packaging.

5.2 Analysis

5.2.1 Outcomes of the laboratory online shop

The outcomes of the laboratory are in three parts a) Notes of the pre-interviews, b) Observations of the laboratory, and c) Notes of the post-interviews for each participant, with the notes being briefly described. We will show the transcript of participant one as an example (Figure 5.1), the rest of the transcripts will be placed in appendix F.

Participant one: high involvement	
Age: 31, gender: male, ethnic: Chinese, education: MA, occupation: profession.	
Activity	Transcript
<i>Pre-interview</i>	5-6 years red wine experience; normally search wine information and then go to wine shops; read information carefully; choose wines based on types of grapes and what food he eats; likes to try new wines; ideologically French wines are the best; online shopper.
<i>The Observation</i>	Task 1: <i>Intuitive choices:</i> W2 and W10 had clear images; W1 had beautiful colour on the bottle. <i>Purchase choices:</i> W1, W9 and W7 all had good grape descriptions.
	Task 2: Chose W1; nice interactive images so that the labels could be clearly seen; tried to find whether W2 had the same style of interactive images or not (This behaviour was called “play behaviour” in this research); description fitted his needs.
	Task 3: Chose W2; the product information fitted his needs although he initially wanted to buy W1 which had a better label design but did not have enough information.
	Task 4: Chose W1; he preferred rich information and hypertexts, which were very convenient in linking to the page that he wanted to read.
<i>Post-interview</i>	This participant said “ <i>The problem of shopping online is that I can’t enjoy the feelings without touching the real thing.</i> ” If the enhanced online packaging can be promoted to fulfil this disadvantage, it will help many people to enjoy the virtual environment and engage with impulse shopping.

Figure 5.1: A concise transcript of “laboratory online shop” for interviews and observation

Conceptual mapping was produced and data matrixes were developed, in order to help the author discover their patterns of shopping behaviour and to understand their purchasing behaviours. Data analysis and discussions of these outcomes will be in the following sections.

5.2.1.1 Matrixes for comparisons between tasks

In task one, every participant was asked to place their first three intuitive choices of wines on visual impact (without carefully reading wines' information) and their three purchase choices after them browsed and considered their considerations of wines (Figure 5.2, see next page). This figure will help the author to understand the relation between real purchases and intuitive "click on" intentions.

Participant	Involvement	Task	Choice of wines										
			1	2	3	4	5	6	7	8	9	10	
1	High	Intuitive	○	⊗									⊗
		Purchase								○	⊗	⊗	
2	High	Intuitive	○	⊗									⊗
		Purchase	⊗	○									⊗
3	Low	Intuitive	⊗	⊗									○
		Purchase				⊗				○			⊗
4	Low	Intuitive				○		⊗					⊗
		Purchase		○		⊗					⊗		
5	Low	Intuitive		○				⊗					⊗
		Purchase				⊗			○				⊗
6	High	Intuitive		⊗			○	⊗					
		Purchase		⊗				○	⊗				
7	Low	Intuitive								⊗	⊗	○	
		Purchase	○			⊗	⊗						
8	Low	Intuitive	○		⊗								⊗
		Purchase	⊗	○									⊗
9	High	Intuitive		⊗						○			⊗
		Purchase	⊗	○									⊗
10	Low	Intuitive		⊗								○	⊗
		Purchase				⊗						○	⊗
11	Low	Intuitive								⊗		⊗	○
		Purchase				⊗		⊗	○				
12	High	Intuitive	⊗	○							⊗		
		Purchase					○	⊗	⊗				
13	High	Intuitive	○	⊗									⊗
		Purchase	⊗			⊗			○				
14	High	Intuitive		⊗				○		⊗			
		Purchase		⊗					○				⊗
15	Low	Intuitive	○	⊗									⊗
		Purchase		⊗					○				⊗

Figure 5.2: Participants' intuitive choices without carefully reading information and purchase choices, after browsing information. ⊗ = first choice, ⊗ = second choice, ○ = third choice.

In task 3 and 4, the product presentation of each wine had the same style as each other during the same task but each wine had different levels of product information (see section 4.3.4 structure of the laboratory). The author wanted to discover how deeply product information can influence consumers' choices. Many of the participants would like to purchase W1 in task 3 but they did not, due to too little information. Conversely, they changed their mind to purchase W1 in task 4 because of the sufficient information. The following figure 5.3 shows the reason of changing and not changing purchase choices between task 3 and 4.

Participant	Involvement	Choice of wine		Reason of changing choice	Reason of not changing choice
		Task 3	Task 4		
1	H	W2	W1	Sufficient information and the hypertext.	
2	H	W2	W2		Product description fits her need; does not like too much information.
3	L	W2	W1	Sufficient information	
4	L	W3	W2	Trust recommendations	
5	L	W2	W1	Sufficient information	
6	H	W2	W1	Sufficient information and the hypertext.	
7	L	W1	W1		Likes the looking of the bottle.
8	L	W2	W2		Product description fits her needs; does not like too much information.
9	H	W1	W1		Knows that it is a good wine, clear image are enough for him to identify the wine.
10	L	W2	W2		Likes the design of label.
11	L	W3	W1	Sufficient information and the hypertext.	
12	H	W3	W3		Product description fits her needs although W1 draws his attention.
13	H	W2	W1	Sufficient information and the hypertext.	
14	H	W3	W1	Sufficient information and the hypertext.	
15	L	W2	W1	Sufficient information and the hypertext.	

Figure 5.3: Under the same conditions of product presentation in task 3 and 4, the participants' reasons to change or not to change their purchasing choices. H = high involvement, L = low involvement, W= wine.

5.2.1.2 Conceptual mapping

Although the field data was transcribed, it was needed to select key factors from the transcript in order to analyse the outcomes. The key factors were 1) product information, 2) reading behaviour, 3) product presentation, 4) play behaviour, and 5) impulse shopping.

This mapping allowed the author to clearly observe their purchasing behaviour, considerations, the effectiveness of product information and presentation for different levels of involvement participants. During the process of the mapping development, some tentative mappings (See appendix G) were drawn before the establishment of the final mapping (see the next page, figure 5.4). In addition, a matrix (see the appendix G) which was based on the concept of the mapping was established to help the author to better understand the relationship between the participants and the key factors. The mapping and the matrix would be used for analysis and discussion in the later sections.

Participant and product information

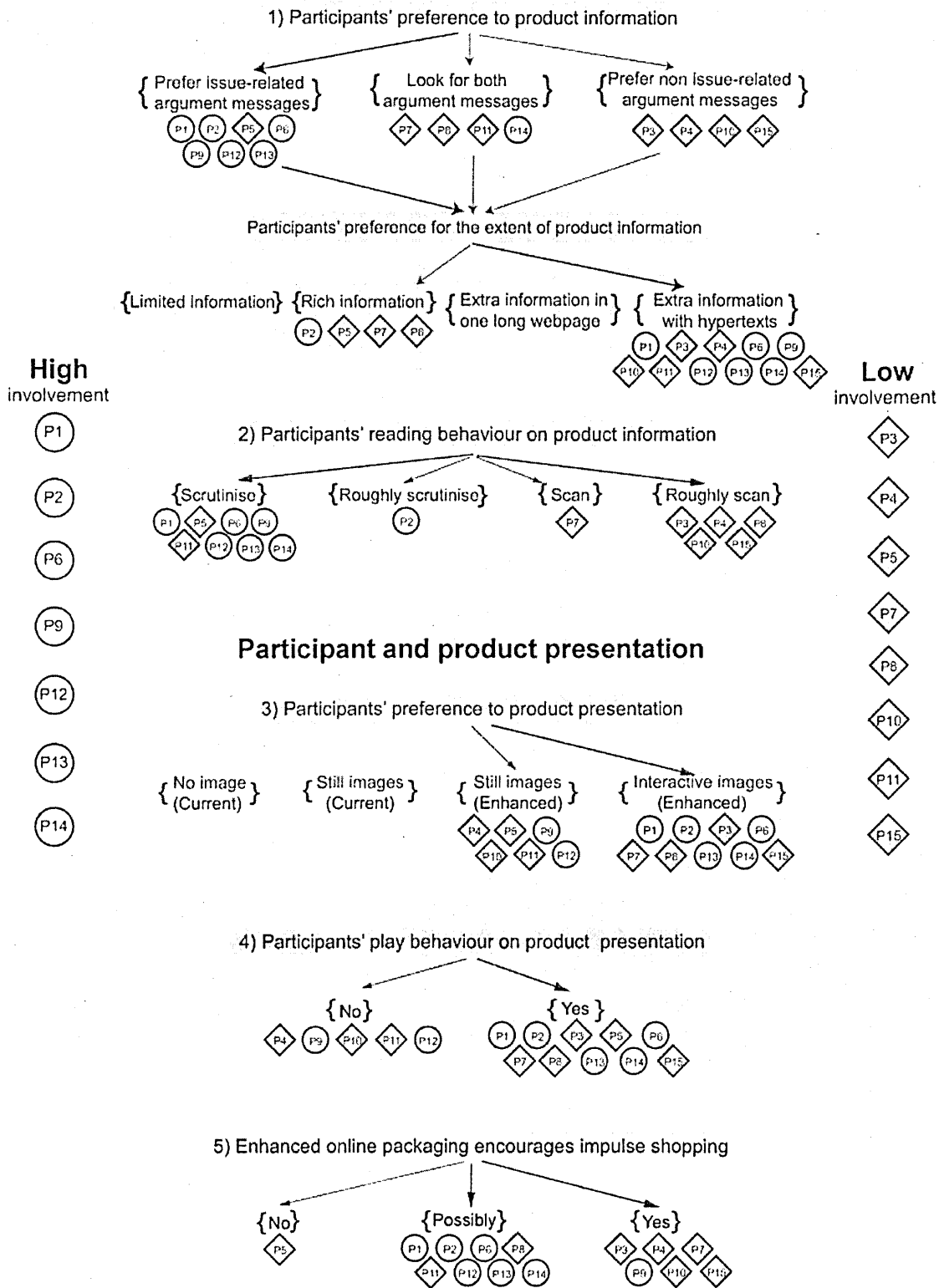


Figure 5.4: The mapping, participant's behaviour and preference could be clearly observed.
 P=participant.

5.2.2 Online packaging contributions to eCommerce

In this section, data gathered from the final study was analysed, in order to find out whether adoption and development of the concept of online packaging would be beneficial to eCommerce businesses and their customers.

Reiner and Rose (2002) reported that Richard Linxweiller performed extensive research on the topic packaging, showing that there were only 20% of products in German supermarkets being promoted by conventional advertising. Conversely the other 80% of products were selling without advertising but they were promoted more or less by the packaging. Interestingly, packaging sometimes has to play a role as a beginning “attractor” as well.

In the online environment, consumers are exposed to a limited number of products, normally a dozen(s) of products in each aisle they encounter. It is very different from a physical supermarket that could have over a hundred(s) products per aisle. Although online products have less chance to become actively exposed to consumers, consumers create an opportunity to be shown relevant products when they show their interests by visiting a particular aisle. It is very important for a product to trigger “moment of opportunity” (Young, 2001) in order to persuade consumers to make a purchasing decision.

The function of physical commercial packaging is very similar to the function of the online packaging that we discovered during the tentative studies of this research and the literature review. They all carry communicative missions to consumers. The aim of these missions is to build, reinforce or change consumers' cognition, attitude or behaviour, at various level of product involvement, in order to create an opportunity to sell products.

As mentioned in 2.2.3, consumers might be attracted by a product's advertisements or a friend's recommendation and go to shops for specific products. However, a product's packaging might be the final "persuader" to make the product sale within both shopping environments. Online packaging can act as a database for products where consumers can obtain information without time and distance barriers. Besides, online packaging can be designed to have comprehensive and rich information to promote its products and also the technology of multimedia design can create highly interactive environments for both product information and presentation to consumers, in order to fulfil the lack of a physical shopping experience.

The "laboratory online shop" has demonstrated that consumers will pay attention to enhanced online packaging so producers have an opportunity to develop computer interactivity to packaging thinking for online packaging. So the function and thinking of packaging can be expanded from brick-and-mortar shops to eCommerce.

The following three sections were concluded for the contribution of online packaging, taken from the outcomes of the laboratory online shop:

5.2.2.1 Unlimited information provision

One of the advantages of online packaging is that online packaging could provide unlimited information with different levels of product involvement for consumers. Although a small number of participants thought that basic product information was enough for their needs, most of the participants considered that the extra information with hypertext was a good way to put information together and saved space within a webpage. Participants could choose the information that best suited their knowledge and level of involvement, so they had no need to read the whole webpage.

It was very obvious during this research that the level of product information could influence participants' purchasing choices. For example, seven participants made their purchasing decisions for W1 in task 4, however they bought other wines in task 3 (See figure 5.3). The reason they changed their choices was that W1 in task 3 only had very limited information, although it caught many participants' eyes at first sight. They did not feel confident to purchase it due to poor product information. The W1 in task 4 had argument and non-argument issues of information with hypertext. It not only gained participants' confidence to place their choices but it also provided different levels of information to suit those consumers with a different product involvement.

5.2.2.2 To provide visual assistance

Packaging carries the duty of communication to consumers for both product information as well as attraction. Since the booming of the modern supermarket, packaging is one of the most important ways to attract consumers' attention in the self-service shopping environment.

In the tentative study, it was found that consumers disliked small and unclear images typical of current practice. In section 2.5, it was found that researchers (Williams and Larson, 1999; Weitz, 2000; Har et al, 2000; Edwards and Gangadharbatla, 2001; Häubl and Pablo, 2002; Lightner and Eastman, 2002; Huang et al, 2003) also discovered that enhanced product presentation could attract consumers and help them to understand products in order to build a positive perception to encourage their purchasing decisions. Of course, there were many ways to produce enhanced product presentation, the researchers had suggested video clips, 3D and interactive images. The form of the presentation will be discussed in 5.3.1.

In the "laboratory" experiment, a consistency with the tentative studies was found. The author discovered that the participants disliked some of the current online product presentation, e.g. no image and small still images, but they were likely to respond more positively to enhanced still images and interactive images. It was also found that no participant bought a wine without an image, because the participants in both involvements thought that the image of the product could be a confirmation to ensure that their purchases were correct.

5.2.2.3 To expand consumers' consideration lists

When the participants were browsing the shopping aisle, they normally looked around some of the other wines that attracted them by visual appearances or product description before they made their final purchasing decisions. Although participants with a different level of product involvement had a different priority of concerns, the enhanced online packaging could truly attract participants' attention. For instance, low involvement participants were normally attracted by product presentation first and then read the product information, approximately. Conversely, high involvement participants were more likely to scan the product description first in the aisle and then click on the products that they were most interested in.

Every shopper has his/her own concerns when buying a product and the range of possible issues for designers to address is very great. However, a broad picture could be observed from this laboratory to indicate the participants' thinking process. As we can see in figure 5.2, referring to the shopping observation, only two participants' intuitive and purchase choices did not overlap each other. The other thirteen participants had at least one purchasing choice overlapping their intuitive choices. It might be possible that this result offered a high probability for these overlapping choices due to such a small sample of participants and wines. Nevertheless, during the pre-observation interviews, 1/3 of participants said (See appendix F) that they would like to try new wines and in the post-observation interviews, fourteen participants also expressed (See figure 5.4) that they were likely to

shop impulsively if the wine had rich information to fit their needs and attractive presentation.

The evidence from the pre- and post-observation interviews showed a consistency with the shopping observation, demonstrating that the participants were more likely to be seduced by the enhanced online packaging and would make a "trial purchase". The key to the seduction was a deep consideration of their concerns, at different levels of product involvement and the creation of features for the product in terms of description and presentation to make the product more desirable. To do so, non-users might be persuaded and competitors' customers could be attracted, as the consumers could realise what they could benefit from the product and be persuaded by the online packaging.

5.2.2.4 Summary

The enhanced online packaging might not have an instant effectiveness in persuading consumers to make their purchases but chances are that enhanced online packaging can reinforce their positive attitude towards products. Their purchasing decisions might be influenced by frequent exposure to products with enhanced online packaging. From this experiment we understand that online packaging, product information and presentation, could become a very important determinant in influencing consumers' purchases. The online environment is a "highly self-select environment" (Kathman, 2002) where consumers are normally shopping by

themselves, consumers can gain confidence towards products, via enhanced online packaging that has proper product description and a visual appearance which fits their requirements, without the added need of seeking out external help, e.g. an inquiry e-mail or a 0800 consumers' help free phone call, to assist them during their shopping excursion, as their doubts and inquiries can be sorted out by the online packaging alone.

5.2.3 Involvement and patterns of shopping behaviour

In this section, participants' behaviours were analysed to check whether there was a consistency with the prediction by the Elaboration Likelihood Model (ELM). The ELM was also used to analyse participants' attitudes towards online packaging at different levels of product involvement. Patterns of shopping behaviour for different levels of product involvement will also be concluded.

The division of high and low product involvement was evaluated by the author but based on the participants' description and behaviour. In the pre-observation interviews, the participants were asked about their knowledge, experience, shopping behaviour and thoughts about wines. These clues provided evidences for the author to place them into two different categories, high and low involvement.

5.2.3.1 The prediction of participants' behaviours by the ELM

According to the ELM, motivation and ability are the two determinant factors for people to process a message. A person who has the two factors is likely to scrutinise an issue-related message. Conversely, if a person does not have these two factors or only has one of them to process a message, the person is likely to engage with non issue-related messages, rather than issue-related messages. The factors, motivation and ability, could be conceptually described as an involvement for a product or a message. High

involvement people have both, whereas low involvement people have none or only one of these factors. This theory predicts that high involvement people are likely to follow the central route and pay attention to “expert” information about the product, whereas, low involvement people would be attracted by peripheral cues.

In this experiment, it was assumed that all participants were motivated to take this online shopping trip but this assumption did not include whether they all had motivation to click on every wine in the shopping aisle, as it was observed in the study of “simulated online shopping” (Section 4.2.5) that participants did not normally click on all of the wines in the aisle, even though they only had few choices.

Although they had opportunities to browse all wines, they had their own choices to decide to click on any of them or not. If they voluntarily clicked on a wine and were exposed to the detailed information of both central, such as grape mix, and peripheral cues, such as interactive features, they actively had an opportunity to process those further message cues of the wine no matter what their involvement was. Actually, their voluntary motivation had already occurred when they decided to click on a wine, unlike an auto pop-up internet advertisement that internet users are normally exposed to involuntarily. This could likely be an opportunity to deliver persuasive central and peripheral message cues to online shoppers via online packaging, because they have already formed behaviour to voluntarily click on a product and are completely active to process the message.

1) High involvement participants

As mentioned before, Petty and Cacioppo (1996) indicated that high involvement behaviour is more predictable than low involvement behaviour due to their strong personal understandings towards products.

There were seven high involvement participants in this experiment, six of them said that they chose wines based on detailed features of the wine itself during the pre-observation interviews. The detailed features could be understood as being the central cues. In other words, these participants needed the wine's description with issue-related messages to be rich for fitting their needs.

The participants chose wine based on the description of their understandings which might contain some "technical" knowledge, e.g. type of grape and wine making process, or some simple reasons, such as the taste of the wine and the food accompaniment. Rich information will make for a long webpage, but, many of the participants disliked a webpage crowded with a variety of information, rather than one with rich information and hypertext (See figure 5.4). The use of hypertext can save much space on a webpage. In the hypertext environment of the "laboratory online shop" participants were willing to browse for the information that they were interested in.

During the observations, participants in this category paid much of their attention to either scrutinise or roughly scrutinise the product information (See figure 5.4). This reading behaviour was likely following the central

route to try to find some arguments in the information to suit their strong understandings of the wines, before considering their preferred wine and making their purchasing decisions.

Although these participants were more likely to elaborate with issue-related messages, it was found that they did not purchase their wines without having access to an image, which was considered as one of the peripheral cues. Six of them also said in the post-observation interviews that they liked interactive images that allowed them to see the labels clearly, raising their curiosity about the wine.

The author also observed that most of the participants had “play behaviour”, which meant that they liked to manipulate the images which had interactive functions, e.g. rollover images. This behaviour will be discussed in section 5.2.4.

Online packaging contains two main elements, product information and presentation. For high involvement participants, they had motivation (when they clicked on a wine) and ability (wine knowledge) to process the wine's information, which could be the major criterion for them in judging the wine. Nevertheless the presentation of the wine was an auxiliary one, to help the wine obtains the participants' trustworthiness and assist them to easily identify the wine and to confirm the purchase was correct, as we have analysed in section 5.2.2. There was only one piece of exceptional behaviour that occurred in this category. The participant considered that product information and presentation were equally important for him/her to generate motivation towards a wine.

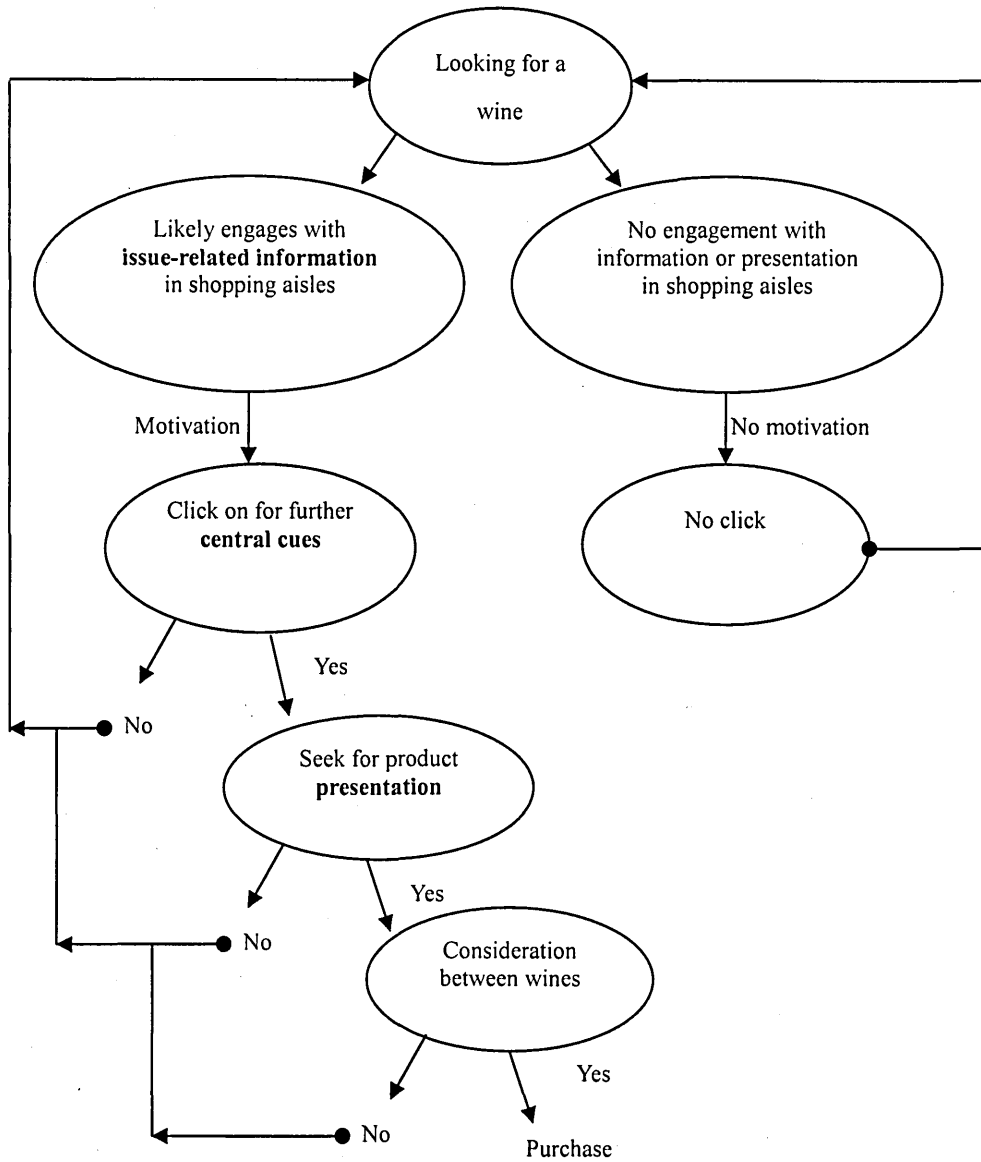


Figure 5.5: Purchase behaviour of high involvement participants

However, in most cases of high involvement participants, their motivation was more likely to be raised by a wine's description in a shopping aisle before they would click on the wine for further information. If they elaborated with the information, they would seek the wine's presentation for further consideration, in order to make their purchasing decisions. This kind of behaviour can be shown in figure 5.5.

2) Low involvement participants

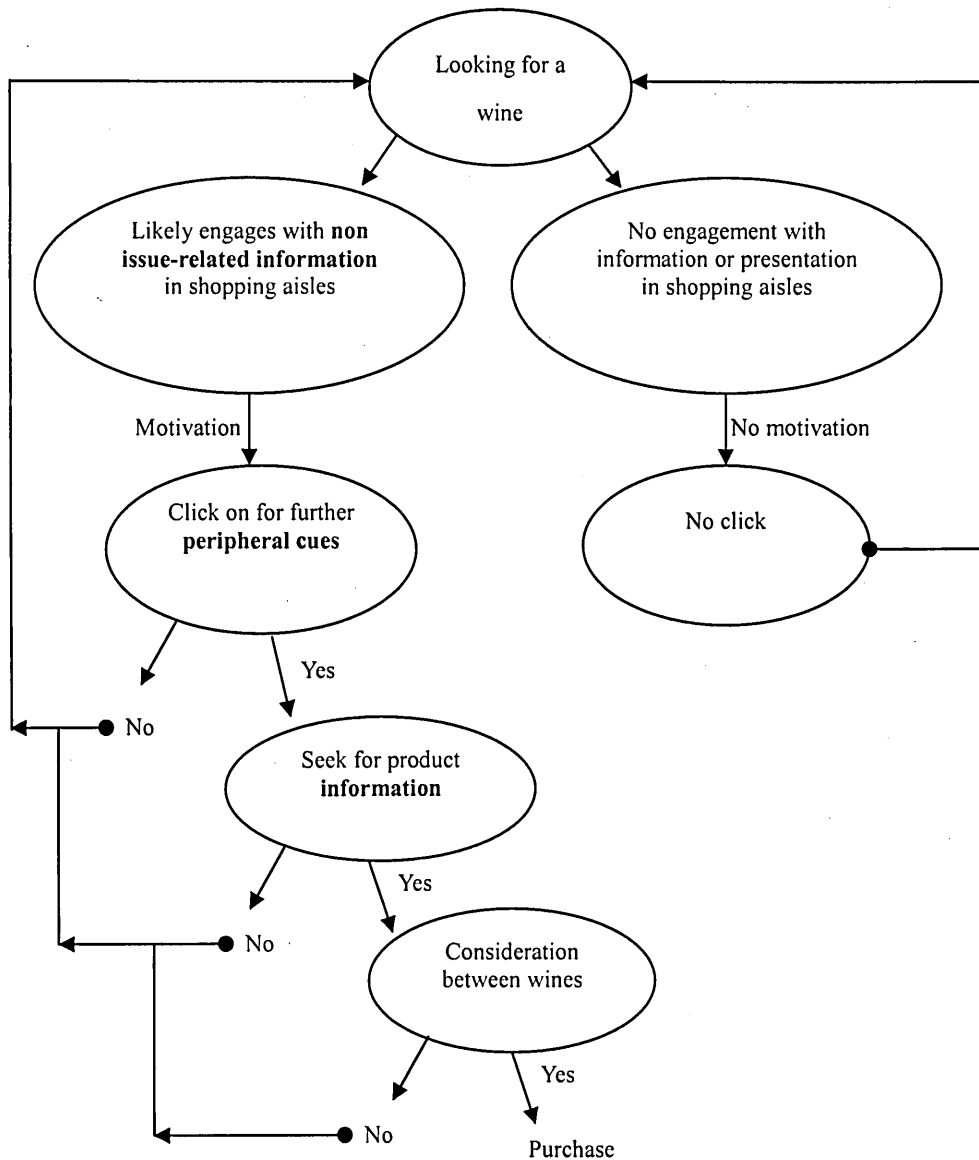


Figure 5.6: Purchase behaviour of low involvement participants

The figure 5.6 shows the purchasing behaviour of low involvement participants.

Compared to the high involvement participants, the low involvement participants were less likely to engage in issue-related arguments. The ELM indicates that they will engage with certain peripheral cues of online

packaging, e.g. customer's rating and interactive images. Their behaviours were not easily predictable, because they normally do not have enough knowledge or understandings to judge a product or a message. So they could be influenced by many variables, including some central cues, e.g. wine making process. This was because some of the low involvement participants simply believed that the longer the wine making process took the better the quality you would get. It could be questioned, whether they really understood this "technical" knowledge or not.

There were eight participants in this category. In the pre-observation interviews, five of them said that they had no idea how to choose a wine, with the rest of them saying that they chose wines based on the taste of the wine or friends' recommendation. In the observations, it was discovered that product presentation, such as interactive images, was the main factor in focusing their attention and motivating them to choose a particular wine. For example in task 2, six of the low involvement participants chose a wine based on peripheral cues, e.g. the look of the bottle, the label design and rollover images. However, some central cues of the wines' features were also considered during their decision making process, such as the rich description of the wine.

While most of the high involvement participants preferred rich and extra information with hypertext, only half of the low involvement participants liked this style of product information, with the rest of the participants preferring rich information. This point is likely to be explained by their information reading behaviour, as only two of the low involvement participants

scrutinised the wines' information during the experiment, whereas the other six participants only scanned (one person) or roughly scanned (five people) the information (See figure 5.4). One of the low involvement participants explained that the information was almost useless to him because he did not understand its real meaning, he only knew that he would never buy the cheapest and ugliest looking wine.

Low involvement participants' attitudes towards the style of product presentation were not as consistent as the high involvement participants'. Half of them thought that enhanced still images were enough for them to recognise the wines, they did not need interactive images to encourage their purchasing decisions. This was an unexpected finding, as the author assumed that low involvement participants were more likely to want interactive images than the high involvement participants. The rest of the participants preferred interactive images, so that they could have more interaction with the wines than mere still images. As was expected, no one enjoyed current online product presentation with small images or no image at all.

It was observed that the use of rich information for low involvement participants was unlikely to be used for them to attain the benefits that they could obtain from the wine but it was a symbol of trustworthiness to provide peace of mind. This behaviour was opposite to the high involvement participants' behaviour, as they sought features of the product based on prior concerns. The low involvement participants' motivation was likely to have been stimulated by peripheral cues, e.g. product presentation, food

accompaniment and label design. Only then would they click on a wine for more detailed information or presentation, in order to make a further consideration of the wines.

The detailed information that they were seeking could be central cues, (e.g. grape mix) or peripheral cues (e.g. interactive images). This might be strange to a person who did not understand the “technical” knowledge of wines. As mentioned, the information was a symbol of trustworthiness to their peace of mind, in order to confirm their choices were correct no matter what kind of cue it was, just like an experienced person did.

To summarise briefly for this section, the results of all the participants’ behaviour were mainly consistent with the prediction of the ELM, although some exceptions did occur. From the theory, high involvement people’s attitudes are formed on the basis of the central cues of information (e.g. grape mix and region of origins). This kind of strong attitude endures longer with strong personal understandings and is more likely to be predicted than with the low involvement people, whose attitudes are formed on the basis of the peripheral route which is elaborated by peripheral cues of information (e.g. customers’ rating and enhanced images). This attitude lasts for a short time and is without conviction. This tells us that it is very important for designers to create the features for a product that consists of all the levels of product involvement “messages” for consumers, so that they can communicate with the product via its packaging and will know of the benefits that they can have from any particular product.

5.2.3.2 Patterns of shopping behaviour

Although low involvement participants were not likely to understand and scrutinise some issue-related arguments, they felt that they needed to see rich information to ensure them that their decisions were correct. Similarly, high involvement participants also required to see the product presentation to confirm that they were buying the right wine. For both categories of participants, product information and presentation are firmly paired, as both mechanisms are needed to help them when they go shopping online.

There is a shopping pattern that can be generally concluded for both categories of participants. The following figure 5.7 will demonstrate this:

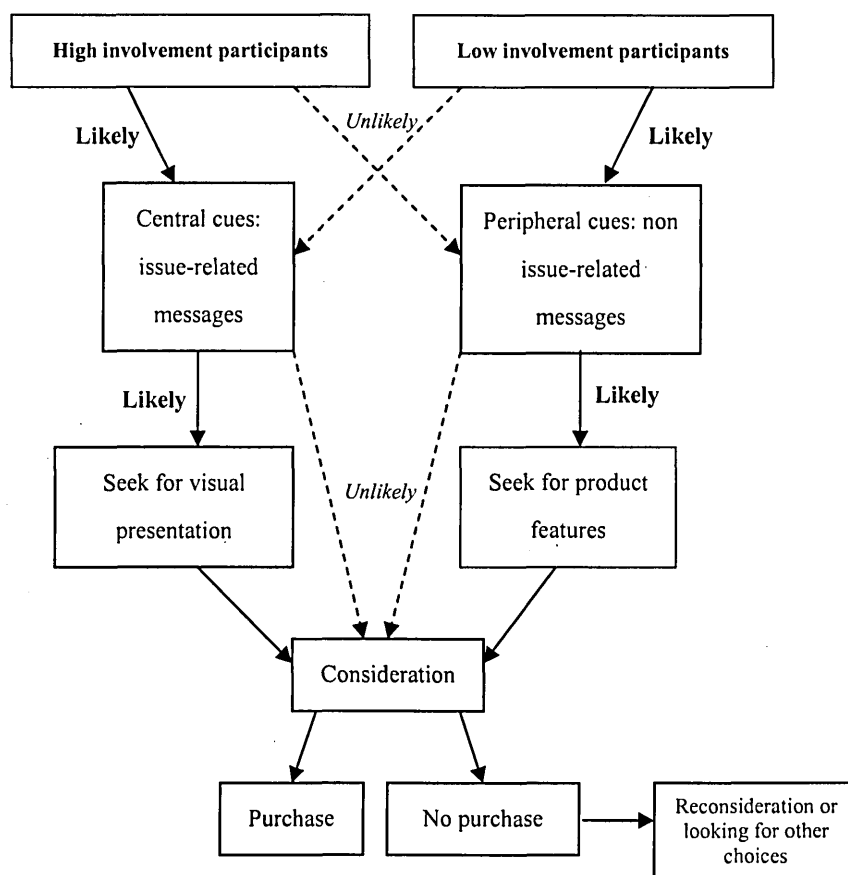


Figure 5.7 Patterns of shopping behaviour in this laboratory experiment

At different levels of involvement people have different concerns about a product, with there being one point which can be obviously observed for both categories. High involvement people are considered to be not easily persuaded by presentation alone but no participant would consider a product without visual contact, even if they were familiar with the product already. Low involvement people would not buy a product with their choice informed only by the appearance of the product. They also browsed (some people might know some shallow knowledge about wines, or were trying to find a clue to confirm their "intuitive decisions") and learned from the text information, although they might not understand the real meaning sometimes, due to their lack of precedent knowledge.

5.2.4 Impulse shopping and play behaviour

Impulse shopping is a common practice in our daily shopping trips. Blackwell et al (2001) indicated that over 54 percent of items bought during shoppers' physical shopping trips was impulse shopping. This shopping behaviour was likely to be stimulated by product displays, or reduced prices for a product. They also pointed out that shoppers often intended to employ product displays as a replacement for a physical shopping list. The presentation of a product can act as a reminder of the consumer's need to trigger their impulse purchases.

In the tentative studies, section 4.2.4 shopping observation, it was also discovered that participants bought many unplanned items impulsively in a brick-and-mortar supermarket but were unlikely to buy unplanned items in an online supermarket. Additionally, in section 4.2.5 the simulated online shopping, one of the findings was that eighteen out of twenty participants were likely to consider that enhanced online packaging had a chance to trigger their impulse buying mechanism.

Play behaviour was observed during the laboratory experiment, ten out of fifteen participants had this behaviour. As interactive images offered the participants an opportunity to manipulate the online product, they were likely to utilise this human-product interaction to bridge the loss that they could have physical contact with the online product, in order to help them to transfer their physical shopping experiences into the online environment.

5.2.4.1 Impulse shopping and low involvement participants

This impulse shopping behaviour frequently occurred in the low product involvement participants in the “laboratory” experiment. It was observed that the low involvement participants were almost shopping impulsively. Peripheral cues such as the design of the label, the colour of the label, interactive images and expert recommendation, were important factors to help the participants to make their purchasing decisions. Due to the fact that they did not have the ability to understand the central cues of information that the high involvement participants were more likely to follow.

There was only one participant who insisted that he would never be influenced by the appearance of a product and always tried to find the merits before making the purchase. Actually the function of online packaging is to expand the features of the product information and to create a desirable product presentation. Although this participant said that he tried not to be influenced by the appearance, his motivation had already been stimulated by the presentation of the product. Once he clicked on a product, he might find his merits from a full list of product information.

In the post-observation interview, the participants were asked whether they would buy products impulsively online in the future? There was only one participant who said “no”, the rest of the participants thought that clear images and rich information in an enjoyable online environment would be likely to stimulate their impulse shopping.

5.2.4.2 Impulse shopping and high involvement participants

Impulse shopping was not obvious with this group of participants. They were observed reading the product information carefully, trying to find issue-related arguments to fit their needs. As we know, they were following the central route of the ELM. It is not easy to persuade the high involvement participants to switch their choices due to their strong beliefs.

However, during the observation, they were often attracted by a wine with enhanced product presentation and clicked on the wine for further information. Thus, through their behaviour, it could be assumed that their attention was placed on the wine. This indicates that they clicked on the wine, at this point, the participants might generate their awareness and build up a positive attitude to the wine. After several exposures to the wine, participants might make a “trial purchase”. Of course, they might ignore the wine after the first browse if they did not like it.

In the post-observation interviews, all participants in this group agreed that they would be likely to engage with impulse shopping, if the product presentation had been enhanced and the product information had been fully described.

Although high involvement consumers seemed more likely to make a “planned purchase”, manufacturers and retailers might be able to use business tactics to switch them from a planned purchase to a “new” purchase, e.g. price reduction, re-design packaging, product displays or other promotional activities. For the low involvement consumers, their final

decisions making were often influenced by price reduction, product displays or packaging (Blackwell et al, 2001). Despite some marketing tactics, e.g. price reduction and promotional activities, product displays and packaging are the promising tools that can seduce the consumers in the different product involvement group. This might be one of the reasons why impulse shopping did not occur during the tentative studies due to the current online product being badly presented by online packaging.

5.2.4.3 Play behaviour

As described in participant one's transcript (see section 5.2.1), it was observed in this research that if a participant found a product which had enhanced presentation with interactive images in a shopping aisle, the participant would manipulate the interactive images and try to find out whether other products had the same effects or not. As we can see in figure 5.4, ten out of fifteen participants, five for low involvement and another five for high involvement, were observed to possess this behaviour during the shopping trips.

Barlas and Hoekstra (2002) stated that products sold online lack an "active exposure" to the customer in an online environment and that it could reduce purchasing opportunities for unplanned products. The legibility of products can be important to satisfy different customers with different levels of product involvement. So a well-designed online product presentation is as important as it is in physical shops. In a physical environment, as mentioned

in section 2.2.3, shoppers normally pick up an item and look at it, turning it around or seeking information from its packaging, before they make their purchasing decisions. It is quite rare that shoppers grab an item from shelves and put in a trolley straight away without making any visual confirmation. However, in the online environment, there is no way for consumers to have this experience of manipulating a physical item, via the internet under the current technology.

It is not clear whether play behaviour was driven by the participants' curiosity about computer interactivity or whether they were seeking visual information to attain a better understanding of the product without reading its text description. Whatever the reason, the product was successfully exposed to the participants in order to increase their awareness or motivation for the product. Although online shoppers cannot manipulate a physical product in online shops, these observations suggest that need for this behaviour can be met by "playing" with interactive images to transfer the physical shopping experience into the virtual environment.

As demonstrated in this experiment, the low involvement participants were almost shopping impulsively and with many of them demonstrating play behaviour. In the high involvement group, five out of seven participants had play behaviour. Although the causal relationship between play behaviour and impulse shopping has not been proven, it is a good opportunity to expose products to them, in order to create an awareness of the products in their mind.

5.2.5 Summary of section 5.2

In section 5.2.1, notes were transcribed from interviews and observations for every participant. Mapping and patterning was used for content and conceptual analysis in order to discover the use of online packaging and the differential of online shopping behaviour between low and high involvement participants.

The use of online packaging falls into three main areas: 1) Unlimited information provision: product information can be unlimited and can be extended in order to fit all of the consumers' needs regardless of their different levels of product involvement, 2) To provide visual assistance: enhanced product information and presentation can draw consumers' attention to stimulate their awareness or motivations for a product, and 3) To expand consumers' consideration lists: once consumers increase their awareness or motivations for a product, the product has more chances of being sold.

Participants with different levels of product involvement and purchasing patterns were evaluated by the ELM. The result was consistent with the prediction of the ELM. The high involvement participants adopted the central route to scrutinise issue-related information but they were not easily persuaded by the argument of the information. The low involvement participants mainly followed the peripheral route and were more likely to be persuaded by non issue-related information, as the issue-related

information only played a minor part in their considerations for this group of people.

In physical shops, consumers normally pick up an item and look around its sides for information or confirmation before purchase. There is however no chance for us to do that in online shops, but play behaviour might be a substitutional behaviour to help consumers to transfer their physical shopping experience into the virtual environment and to trigger the motivations of impulse shopping for consumers with different levels of product involvement.

Although this research showed that ELM predictions were correct, it was also found that both groups used both routes, it was the emphasis or focus that was different. All participants thought that rich information and clear product presentation are essential for online products in order to gain their confidence for the product.

5.3 Discussion

In this section, the implications of the findings in the experiment will be discussed with three points: 1) Forms of online packaging: to discuss the appearance of online packaging, 2) Innovation in packaging thinking: to explain the historical meaning of online packaging, and 3) The design guidelines of online packaging: how to inspire online packaging. The purpose of these discussions is to discover a more in-depth knowledge of online packaging than is currently considered.

5.3.1 Forms of online packaging

The initial plan of this research was to find out the form of online packaging. "Form" in this case means the operational structure of the packaging - describing its visual, informational and interactive features. However it was discovered that online packaging has no standard form of presentation in online shops and the form of online packaging is not taken very seriously as studies on this topic have shown.

Physical packaging is very diverse in its forms, while some codes for online packaging may emerge, it is also likely that designers will always push against the boundaries of the codes.

As discussed in section 4.2.3, it was found that current online packaging had three kinds of formats, text, pictorial icons and a product's real image (Visser, 2002; Huang, 2003). These existing formats could be considered as

primitive online packaging. Designers and retailers did not deeply consider the function of packaging to “pack” online products and fully utilise the advantages of computer interactivity and multimedia design to enhance the online product information and presentation. This caused poor online product information and presentation that online shops were normally blamed for by online shoppers.

According to the result of the “laboratory”, it was discovered (See section 5.2) that different levels of information and presentation can effectively influence and manipulate consumers’ purchasing behaviour and purchasing decisions. Although the design of online packaging will be dependent on the designers and retailers’ cognition to the awareness of online packaging, the most important thing for online packaging is to establish a good communication between online products and the consumers.

The biggest difference between physical and online packaging can be the quantity of product information and the presentation that has already been mentioned. In the physical world, designers can only choose limited information to suit a specific category of consumers’ needs but designers can use all the direct and indirect information for consumers to choose by themselves in the virtual world. Similarly, presentation need not be only still images. It can include various types of multimedia but the drawback of online packaging is that consumers cannot touch the physical product. Apart from that though, consumers might have many benefits that they do not have a chance to obtain from the physical packaging.

5.3.2 Innovation in packaging thinking

As mentioned in section 2.2.1, packaging has been used to preserve food and to protect goods for 3000 years and has been called as a “silent protector” for products. Through the development of commerce and the rise of supermarkets, the role of packaging has been expanded from a “silent protector” to a “silent salesman”, revealing that packaging has a dualism which can not only protect but also promote products. Since the introduction of eCommerce in the early 1990's, online shopping has gradually caught the consumers' attention.

However, computer screens replaced physical shelves, images replaced physical products and virtual spaces replaced real environments. In these circumstances, consumers could not have physical contact with the products directly; they need to imagine the existence of physical products. The lack of physical contact, visual impact and information cannot simply play the role of “salesman” in full under this trading platform, as this argument was discovered in section 4.2.4 and has been recognised by many researchers (See section 2.5 online consumers' attitudes towards products' information and presentation).

In chapter 2, a historical perspective of packaging was explored, as was online consumer behaviour and the differences between packaging and advertisement, to discuss the concept of packaging which could be potentially transferred to the virtual world, in order to continue the function of packaging. This research also wanted to explore the historical position of

packaging for eCommerce and what benefits packaging could bring to online shoppers.

There are several issues taken from the literature review and practical work: 1) eCommerce is strongly increasing, 2) packaging can help both products' sales and consumers' recognition, 3) the current online shopping mechanism lacks sufficient methods to provide product information and presentation which packaging performs in the physical world.

If it is presumed that the step to "silent-protector" was the first packaging innovation for keeping products in a complete condition and the step from "silent protector" to "silent salesman" was the second packaging innovation for the booming of supermarkets. When and what will occur for the third packaging innovation? The author considers that it is necessary to take a fresh look at packaging and to make the third packaging innovation happen for eCommerce. Additionally, interactive features can be a key tool, as well as product presentation and information that can all be the main players for this innovation.

Interactivity is one of the most useful advantages of the internet. It can synchronously provide a response to consumers and has various ways to present products, such as animation, interactive images, high quality images, consumer controlled 3D presentation and even a vocal mechanism for product introductions. These special effects could catch the consumers' attention and provide novelty ways to actively interact with shoppers, in order to guide their physical shopping experience into the virtual world. This

would be better to help shoppers to browse and recognise products than the current small still pictures provided in most online shops.

Another advantage is hypertext, which can maximise the source of information and content. The physical packaging has a limited space to print relevant information, hence the manufacturer can only choose specific information to print. However, the chosen information might not be sufficient for everybody. On the internet, this problem can be limited. The manufacturers and retailers can produce a total catalogue of information to place beside any product. For example, specific specifications on ingredients can be fully explained, as space is not as limited as it is on the packaging of a product in a supermarket.

One of the difficulties for this research was that many people ideologically believed that the concept of packaging could be only applied physically and not in virtual environments and that this would cause poor product presentation and information. Was that true that the concept of packaging could not be transferred to the virtual environment? As we can see that advertisements have been named “internet advertisement” on the internet, and the public has recognised the term “internet advertisement” which is performing the same function as it does in the physical world. Thus why can packaging not be utilised on the internet and named “online packaging”?

From the historical view of packaging, it has been discussed that packaging was firstly used as a protector for products, whereas it has become a silent salesman when the trading platform of self-service

supermarkets was booming. E-commerce is a relatively new trading platform and packaging should have to step further to adapt to this new virtual market-field, with designers and marketers also needing to consider that packaging is confronting a turning point, where online retailers can attain profits and online shoppers can be also benefit from this packaging transformation.

This research indicates that we have to take the advantages from the functions of packaging and apply it to product presentation and information for an online shopping mechanism in order to create a considerate online shopping environment and achieve the third packaging innovation for the historical missions of packaging.

5.3.3 The design guideline of online packaging

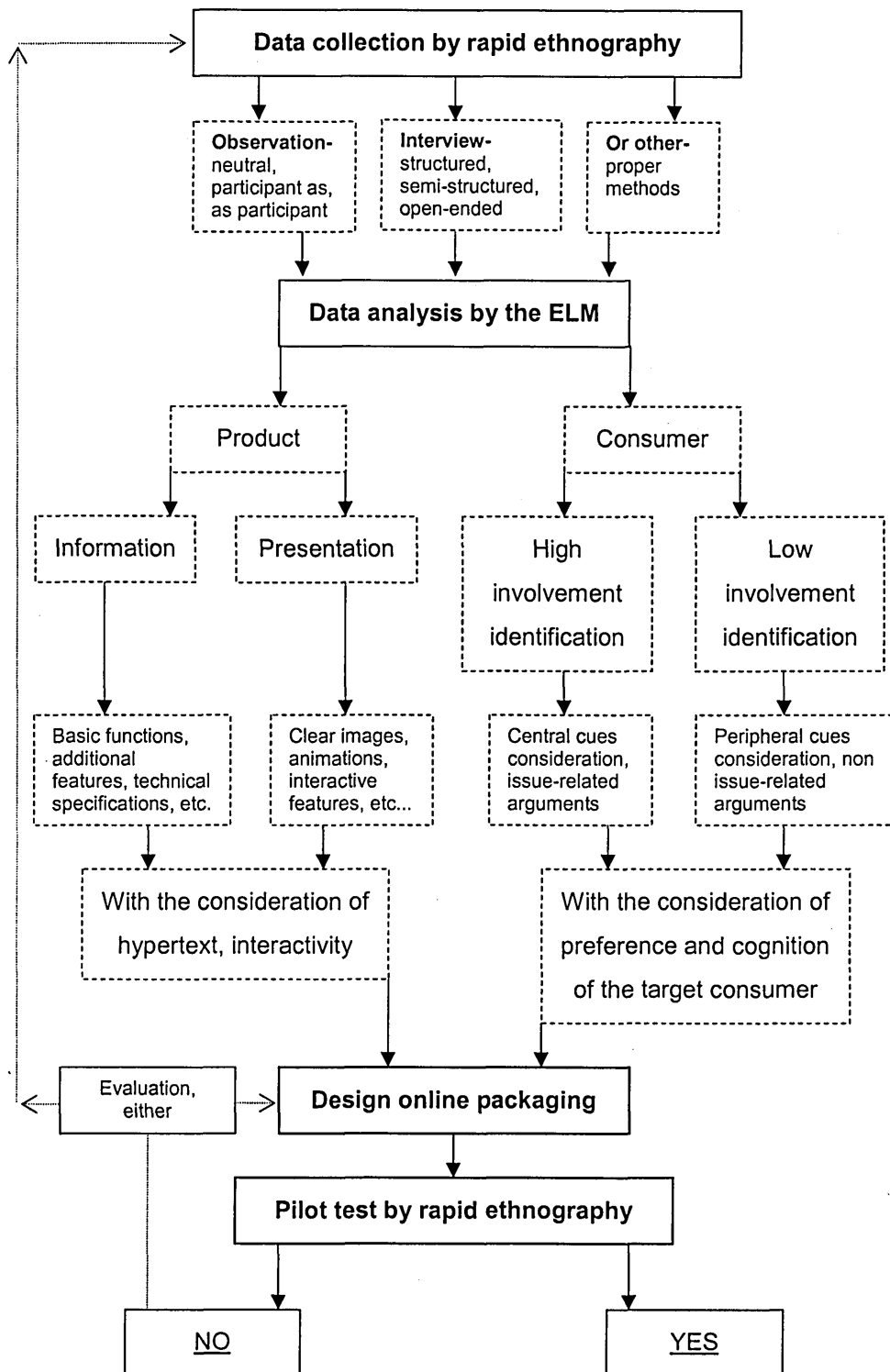


Figure 5.8: The design guideline of online packaging

Designers use the methods of the creative arts and the sciences. Research methods that are the scientific approach are used to gather and analyse data, to better understand the subjects in the design project. Creation and techniques that are the applied art approach are employed to express designers' ideas to communicate with users.

Drawing on the outcomes of the research, the author proposes a framework of online packaging design guidelines which is based on the following four themes:

1) Packaging functions – to build the understanding of products and deliver the product's benefits via online packaging.

2) Elaboration Likelihood Model (ELM) – to understand consumers' concerns and personal factors to a product for people with different levels of product involvement.

3) Interactive features – to use the techniques of interactive design in an online shop to best perform online packaging, and

4) Rapid ethnography – to employ this research approach to understand a product and a consumer's need and pilot test the design of online packaging before its launch.

As discussed in section 3.4 designing does not follow rigid procedures. This guideline is also not a rigid step by step formulation but it does provide a fresh look at the packaging functions that can still be used in online shops. This research indicates that designers can employ ideas from the ELM and rapid ethnography to understand consumers and the product in the design

process in order to consider certain issues during the development of online packaging, and there are a number of opportunities to employ interaction strategies. The four themes of the design guideline are explained as follows:

5.3.3.1 The use of packaging function

As mentioned in the literature review, it was found that packaging mainly served the functions of product protection and promotion. The promotional function was adopted for online packaging thinking, including product information and presentation. Packaging is a good solution as a sales promotional tool for a marketing strategy (Oliver, 1995; Stewart, 1996), as shoppers often employ product displays and presentation as a virtual shopping list in brick-and-mortar shops that also frequent trigger impulse purchases (Blackwell et al, 2001). However, many researchers in psychological fields (See section 2.5) discovered that online shoppers found it difficult to buy online due to poor product presentation and description. They suggested that novelty presentation and rich product description could enhance this poor situation. Their suggestions were consistent with the findings of this research but the question that they did not address was how to conduct the design work to enhance the poor situation?

The author argues that for product information and presentation, it is necessary for designers to find out the product specification and features that the product can provide to consumers before commencing the design process, because online packaging offers the opportunity for much richer

information and presentation than a printed pack. The research indicates that consumers will respond to this additional detail. For example, it was discovered in this research that product features had to be created for both involvement participants in their own “messages” in order to stimulate their motivation for a product and persuade their purchasing decisions. Doing so is not only delivering information to consumers but also creating consumers’ desires for the product.

However, it is difficult to tell what kind of information and presentation should be included and what kind of information and presentation should not. Conditions may vary for different products, due to the different attributes of each product and the target consumers as we mentioned before.

This research indicates that a rapid ethnographic strategy, observation and interview, is another way for designers to find the consumers' part of the story whereas the product information is found by understanding the product itself. Knowing the product and the manufacturer will help designers produce rich information. Knowing the consumer will help designers identify which information is relevant.

5.3.3.2 The use of the ELM

This cognitive psychological theory was employed for two main purposes as mentioned before: a) To provide the guiding principles of design to consider different content (for both information and presentation) for different levels of product involvement consumers, in order to give them

suitable cues, resulting in favourable thoughts for their involvement. b) To predict the participant's behaviour, as well as to measure the effectiveness of product presentation and information, in order to understand online consumers' expectations and online packaging requirements for eCommerce. This theory has been frequently used in academia to compose persuasive messages and to predict people behaviour, as described in section 2.4.3.

The author believes that this theory is extremely useful for designers, as it had been used twice for two studies in this research and the results of these studies were consistent with the theory. However, it has rarely seen any other designers and design researchers who have paid attention to the ELM.

From the viewpoint of designers, they not only need to understand the item that they are going to design, but they also have to know who is going to use their design. This research suggests that understanding the different levels of involvement of their target consumers will help designers to better communicate between the object and the consumers.

Everybody has his/her own personal factors, hobbies, knowledge and precedent experience. It is very unlikely to be able to establish good communication with your entire target consumers by using a set "message". Many of the consumers may not understand what you are trying to tell them, although these "target" consumers might share the same level of education or the same activity, e.g. internet users, they may not have many other things in common.

The data of the consumers' background research can be analysed by the ELM, which tells us that the consumers have their own involvements towards a product. The designer can use interview and other consumer data to identify the points where high and low involvement occurs. Furthermore, it is not just a matter of separating consumers into high and low involvement but also identifying the issues around which involvement occurs. The implication of the ELM for designers is that for high product involvement consumers, designers should use issue-related arguments to emphasize the quality, attributes and benefits of their products. For low involvement consumers, designers should employ the peripheral route of persuasion, using non issue-related messages as peripheral cues to stimulate the consumers, such as background music, visual stimuli and celebrity spokespersons.

5.3.3.3 The use of interactive features

Nowadays, internet use is increasing and website design is becoming more sophisticated. In this research, it was found that hypertext and interactivity were the key advantages of online packaging. Hypertext can extend a product's information without limitations and interactivity can help consumers to transfer their physical shopping experience to online environments, as we discussed in section 5.2 designers should use the technique of interactive design to best perform online packaging in shopping websites. There are many design techniques that can be employed, such as image enhancement, three dimensions, animation, vocal mechanism and

interactive image. These techniques may apply to an online product which fits its main attributes or focused features. Nevertheless, these techniques are methods to design the appearance of the product. Importantly, the content of the design that can communicate well with the consumers is a real interactive design, no matter whether the design can flash/move or not.

5.3.3.4 The use of rapid ethnography

In this design guideline, rapid ethnographic strategy is designed to be employed at the beginning of the process to collect background information about the product and the target consumer, with the final principle being a pilot test to test the online packaging.

Ethnographic research has been used for design research since 1970's to improve poor human-machine interface problem, but a traditional ethnographic research is a time consuming task which can take from several months to several years. Designers do not normally have much time to deal with a design project, they often have hours or days to respond to their clients or to solve a design problem. So they need a quick method to gather goal-directed information in order to understand the whole situation for the design.

As mentioned in previous paragraphs, it is very important for designers to understand the product and the target consumers before designing online packaging. This research demonstrated that rapid ethnography provides a quick lens to spot problems of a product, including hardware problems (the

problem of product mechanism) or software problems (the problem of product communication). It can also be used to gather consumers' preferences and opinions for a particular product. This information will provide designers with a great help to improve current problems or offer them ideas to create a brand new design.

The second rapid ethnographic approach in this guideline is to test the effectiveness of online packaging before completing the design project. This will help designers to spot problems that are not their concern and the finding of this pilot test can also be their references for future modifications of online packaging.

5.3.3.5 Using the guideline

The guideline has four principles which are simply demonstrated in figure 5.9 and every stage will be explained as follows:

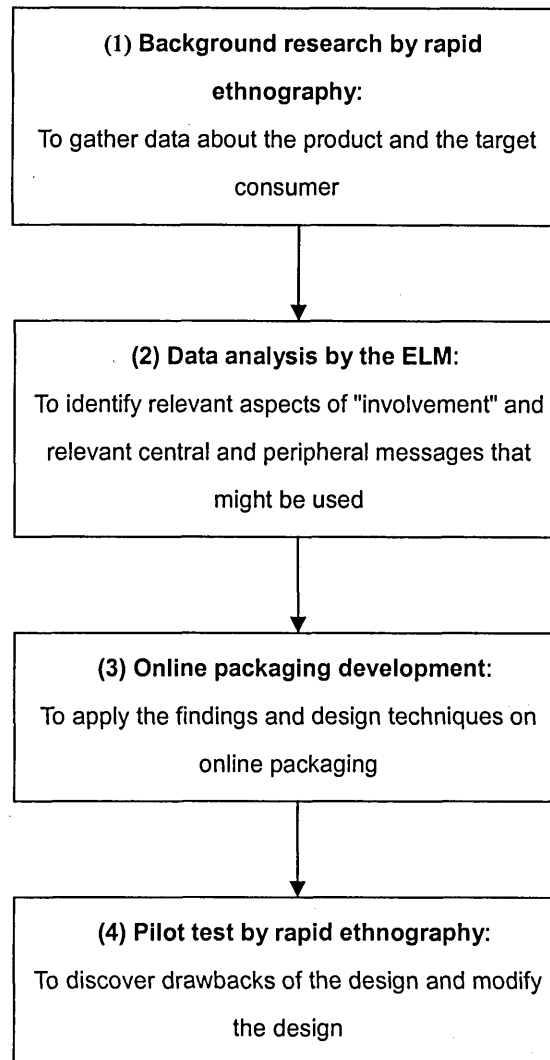


Figure 5.9: A simplified version of the design guideline of online packaging

(1) For the data gathering stage

Rapid ethnographic strategy is suggested. Of course, designers may also have other methods for collecting additional first and second data. Whatever technique they use, it is important for designers to learn how to recognise

when they have collected adequate data and can move on to the next stage.

(2) In this ELM analysis stage

The data will be analysed and sorted into two parts, **(A) the product part** and **(B) the consumer part**. The ELM thinking will be applied to the analysed data and will explain how to apply it.

(A) The data of the product part can be broken into **a) *information*** and **b) *presentation*** sections.

In the **a) *information*** section, the ELM is applied to consider different information for a product, including issue-related and non issue-related messages, for different levels of product involvement consumers. There are some categories listed, additional features, technical specifications and basic function, (See figure 5.8) for designers to refer to and every category has to contain the information for both high and low involvement consumers. For example, “additional features”, one of the categories, the ELM predicts that the high involvement consumers are likely to recognise these messages. However in this research, it was found that low involvement consumers also wanted to see some messages from the “technical knowledge” in order to confirm their choices were “correct”, although they might not really understand the meaning. So this category of information can be designed technically but in readable terms for all consumers, e.g. avoid jargons, abbreviations, which were suggested by traditional packaging researchers for physical

packaging (Emblem and Emblem, 1996; Chou, 1999). However, it is arguable that this research indicates that some low involvement people paying attention to technical knowledge that they do not understand, jargon and abbreviations might be re-assuring to them since they give an impression of expertise.

In the *b) presentation* section, the ELM is also applied to this section with high and low involvement considerations for consumers. Product presentation is considered as a peripheral cue, but in this research, it was discovered that most consumers needed proper product presentation. The high involvement consumers needed this product presentation as a visual confirmation, whereas for the low involvement consumers, the product presentation could be a stimulus for their interest in the product. To meet these needs, a product's presentation might have an enhanced image(s) in a shopping aisle and have interactive images or a larger image(s) in a further detailed webpage. However, individual designers will have their own ideas about how to respond to these issues and that is beyond the scope of this research.

(B) The consumer part can be divided into high product involvement and low product involvement groups.

It has been discussed in section 5.2 and previous paragraphs that product information and presentation have to be properly designed for both involvement consumers. Therefore, designers have to understand the high involvement consumers' concerns, the preferences of this group of people and what benefits and advantages they can get from the product in order to

generate issue-related information for the target consumers. For the low involvement consumers, designers need to do the same thing, in order to select suitable peripheral cues, as well as what they do for the high involvement group.

(3) Online packaging development stage

Data were analysed from the background information of the product and the target consumer by the previous stages. This research has identified some online packaging features (See section 2.5.4) and tested a number of actual techniques, such as clear images, a manipulatable wine bottle, animations and rich information (See section 4.3.5). In this stage, designers employ their design techniques, based on the findings, to design online packaging for the product.

(4) Pilot test stage

During development/evaluation of the design designers can adopt the rapid ethnographic approach used in this research to observe consumers' interaction with the online packaging and interview them for their opinions.

5.3.3.6 To summarise briefly the design guideline

The author suggests applying the ELM thinking to find suitable messages for high and low involvement consumers. It has to be emphasised that every

single message must have its own argument and focus, no matter if it is non issue-related or issue-related. A designer might themselves be one of the high or low involvement consumers in reality, so the designer has to keep his/her thinking in balance. When s/he finds a persuasive cue for one side of the consumers, s/he must think about another cue for the other side of the consumers.

Designers might find it difficult to find appropriate high and low persuasive cues for all consumers, this is why the rapid ethnography strategy can be important for designers to gather different views of background information from the product and target consumers in a very short time and in an efficient way. Moreover, it is important for designers to identify the significant areas of high and low involvement and the cues or messages that might be relevant to each. These may not be the most obvious aspects of the product in question. This is not a question that consumers can be explicit about so rapid ethnography provides means for designers to observe and identify issues directly.

These guidelines offer a direction for designers to think of the development for online packaging and what they should consider during the design process. Most importantly, the design guideline integrates two practical theories, the ELM and rapid ethnography, taking the theories from academic terms into practical terms which will be easy to understand and follow, making this academic research relevant to practice in a direct way.

5.3.4 Summary

This discussion presents the evaluation of the findings from the practical work and the literature review in three parts: 1) Forms of online packaging, 2) Innovation in packaging thinking, and 3) The design guidelines of online packaging.

- 1) Forms of online packaging: it is discussed that there is no standard form of online packaging in terms of designers' creative expressions.
- 2) Innovation in packaging thinking: packaging has been used in our daily life for thousands of years, and has been given additional new meanings and functions as time and trading platforms have gone by. In this digital era, packaging professionals should upgrade and adapt their thinking to the new retail environment if their work is to remain relevant.
- 3) The design guideline of online packaging: this guideline offers a framework of data collection methods, data analysis, design directions and evaluation methods for designers to develop online packaging. Two academic theories were integrated into the guideline to create an easier understanding. Each design stage can be followed by the designers to solve design problems, in order to enhance their design for online packaging.

In the next chapter, we will discuss the contribution and evaluation of this research, the criticisms and limitations will also be discussed for the direction of future research.

Chapter Six Conclusion

6.1 Consequences of this research

This section, will discuss the main contributions of this research, as follows: 1) Packaging thinking in the online environment, 2) Research method for designers, and 3) The application of the ELM for designers. The implication for retailers and manufacturers are also indicated.

6.1.1 Packaging thinking in the online environment

This research has introduced the issue of online packaging into academic research forums. As mentioned, publications from this research have encountered resistance from some designers and researchers indicating that online packaging thinking is a novel concept for many of them and they are unable to separate online packaging thinking from advertising and online shop design. They do not recognise the argument that the functions of commercial packaging design can be transferred to the virtual environment. However, Visser (2002) considered that packaging is an underused resource for eCommerce and this research suggests that designers will benefit from focusing on this understudied issue.

This research also indicates strongly that online shoppers do need the commercial packaging functions such as product information and presentation, to help them to buy online and also help them to transfer their physical shopping experience into the online environment. The author tentatively defines online packaging as *“online product information and presentation which transfers important functions of physical commercial packaging to the virtual environment, in order to assist e-commerce sales (Huang et al, 2003; Huang, 2003)”*. It is hoped that this provisional definition will provide a direction for a further discussion to consider the development of online packaging.

The two further contributions of the research are more specific, they provide guidance for designers who wish to implement online packaging.

6.1.2 Research methods for designers

This research suggests that rapid ethnography can be a useful research approach which will stimulate creative thinking as well as providing relevant knowledge for designers working in this new area.

Designers need to perform their own research because there is little established knowledge and experience of these online packaging design problems. Additionally, every product has its own attributes and each target consumer group has its own characteristics. Thus, this research suggests that designer could benefit from investigating the product and the consumer by adopting methods based on rapid ethnography in order to understand their online packaging projects.

This research also indicates that qualitative research is more appropriate for designers to use in their practical design process than quantitative research. As a qualitative research can be “quick and dirty” method to understand all the requirements of the design project, in order to quickly respond to time restriction and clients’ demands. However quantitative research normally requires a big sample survey and a rigid instrument for analysis and measurement of the data, designers normally do not have time or the knowledge to deal with this type of research.

In section 5.3.3, the use of rapid ethnography has been described. This research has demonstrated that rapid ethnographic strategy is very useful way for goal-directed background research in collecting products’ and consumers’ information without sacrificing the quality of the research. Additionally, repeated use of this method will allow the designers to find drawbacks in order to refine and focus their design proposals.

6.1.3 The application of the ELM for designers

Another meaningful implication of this research is the importance of consistently applying ELM thinking to an online product and the target consumer for the development of online packaging.

Although the ELM is frequently used in studies for researchers who want to construct persuasive communication and predict people's attitudes towards messages, to date it has rarely been employed explicitly in design practice. However, the ELM has been used twice in this research for guiding online packaging design and predicting consumers' behaviour with different levels of product involvement. Finally integrating it into the design guidelines for online packaging. This research indicates that the ELM provides a very appropriate way for designers to think about their online packaging problems, producing different message cues for online shoppers with different levels of product involvement.

Although there is no single and definite answer to design problems, each design project is very different to other projects, the ELM is a useful instrument for guiding designers to create different persuasive messages, including visual elements, for consumers with different levels of product involvement.

Finally, there is one thing that needs to be mentioned. This is that the success of online packaging does not only depend on the designers' creativity. Retailers and manufacturers have a very important role in the development of online packaging. They need to create standards and an infrastructure for their websites, so that designers can apply online packaging to their products.

Retailers and manufacturers recognise the importance of packaging as an efficient marketing tool (Stewart, 1996). They always need to make sure that every element of packaging, such as the naming, colouring, branding, labelling, displaying, information and shape, can provide adequate stimulation to provoke consumers' awareness and cognition in physical marketplaces. Retailers have developed a suitable infrastructure for the display of packaged goods, and manufacturers tailor packaging to the retail infrastructure. They are firmly paired to support the performance of packaging in physical shops.

Since, in the last decade the marketplace has been extended to the online environment, retailers and manufacturers should step back and seriously consider the importance of online packaging.

However, it is difficult for designers to apply online packaging thinking to each product in every online shop unless retailers work out standards and an infrastructure for their websites. For example, the database of online packaging could be set in the manufacturers' servers following standards agreed by retailers, with retailers only providing a gateway for consumers to link them to the database, so that designers can easily follow the standards and infrastructure and apply their creativity to online packaging.

6.2 Evaluation of the design guideline

While the principles in the guidelines were evaluated throughout this research, the usability of the guidelines themselves has not been tested. Although this is not a central part of the research, an opportunity was found to carry out an informal test.

The author introduced the design guidelines to 3 groups of 8 design students at Southern Taiwan University of Technology. The students were encouraged to use the suggested methods in their creative work.

Two students resisted using the recommended approach and indicated that they did not see any need for formal guidelines for creative work. The remaining 6 students chose to apply the guidelines to current project work. Initially they saw this as an aid to presentational and informational aspects of the design for their online shops, but as their work developed they found the guidelines helpful with information collection and audience analysis.

This was a new departure for the students who had previously relied on their own ideas without reference to their audience.

From this small study it appears that the design guideline can be understood by inexperienced designers and it can influence them to pay greater attention to their audience. In further discussions, more experienced postgraduate design students were quick to recognise the principles in the guidelines and recognise ways to put them into practice. (The undergraduate work is concerned with the online shop of the Taiwan Salt Museum)

However, students also mentioned that it might be difficult for them to understand the design guidelines without the author's introduction in the tutorials for two reasons: 1) They did not understand some academic terms, such as rapid ethnography and the ELM. 2) They did not know how to apply theoretical guidelines into their projects.

These problems might cause designers to avoid understanding it and will consequently result in a failure of the guidelines. Therefore, further development is needed to create an effective "toolkit" in a practical term that designers can easily understand and apply to their designs.

6.3 Criticism and limitation

The main criticism of this research is that there was only one category of products used to present the idea of online packaging, with the idea only being tested in the “laboratory”, rather than in a real online shop. This limited context of a simulated wine shop has provided insights and principles which may have value in other areas of packaging and design, but these have not been explored in this research.

It could also have included larger samples of participants to test the idea with different categories of people, such as designers and marketers.

According to this research, online packaging is a relatively new research topic, with this study acting as pioneer research for this topic, as academia is yet to focus and concentrate on it. There are some limitations, which have not yet been discussed in this research. There are follows:

Packaging design:

Although the functions of packaging are reviewed in the literature review, many issues of commercial packaging design are not discussed, such as colouring, branding and the shape of the packs for the application of online packaging. It does not mean that these issues are excluded from online packaging, because this research only focuses on the significant new problems and opportunities in this activity.

The internet:

In this research, the author suggests that it is best to use interactive images and rich information for online packaging. To do this, it will cause large files of transmission over the internet. Issues, such as computer compatibility, the bandwidth of internet transmission and the colour differential of each monitor were also not considered for this research.

The research method:

It is normal for ethnographic research to be conducted in natural setting environments.

Natural settings	<ul style="list-style-type: none"> 1) Location – in the participants' houses 2) Computer – using the participants' computers. 3) Online shop – general design of the laboratory online shop.
Less natural	<ul style="list-style-type: none"> 1) The design of online packaging and the shopping aisle were partly different from current online shops. 2) The author was being in their houses.
Not natural	<ul style="list-style-type: none"> 1) Limited choices of wines. 2) This was an experiment.

Figure 6.1: Some less and not natural settings were used in the studies of 4.2.5 and 4.3.

However, while early studies were conducted in this ideal, the studies of 4.2.5 the simulated online shop and 4.3 the laboratory online shop were conducted in partly artificial settings, due to the ideal “venue” not being found in current online shops for these experiments. Thus, the author has called it “amended rapid ethnography” under these circumstances, instead of the “rapid ethnography”. Figure 6.1 shows the difference of the amended one.

The author considers that the rapid ethnographic approach is very appropriate and useful for designers to gather background information about

their design projects and to test their new ideas or products, although this “amended rapid ethnography” has not been recognised by the academia.

6.4 Recommendation for further research

Online packaging is a new subject and therefore it lacks a body of theory and a specific research agenda. Future research could fall into two directions 1) in a research setting, and 2) in a professional practice setting.

1) In a research setting: In this research, the idea of online packaging was only applied and examined for one kind of product, and the theories developed are grounded in that limited context. It needs to be applied to various products, to better examine the transferability of the idea. Meanwhile, some functions of commercial packaging design, e.g. branding, colouring, that have not been discussed in this research, can also be added for discussion in future research, in order to gain a holistic view of online packaging.

2) In a professional practice setting: although this research is conducted through design, it lacks a real marketplace for designers to apply it to online products, to examine the effectiveness of online packaging in order to gain more critical results to improve the drawbacks of the idea rather than in the 'laboratory' experiments. This will help researchers to refine the design guideline and the rapid ethnographic approach research for more practical use, as designers need easier and more appropriate ways to help them in the design process and enhance the quality of their designs.

It has been difficult to generate a new idea and test it with few theoretical and practical supports and this tentative approach is due to this being the beginning of online packaging research. It needs more research and practice to refine it, before academia and the industry pay more attention and recognises this "pixel pack", the next stage for online sales.

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Appendix A

The transcript of designers' interviews

Interviews with designers

Location: London

Time: May/2002

Interviewee:

A. Ms. Keren House, Creative Director, Siebert Head Design.

B. Mr. Sean Fortune, senior packaging designer.

Q1: Can you tell me your background and what design projects you have done?

A: Graduated from the Royal College of Art in 1976. Spent 2 years teaching graphic design at Pennsylvania State University then joined Pentagram in London for 2.5 years, before leaving to start up my own company-The partnership, which became The partners in 1983. Clients included the Museum of London, Honeywell, Boots the chemist and The Bank of England Museum. In 1990 I joined Design Bridge and it was only there that I became more involved with packaging and brand design , working with others on Suchard Chocolate, Colemans Mustard, dry sauces and condiments and the full range of School Footcare products amongst other projects. In 1998 I joined Siebert Head as creative Director working on such brands as Phileas Fogg, Toblerone and most recently Carlsberg Lager and Export.

B: I graduated in Industrial Design 1986 and worked for Fast Moving Commercial Goods (FMCG) Consultancy and R&D with Johnson Way.

Q2: Do you think there is a design theory involved in your design projects? If so, how does it work? If not, why?

A: Brand and packaging design is used as a means of communicating visible and visual differentiation between products. Any theories would have to respond to market changes and consumer needs. I don't know

that I work to any theories, but I do know that when I start a new project I will look for a point of difference to articulate and a big idea if possible. Any piece of packaging then has to work- it has to be readable, feel right in the hand, open and close properly-do everything that is required of it in the best possible. Sometimes these things are born of logic, sometimes of intuition. The skill, perhaps, is to recognise their worth and then fight to realise them.

B: Not so much design theory as empathy. Empathy generated through an interrogation of the total brief, such as marketing objectives, manufacturing and distribution objectives, retail objectives and cost objectives

This is the closest to theory of approach – strategic insight. Alongside this, and potentially more important, is understanding the consumer as an individual – not a type corralled by demographic profiles and generating a clear picture of what the consumer wants, expects and thinks.

Q3: What do you think packaging design innovation is? How does it occur?

A: See Q1 and 2.

B: A lot of packaging innovation is exactly that – innovation as seen by the packaging industry. It has very little relevance to a consumer – they see a box! True innovation is to bring something new and exciting to the category, meeting the strategic objectives of the brief whilst appealing to a consumer at a personal level.

Q4: How do you think successful packaging design that can be measured ?

A: If it sells.....again and again. If it contributes to a memorable brand identify- sign posting the brand. As physical packaging, if it does the above and functions well-delivering the product in an enhanced way. The Design Effectiveness Awards attempt to measure the success of

design across several categories including packaging-but it is difficult.

B: Successful innovation can only really be measured through sales performance.

- ROS- rate of sale, how fast the new product sells.
- Increased listing – the new pack being stocked where it was not before.
- All of this must be measured outside of promotional and advertising activity in order to get a good understanding of what the pack itself is doing. How the brand manifests itself totally across all media.

Q5: What kind of role do you think that packaging can play on digital media?

A: Packaging being the closest thing to product plays a large part-after all one larger looks, and often tastes, like another. The branding & packaging design defines and differentiates the product. Brands work-they have to work on digital media. They will use whatever equities and visual signposts they have at their disposal to promote, remind and lock into the memory. Packaging will be included in this (think the Coca-Cola bottle) but will not be the only too.

B: Packaging and digital media is a thorny issue – packaging must perform a transit function but the limitations of the average home computer hold back the display on screen. As technology moves towards a greater freedom of design may occur with online packaging performing a much stronger personal consumer interface rather than the requirement to perform on shelf.

The media is in its infancy – Radio and TV has been around for ages. Over the last 15 years we have begun to truly exploit it as an advertising communication medium in its own right – mini programmes and in depth communication outside shouting about the about.

Appendix B

The transcript of experts' interviews

Interviews with experts

Location: Taiwan

Time: August/2002

Interviewees

A: Mr. Tian, a lecturer of an university and packaging consultant for 25 years.

B: Dr. Cheng, President of Design Innovation Management Institute, 30 years experience in packaging research.

C: Mr. Lin, specialist in packaging, Design Promotion Manager of Taiwan External Trade Development Council.

Q 1: What do you think that online packaging could be developed or not?

A: I think the online packaging as you said can be some kind of animation which can make the digital packaging more attractive, such as the pack that can be opened by way of interaction with the customers.

C: I think that your "online packaging" can not be realistic and unnecessary. Even if you place various pictures, or animation of packs on to the internet. They are only a promotion method just like an advertising poster on a wall.

Q 2: Does the online packaging have potential for internet shopping in the future?

A: Actually it is very hard to tell the future, but currently the volume of eCommerce is going up and the amount of online shoppers is increasing. Especially the young population who are getting more used to buying and trusting in the online trading system. Apparently in the future, this young population will become the mainstream of the internet market. At that time you will see how important the place of online packaging will be on cyberspace.

C: I am not sure whether the “online packaging” will have potential or not for the future of internet shopping. However it seems a very good research topic. I think there is nobody who knows the result. No matter what result it will be, you should explore it.

Q 3: Do you think there is any different between “on shelf packaging” and “online packaging”?

A: In fact the “online packaging” you mentioned is a brand new concept for me. Although I do not know how it will be, I can imagine that a lively “online packaging” would be more attractive than a still of “on shelf packaging”. Besides, I suppose that “online packaging” is not only for selling purpose but can also be a kind of educational medium to tell customers of environmental issues. That will be very good.

C: I do not think you mentioned that a product's picture on the internet is “online packaging”. I would rather believe that is a promotion method like an advertisement. Hence you have to develop serial evidence of “online packaging” in order to tell people what it is. But if there are only tiny differences between them, you would do better to find other big clues for persuading customers to pay attention to your “online packaging”.

Q 4: What is the advantage of “online packaging” for internet shopping?

B: You must make your "online packaging" different from other product's still pictures in order to catch the customer's gaze. So you might enhance your packaging by vivid colour, branding or shape. Whatever the traditional packaging can not be is what the advantage of your “online packaging” can be. It might be difficult to get there but you have to look for theories or actual examples to prove the advantage really exists.

C: What is research for? It goes without saying that it is for something we do not know much about. I have not seen any report about online packaging, so it is quite new for me. The character of interaction is an

important advantage on the internet. So you might think about how to use the advantage of the internet for your “online packaging”.

Q 5: Is the online packaging “what you see is what you get”? In other words, should customers receive the parcel with the same packaging as shown on the computer screen?

A: You had better do the same packaging. In my experience, I knew when customers got the product without the same packaging as was shown in the mail order brochure. Customers thought they were cheated by the mail order company even though the product was exactly as the same as in the brochure.

B: You might do different packs by different prices. But I do not think it is a good idea. Firstly, you can offer choices, cheaper or normal price, if you post the product with a blank pack to customers, they may get a cheaper price. In fact you have to think what the packaging is for? Packaging has many functions; one of the important functions is to strengthen the branding in the customers' mind. If you use a blank pack how it could this work?

Secondly, the firm would not like to do blank packs, because it wants to make a good impression on the customers, rather than to save a little on printing costs.

Thirdly, when customers spend money for your product, they want integrity of product, including excellent packaging. If your customers choose a product with a blank pack on the internet, even by themselves, when they receive it they might think it is a “handicap”.

C: Of course you should do the same pack, there is no doubt. You can not save the printing cost, because it is very difficult to sell a product with a blank pack. If you do so, you will pay more than you think. Once the product got no sales, it would be waste. So sales help the firm to survive in the markets. No firm can take a risk of a blank pack.

Appendix C

Questionnaire for the study of public viewpoints towards online packaging

Questionnaire of Packaging Research

This questionnaire is for the researcher to understand the customer's behaviours when they buy items on the internet. Especially, the researcher wants to know whether the product's packaging can influence a customer's decision-making on the screen. This is a very important research for the researcher. Please do your best to answer following questions and all of your answers are for this academic research only. Thank you for your co-operation.

1. What is your age group?
15-19, 20-24, 25-29, 30-34, 35-39
2. What is your job category? And which city do you live?

3. Have you ever used the internet?
No (Go to Question 15), Yes
4. How often do you use the internet?
Two or three times a month or less, A few times a week,
Once a day, More than once a day, Always on
5. What is the main purpose(s) that you use the internet for?
(Please give me your ranking, 1 to 4 or 5, 1= Most often, 5=Less often)
Communication, Entertainment, Shopping,
Information, Other _____
6. Have you ever bought items from the internet?
If YES, will you buy on-line next time?
Never, Possibly, Occasionally, Regularly
If NO, why don't you want to buy on-line? (Please answer this question and then go to Question 11)
No computer access for shopping, Do not trust transaction system
, Enjoy real shopping, Can not see products clearly, Other

7. What kind of products do you most often buy on-line?
(Please give me your ranking, 1 to 8, 1= Most often, 8=Less often)

Entertainment tickets, Travel products, Books & CDs,
Computing equipments, Groceries, Gifts & Ornaments,
Home appliance, Other_____

8. How often do you buy something on-line according to its attractive packaging?

Never, Rarely, Sometimes, Usually, Always

9. How clearly can you see the packaging on the computer when you buy on-line?

Poor, Fair, Good, Very good, Excellent

10. What would influence your decision-making when you buy on-line?

Cheap price, Branding, Attractive Packaging, Convenient procedures, Easy to compare with other products, Online exclusive, Other_____

11. Have you ever noticed the packaging of the products shown on the screen?

Never, Rarely, Sometimes, Usually, Always

12. What does the packaging of the products look like to you on the screen?

Poor, Fair, Good, Very good, Excellent

13. Can you get sufficient information of the products from the packaging of the products when you are buying online?

Poor, Fair, Good, Very good, Excellent

14. How can the packaging be performed better on the internet for attracting you?

Question 15 is only for the people whose answer is 'NO' for Question 6.

15. If you can access to the internet, is there any possibility for you to buy items online?

Yes, why_____

No, why_____

Appendix D

Interview records of simulated online shopping

High 1

1. Have ever bought something online? Yes No __, why? ~~5/12~~ cheap.
2. Do you like to buy online?
No, security reason
3. How often do you buy wine?
Weekly.
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging....
5. Which wine's presentation do you like best? Why?
Spanish, ~~big~~ big picture, and the extras pics
6. Which one can attract you most? Why?
Spanish, flashy, color-changing
7. Which one which you buy? Why?
Aus, like Aus wine, so no ~~Spanish~~ touch
8. Can multimedia-packaging presentation stimulate your impulse shopping online? ^{not sure}
No, business trick.
9. Can you recognise wine's brand online once you see the website?
No, No need to recognise, I can read.

High 2

1. Have ever bought something online? Yes No __, why? online available.
(by fast impulse shopping)
2. Do you like to buy online?
feel unsure, security problem, yes.
3. How often do you buy wine?
one week at least.
4. What factors would influence your purchasing decision? Flavour, brand, Country of origin, packaging... recommendation, price.
Occasionally.

intriguing

5. Which wine's presentation do you like best? Why?
Spanish, flashy, special, draw attention.
6. Which one can attract you most? Why?
Spanish.
7. Which one which you buy? Why? ^{and the brand}
Spanish, Aus looks different. ~~5/12~~ Aus.
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
Yes.
9. Can you recognise wine's brand online once you see the website?
Only, Spanish got label, got impact.

High 3

1. Have ever bought something online? Yes No why?
3/18. cheap can see picture clear
2. Do you like to buy online?
yes
3. How often do you buy wine?
monthly, weekly
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging... price.
5. Which wine's presentation do you like best? Why?
spanish, water of, catch gaze, beautiful
6. Which one can attract you most? Why?
spanish
7. Which one which you buy? Why? ~~French~~ Aus
No: spanish. 3/18 show quality
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
yes, more details - fun - visual
visual communication
9. No, brand is not most important factor

High 4

1. Have ever bought something online? Yes No why?
I'm not comfortable giving credit my credit card details on the web
2. Do you like to buy online?
3. How often do you buy wine?
once or twice a week
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging....
price
5. Which wine's presentation do you like best? Why?
The Spanish Rioja because I've had it before and I enjoyed it
6. Which one can attract you most? Why?
The Rioja because I've had it before and I enjoyed it
7. Which one which you buy? Why?
I'm buying Rioja because I've had it before and I enjoyed it
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
Add Woz: Even
9. Can you recognise wine's brand online once you see the website?

High 5

1. Have ever bought something online? Yes No why? cheaper 3/4 Ltr
2. Do you like to buy online?
enjoy buying idea is good.
3. How often do you buy wine?
frequently
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging, ... price.
5. Which wine's presentation do you like best? Why?
spanish, attractive, like label than whole bottle.
6. Which one can attract you most? Why?
spanish, flashy moving.
7. Which one which you buy? Why?
Austrian, quality and flavour. 2. choice, spa.
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
it could, has possibility.
9. brand identity: no, apart from label.

High 6

1. Have ever bought something online? Yes No why? easy, 3/4, big choice.
2. Do you like to buy online?
de.
3. How often do you buy wine?
2 bottle a week.
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging... price, great variables, provenance, flavour, brand.
5. Which wine's presentation do you like best? Why?
spanish, rich information.
6. Which one can attract you most? Why?
French, as its French, provenance from.
7. Which one which you buy? Why?
French, flavour, regional loyalty, second choice, Aus.
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
Yes, pic can stimulate my desires.

High 7

1. Have ever bought something online? Yes No , why? by convenience.
2. Do you like to buy online?
no - ~~no~~ if necessary.
3. How often do you buy wine?
1-2 monthly.
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... price ~~if~~ to brand.
5. Which wine's presentation do you like best? Why?
spanish, taste better.
6. Which one can attract you most? Why?
spanish, famous brand, colourful, big label, valuable.
7. Which one which you buy? Why?
spanish, have had before No French
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
yes, but how to consider other things price, brand, # flavour
9. Can you recognise wine's brand online once you see the website?
No, pic too small, unless to read text.

17 Industry Street
234 PS12, Exeter EX4 3AA

High 9

High

1. Have ever bought something online? Yes No , why? cheap.
2. Do you like to buy online?
~~no~~ would if I had computer.
3. How often do you buy wine?
1-2 a week.
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... price would be.
5. Which wine's presentation do you like best? Why?
spanish, draw attention, aesthetic.
6. Which one can attract you most? Why?
spanish.
7. Which one which you buy? Why?
~~spanish~~, no wine loyalty. No 2: maybe, spanish
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
yes, definitely.
9. Can you recognise wine's brand online once you see the website?
recognise the spanish cos. the label.

- High I
1. Have ever bought something online? Yes No why? *it's easy, cheap.*
 2. Do you like to buy online?
like to, if had internet access.
 3. How often do you buy wine?
1-2 week
 4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging...., *like to read label.*
 5. Which wine's presentation do you like best? Why?
spanish, the name on it.
 6. Which one can attract you most? Why?
spanish, visual catchy.
 7. Which one which you buy? Why?
spanish description, and it looks good. No. spanish
 8. Can multimedia-packaging presentation stimulate your impulse shopping online?
yes, do
 9. Can you recognise wine's brand online once you see the website?
the name, as how it looks.

- High II
1. Have ever bought something online? Yes No why? *cheap, convenience*
 2. Do you like to buy online?
Why not, yes
 3. How often do you buy wine?
1-2 monthly
 4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... *price*
 5. Which wine's presentation do you like best? Why?
French, bottle shape and I like french wine
 6. Which one can attract you most? Why?
spanish, flashy, noisy
 7. Which one which you buy? Why?
French, I like & No. spanish, attractive
 8. Can multimedia-packaging presentation stimulate your impulse shopping online?
possible.
 9. Can you recognise wine's brand online once you see the website?
*No, unless read text.
Yes to spanish, big label*

Low 1

1. Have ever bought something online? Yes No why? Quicker. Easier. easy compare.
wide range product.
2. Do you like to buy online? easy gather.
yes, many choice, automation
3. How often do you buy wine?
Few bottles only
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... price.
5. Which wine's presentation do you like best? Why?
Spanish, cos. it got decoration.
6. Which one can attract you most? Why?
Spanish. Moving.
7. Which one which you buy? Why?
Spanish looks high class. Value of image.
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
possible.
9. No, but the big label is good.

Low 2

1. Have ever bought something online? Yes No why? don't trust online transaction.
2. Do you like to buy online?
like to try but still worry
3. How often do you buy wine?
few times
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... colour of wine. price.
5. Which wine's presentation do you like best? Why?
spanish. like a big big
6. Which one can attract you most? Why?
spanish. moving.
7. Which one which you buy? Why?
if they are all same price. Spanish. luxury
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
yes.
9. No, but apart from the big label. I don't know them.
not very important.

Low 3

1. Have ever bought something online? Yes No why? quite nice and cheap but if it's received, depends on goods, if the goods won't go wrong.
2. Do you like to buy online?
quite enjoy - easy to compare, can buy cheaper ones
3. How often do you buy wine?
not just few times in my life
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... price.
5. Which wine's presentation do you like best? Why?
French, looks better
6. Which one can attract you most? Why?
French, the bottle, beautiful shape.
7. Which one which you buy? Why?
French, cos it's French wine.
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
maybe,
9. Can you recognise wine's brand online once you see the website?
no, the pics are very small unless I read the text.

Low 4

1. Have ever bought something online? Yes No why? ~~isn't~~ the cost of shipping, see if you can get away with buying.
2. Do you like to buy online?
if the website looks professional, security, happy buy online
3. How often do you buy wine?
not very often, about every 2 months
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging, price
5. Which wine's presentation do you like best? Why?
Aus, cos shape of bottle, print like spanish, looks horrible.
6. Which one can attract you most? Why?
Aus, cos
7. Which one which you buy? Why?
Aus, looks like wine
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
depends on download time, if it got rich information, if people can leave their reservation order it would be better.

low 5

1. Have ever bought something online? Yes No why?
2. Do you like to buy online?
no. likes get a discount when you buy online also quick and easy
3. How often do you buy wine?
Yes
not regularly
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging....
no. price, the label, and the country of origin, and PRICE
5. Which wine's presentation do you like best? Why?
Spain wine because catches your eye - reason of what a good
6. Which one can attract you most? Why?
Spain wine
7. Which one which you buy? Why?
there are no prices in Spanish wine
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
Yes

low 6

1. Have ever bought something online? Yes No why? cheaper availability
2. Do you like to buy online?
yes
3. How often do you buy wine?
NEVER
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging, possibly
5. Which wine's presentation do you like best? Why?
wine because clear, interesting, brand, more visual
6. Which one can attract you most? Why?
wine, link to winemaker
7. Which one which you buy? Why?
more actual, spanish
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
yes, label, attraction, promoting better, visual presentation of product.

Low 7

1. Have ever bought something online? Yes No , why? 3rd, cheaper.
2. Do you like to buy online?
don't like, depends on area, fraud protection.
3. How often do you buy wine?
seldom, just few times
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging....
pack, advertising.
5. Which wine's presentation do you like best? Why?
spanish but don't like the label, yellow
good presentation.
6. Which one can attract you most? Why?
spanish, special pack, and decoration.
7. Which one which you buy? Why?
spanish, attractive.
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
yes, could buy both, planned and impulse.

Brand by helps a lot.

Low 8

1. Have ever bought something online? Yes No , why? online available.
3rd, cheaper.
2. Do you like to buy online?
if necessary
3. How often do you buy wine?
not quite often
4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... price, only.
5. Which wine's presentation do you like best? Why?
~~spanish~~ Aus, clear, no distraction.
6. Which one can attract you most? Why?
spanish, moiry, flashy.
7. Which one which you buy? Why?
Aus, looks good. sp but price are the same, will buy spanish
8. Can multimedia-packaging presentation stimulate your impulse shopping online?
yes, more information, and v: vid, more like real.
9. Can you recognise wine's brand online once you see the website?

no

- Low ^{Xu} 9
1. Have ever bought something online? Yes No , why? cheaper.
 2. Do you like to buy online?
yes, cheaper.
 3. How often do you buy wine?
variety.
 4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... price, brand.
 5. Which wine's presentation do you like best? Why?
spanish, beautiful
 6. Which one can attract you most? Why?
spanish, beautiful catch eyes.
 7. Which one which you buy? Why?
French ~~cos~~ cos, they don't have cost on pack. ^{with}
 8. Can multimedia-packaging presentation stimulate your impulse shopping online?
No, it's business trick.

- Low 10
1. Have ever bought something online? Yes No , why? ~~rich~~
privacy, ~~big~~ cheap exclusive for internet.
 2. Do you like to buy online?
~~expensive~~, gather information than buy if
 3. How often do you buy wine?
Not often
 4. What factors would influence your purchasing decision? Flavour, brand, country of origin, packaging.... price.
 5. Which wine's presentation do you like best? Why?
spanish, moving, like a top king.
 6. Which one can attract you most? Why?
spanish flash of
 7. Which one which you buy? Why?
~~spanish~~ French cos famous, second: spanish
 8. Can multimedia-packaging presentation stimulate your impulse shopping online?
Only first time.
 9. Can you recognise wine's brand online once you see the website?
No, Not important, I don't know wine at all.

Appendix E:

Semi-structured interview guide for the pre-observation interview of the laboratory online shop

About wine's knowledge

1. How long have you been regularly drinking wines?
2. How much do you know about wines?
3. Where do you normally obtain wines' knowledge?
4. Do you normally search for wine information?
5. How do you normally search for wine information before buying wines?
6. How do you read wines' information?
7. In your knowledge, what country produce the best wines?

About shopping behaviour

8. How often do you buy wines?
9. How do you normally choose wines?
10. Do you have loyalty to a particular wine?
11. Are you interested to try new wines that you never drink before?
12. Do you buy wines impulsively?
13. Do you shop online?

Appendix F:

Interviews and observations' transcript of the laboratory online shop

The following is the transcript of interviews and observations in the study of "laboratory online shop".

Participant one: high involvement	
Age: 31, gender: male, ethnic: Chinese, education: MA, occupation: profession.	
Activity	Transcript
<i>Pre-interview</i>	5-6 years red wine experience; normally search wine information and then go to wine shops; read information carefully; choose wines based on types of grapes and what food he eats; likes to try new wines; ideologically French wines are the best; online shopper.
<i>The Observation</i>	Task 1: <i>Intuitive choices:</i> W2 and W10 had clear images; W1 had beautiful colour on the bottle. <i>Purchase choices:</i> W1, W9 and W7 all had good grape descriptions.
	Task 2: Chose W1; nice interactive images so that the labels could be clearly seen; tried to find whether W2 had the same style of interactive images or not (This behaviour was called " play behaviour " in this research); description fitted his needs.
	Task 3: Chose W2; the product information fitted his needs although he initially wanted to buy W1 which had a better label design but did not have enough information.
	Task 4: Chose W1; he preferred rich information and hypertexts, which were very convenient in linking to the page that he wanted to read.
<i>Post-interview</i>	This participant said " <i>The problem of shopping online is that I can't enjoy the feelings without touching the real thing.</i> " If the enhanced online packaging can be promoted to fulfil this disadvantage, it will help many people to enjoy the virtual environment and engage with impulse shopping.

Participant two: high involvement	
Age: 29, gender: female, ethnic: Chinese, education: MA, occupation: student.	
Activity	Transcript
Pre-interview	Participants two: high involvement; 4-5 years red wine experience; internet and labels are important information sources; seldom engages with impulse shopping; choose wines based on previous experience; ideologically French wines are the best; online shopper.
The Observation	Task 1: <i>Intuitive choices:</i> W2, W10 and W1. She expected that W1 could have an enhanced presentation, e.g. a rollover image. <i>Purchase choices:</i> W10- because of the mood board; W1- because of the type of grape; W2- because of the information and 3D presentation.
	Task 2: chose W1; nice interactive images so that labels could be clearly seen; play behaviour; read the information.
	Task 3: chose W2; product description fits her need.
	Task 4: chose W2; medium size of information; easy to read, too much information makes her annoyed.
Post-interview	Disliked dirty colour of packaging and too big image that displayed label only but clear images can be essential; never clicked on one without images; no need for too much extra information.

Participant three: low involvement	
Age: 31, gender: male, ethnic: Chinese, education: PhD, occupation: profession.	
Activity	Transcript
Pre-interview	Low involvement; only drank wines several times; only bought wine once; does not know how to choose wines; very limited wine knowledge; online shopper.
The Observation	Task 1: <i>Intuitive choices:</i> W2, W1 and W10, because of visual attraction. <i>Purchase choices:</i> W10 – because of the mood board animation; W4 and W8– because of the history of wine maker.
	Task 2: chose W1 although W2 looked more prestigious; nice interactive images whose labels could be clearly seen; play behaviour; roughly scanned the information.
	Task 3: chose W2; liked the colour of the label; initially wanted to buy W1 but too little information, could not wine my trust.
	Task 4: chose W1; the packaging looks like a high class wine and the information is sufficient now.
Post-interview	<i>“Actually, I do not know how to buy a wine”.</i> The attractiveness of the packaging can be an important factor to encourage a purchase. It will be great if I can smell the wine via the internet.

Participant four: low involvement	
Age: 26, gender: female, ethnic: Greek, education: MA, occupation: profession.	
Activity	Transcript
Pre-interview	Low involvement; only drank wines several times; never bought a wine; does not know how to choose wines; very limited wine knowledge; online shopper.
The Observation	Task 1: <i>Intuitive choices:</i> W10-because of the mood board animation; W6- because of the different background colour and tilt bottle; W4- because of the colour on the label. <i>Purchase choices:</i> W9- because of the food accompaniment description; W4- because of the food accompaniment description; W2- because of the history of the wine maker.
	Task 2: chose W1; clear images; roughly scanned the information; did not have play behaviour.
	Task 3: chose W3; liked the extra information.
	Task 4: chose W2; trusted those recommendations.
Post-interview	"I have no idea how to choose a wine but I am sure that I will not purchase a wine without a proper label". "I will quite enjoy learning about the wines' information from the internet if I have chance to shop online."

Participant five: low involvement	
Age: 34, gender: male, ethnic: English, education: MA, occupation: writer.	
Activity	Transcript
Pre-interview	Low involvement: Never buys a red wine but bought white wine once; has drunk few times; less interested in pictures; no wine knowledge; online shopper.
The Observation	Task 1: <i>Intuitive choices:</i> W10, W6 and W2- because these wines all had different presentation to the rest of wines. <i>Purchase choices:</i> W4- because the wine process and flavour was properly described; W10- it had good descriptions on vintage, long history of the maker and nice animated pictures. W7- because of the good vintage description.
	Task 2: chose W3; description with long history of maker and sounds tasty which fitted his needs; scrutinised the information; play behaviour.
	Task 3: chose W2; production description fitted my need and method of the wine production.
	Task 4: chose W1; sufficient information with links, I can choose what I like to read without searching through a long webpage.
Post-interview	"I never buy a product, all depends on its appearance, and the product description has to fit my needs more or less." Attractive visual information can be a good starting point to promote the product and it will possibly encourage impulse shopping but not for me.

Participant six: high involvement	
Age: 42, gender: male, ethnic: English, education: BA, occupation: profession.	
Activity	Transcript
Pre-interview	High involvement: 6 years drinking history; normally drinks once every 2 weeks; basic wine knowledge; people said French wine is the best; choose wines based on food accompaniment; online shopper.
The Observation	Task 1: <i>Intuitive choices:</i> W6 and W2 had different presentation; W5- nice label. <i>Purchase choices:</i> W7, W2 and W6 had nice description on the food accompaniments.
	Task 2: chose W2; taste of the wine and food accompaniments fitted his need; play behaviour; would not buy a wine just because of the look of the bottle although W1 had a slightly fashionable design; carefully read the information.
	Task 3: chose W2; proper size of information; cannot trust too little information but too much information in a webpage would annoy me.
	Task 4: chose W1; the description makes that the wine looks good; hypertext is a good way to present a lot of information.
Post-interview	The design can be more fashionable but " <i>I will never buy a wine simply based on its appearance</i> ". Information has to be sufficient. Clear images and rich information are essential in online environments, they might encourage impulse shopping.

Participant seven: low involvement	
Age: 28, gender: male, ethnic: English, education: BA, occupation: profession.	
Activity	Transcript
Pre-interview	Low involvement; has bought wines a few times; very limited wine knowledge; never buys the cheapest wine or ugly looking packaging; internet user.
The Observation	Task 1: <i>Intuitive choices:</i> W8, W9 and W10- because the participants liked these bottles black colour. <i>Purchase choices:</i> W5, W4 and W1- because of the flavour description.
	Task 2: chose W2; simple description; good looking bottle; play behaviour; scanned the information.
	Task 3: W1; description is virtually useless for him; the design of the presentation can be the only clue for choosing the wines.
	Task 4: chose W1; still liked the look of this bottle.
Post-interview	" <i>If I have a chance to buy wine online, I will only choose the good looking one.</i> " This is what " <i>I normally do in real supermarkets.</i> " Although the description is useless to me, basic information of the wine is needed to gain my trust.

Participant eight: low involvement	
Age: 36, gender: male, ethnic: English, education: BA, occupation: student.	
Activity	Transcript
Pre-interview	Low involvement; 2 years of drinking experience; normally one bottle a month; limited wine knowledge; price and country of origin are the main concerns in choosing a wine; packaging also plays an important factor in picking up a wine from the shelves; online shopper.
The Observation	Task 1: <i>Intuitive choices:</i> W10- the animated pictures; W3- curiosity about no image; W1- used to click on the first item. <i>Purchase choices:</i> W10- the animated mood board; W1- because of the food accompaniments; W2- because the 3D gave her feelings of the physical item.
	Task 2: chose W1; nice interactive images; initially wanted to buy W2 in the first sight; clicked on W2 first but W1 had more visual information; play behaviour; roughly scanned the information.
	Task 3: chose W2; description fitted her needs.
	Task 4: chose W2; the information directly relates to the product; no need for extra information; customer's rating is a good reference.
Post-interview	The information has to be sufficient but extra information seems unnecessary. The image has to be beautiful to persuade customers and the rating and recommendation can be useful for reference, so impulse shopping might occur under these conditions.

Participant nine: high involvement	
Age: 29, gender: male, ethnic: English, education: BA, occupation: profession.	
Activity	Transcript
Pre-interview	High involvement; 8 years of drinking experience; one bottle every two days; grape mix is important; focus on the taste of wines and region of origin; carefully read information; likes fruity and fresh wines; likes to try new wines; internet user.
The Observation	Task 1: <i>Intuitive choices:</i> W2 and W10- all had clear labels to explain these wines; W7- because of the year of the wine. <i>Purchase choices:</i> W10- nice big images, so he could tell this wine from the visual information; W1- nice label design; W2- because of the grape mix and the taste.
	Task 2: chose W2; because it tastes good; grape mix; no play behaviour.
	Task 3: chose W1; although only limited information, he knows it is a good wine.
	Task 4: chose W1; he knows it is a good wine and a clear presentation can help him to identify it.
Post-interview	Wines' introduction and attributes can be very important clues in choosing wines. "I do not like a long list of information in one webpage, but hypertext can be good for extra information."

Participant ten: low involvement	
Age: 32, gender: female, ethnic: Chinese, education: MA, occupation: student.	
Activity	Transcript
Pre-interview	Low involvement; a beginner of regular wine drinking; very limited knowledge; friend's recommendation is the key to buying wines but judges wines by their appearances before purchase; likes to try new wines; online shopper.
The Observation	Task 1: <i>Intuitive choices:</i> W10- big and animated images; W2- big label; W9- because of the look of the wine. <i>Purchase choices:</i> W10- visual impact; W4- the label design; W9- because of the look of the wine.
	Task 2: chose W2; the bottle looks like a classic design; believes the older the better; no play behaviour.
	Task 3: chose W2; likes the label design with visual impact.
	Task 4: chose W2; likes the label design; believes those ratings and recommendations.
Post-interview	The presentation must have good visual information and impact and contain the information of the wine. Design can enhance the value of the product.

Participant eleven: low involvement	
Age: 29, gender: female, ethnic: English, education: BA, occupation: housewife.	
Activity	Transcript
Pre-interview	Low involvement; eight years wine experience; limited wine knowledge and not interested in learning more; not fussy about choosing wines; drinking wines only for fun; twice a month; easily to be persuaded by the description on the bottle or a friend's recommendation; the taste of wine is an important factor for choosing a wine; internet user.
The Observation	Task 1: <i>Intuitive choices:</i> W7- different label design; W9- the colour of the label; W1- the colour of the label. <i>Purchase choices:</i> W4- likes the flavour of the wine; W6- likes the flavour and the look of the wine; W7- the description fits her needs.
	Task 2: chose W1; description fitted her needs; no player behaviour; not good at using the internet; read the information carefully.
	Task 3: chose W3; has never drunk this wine before and would like to try this flavour.
	Task 4: chose W1; sufficient information and hypertexts which are very good to link to additional pages so that she can learn more about the wine knowledge.
Post-interview	Extra information is very good but does not like the recommendation and rating with the quote. Online shop must have an easy use mechanism to choose wines by different criteria and must have different levels of information for shoppers to choose from.

Participant twelve: high involvement	
Age: 30, gender: male, ethnic: Chinese, education: PhD, occupation: profession.	
Activity	Transcript
Pre-interview	High involvement; 10 years wine experience; twice a week; fussy about choosing wines; focus on wine description, country of origin and the taste of the wine; the wine label is a very important visual information; online shopper; likes to try new wines.
The Observation	<p>Task 1: <i>Intuitive choices:</i> W1- the colour of the label; W8- the colour stands out; W2- can see the label clearly. <i>Purchase choices:</i> W7- fruity taste and good vintage description; W6- fruity taste description but does not like the product presentation in layer 2; W5- fruity taste description.</p> <p>Task 2: chose W2; draws his attention on the first sight but never makes purchasing decisions based only on visual appearance; no player behaviour; read information carefully.</p> <p>Task 3: chose W3; the product information fitted his needs.</p> <p>Task 4: chose W3; the product information fitted his needs, although W1 draws much attention from him.</p>
Post-interview	The extra information is useful to know. Detailed product description should be clearly designed and described. Wine's search engine should be properly designed so that it would allow consumers to quickly find products which fit their criteria, e.g. grape mix, taste and region.

Participant thirteen: high involvement	
Age: 41, gender: male, ethnic: Chinese, education: PhD, occupation: profession.	
Activity	Transcript
Pre-interview	High involvement; 4 years red wine experience; sufficient wine knowledge; drinks twice a month; read information carefully; choose wines based on the taste of the wine; prefer fruity to dry; online shopper.
The Observation	<p>Task 1: <i>Intuitive choices:</i> W2 and W10 had clear image; W1 had beautiful colour on the bottle. <i>Purchase choices:</i> W1, W4 and W7 all had good product description and fruity taste. W3 also fit my need, but no images no purchase.</p> <p>Task 2: chose W2; W2 must be more expensive than W1; although W1 has nice interactive images and both wines all fit my needs, he would like to choose W2; player behaviour; read the information.</p> <p>Task 3: chose W2; the product information fitted his needs although he initially wanted to buy W1 which did not have enough information.</p> <p>Task 4: chose W1; it had sufficient information and hypertexts which were very convenient in linking to the page that he wanted to read.</p>
Post-interview	Product information and presentation is a twin in the online environment. It is impossible for me to buy a product without these criteria. Hypertexted information could be set up for different level of consumers, e.g. beginners and experts.

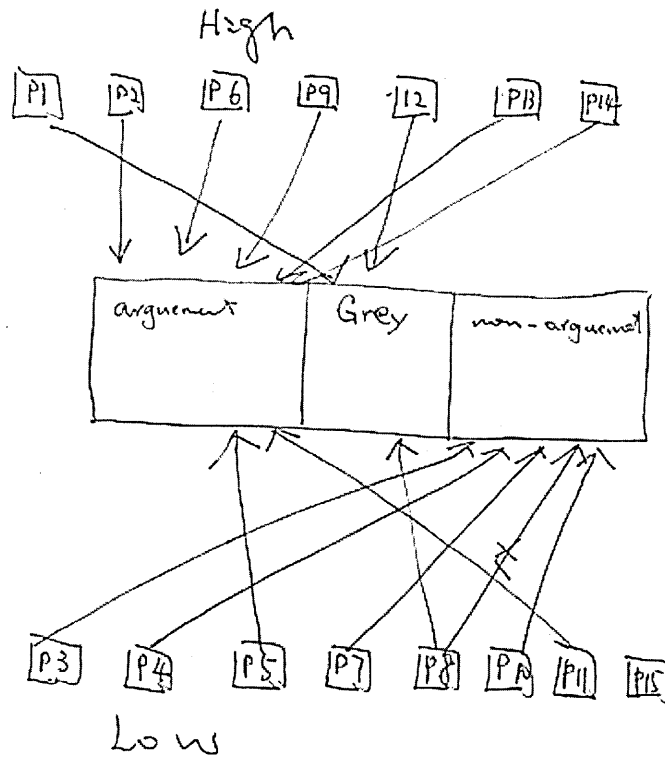
Participant fourteen: high involvement	
Age: 28, gender: male, ethnic: English, education: BA, occupation: profession.	
Activity	Transcript
Pre-interview	High involvement; 7 years wine experience; focus on the taste, country of origin and food accompaniment; read information carefully; normally has a planned wine in mind before going to a shop but likes to try new wines; internet user.
The Observation	Task 1: <i>Intuitive choices:</i> W8- the colour of the label; W2- had big clear image; W6 had a different label design on the bottle. <i>Purchase choices:</i> W10, W2 and W7 all had good grape description and clear images.
	Task 2: chose W1; nice interactive images so that labels could be clearly seen and would like to try; play behaviour; description fits his needs.
	Task 3: chose W3; the product information fits his need but does not like a long list of information on a webpage.
	Task 4: chose W1; it has sufficient information and hypertexts which are very useful to the people who want to learn the knowledge of wine.
Post-interview	Clear images are very important for consumers to identify wines. Product information should be clearly described somewhere on the webpage, so consumers do not have to search the whole webpage for it. "Although I normally know the wine that I will buy in shops, I would like to try new wines if the wine's appearance and description really attracts me."

Participant fifteen: low involvement	
Age: 28, gender: female, ethnic: Chinese, education: MA, occupation: student.	
Activity	Transcript
Pre-interview	Low involvement; not drink wine so often; very limited knowledge; have no idea how to choose a wine; buy wines based on its price and appearance; online shopper.
The Observation	Task 1: <i>Intuitive choices:</i> W2- big label; W10- animated images; W1- because of the colour of the label. <i>Purchase choices:</i> W10- mod board; W2- the rotatable bottle; W6- the taste of the wine.
	Task 2: chose W1; the interactive images allow me to see the certificate; roughly scan the information; play behaviour.
	Task 3: chose W2; initially likes the visual impact of W1, but it lacks adequate wine description; believes those ratings and recommendations.
	Task 4: chose W1; likes the colour of the label; can learn some thing about wines from those links.
Post-interview	"Sometime it is very difficult to buy an unfamiliar item from the internet, because I know nothing about it and cannot clearly see it." "So I usually buy something that I am familiar with." "If online shops can enhance their product presentation, I might buy something impulsively."

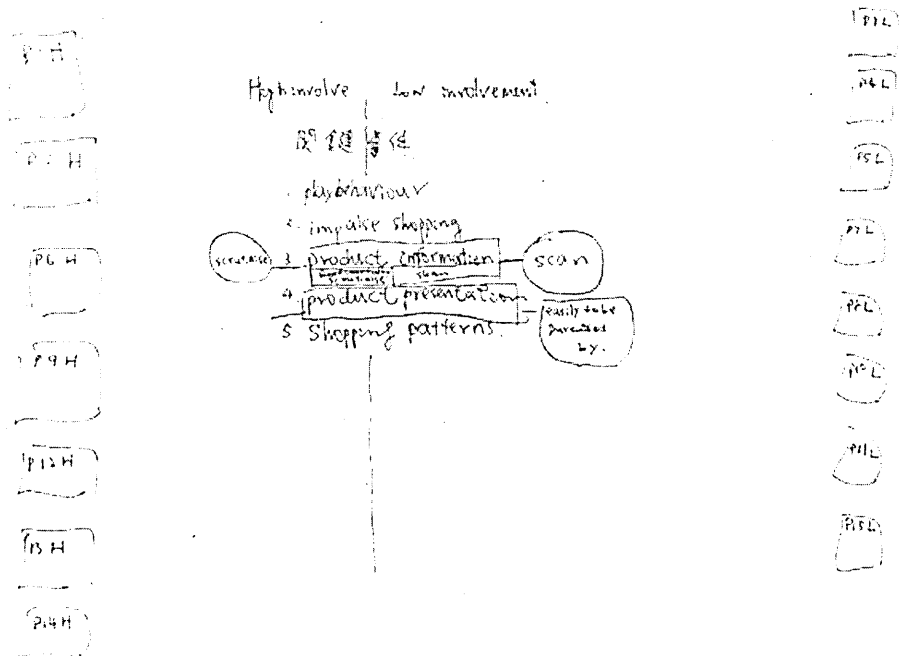
Appendix G

Drafts for the development of the mapping

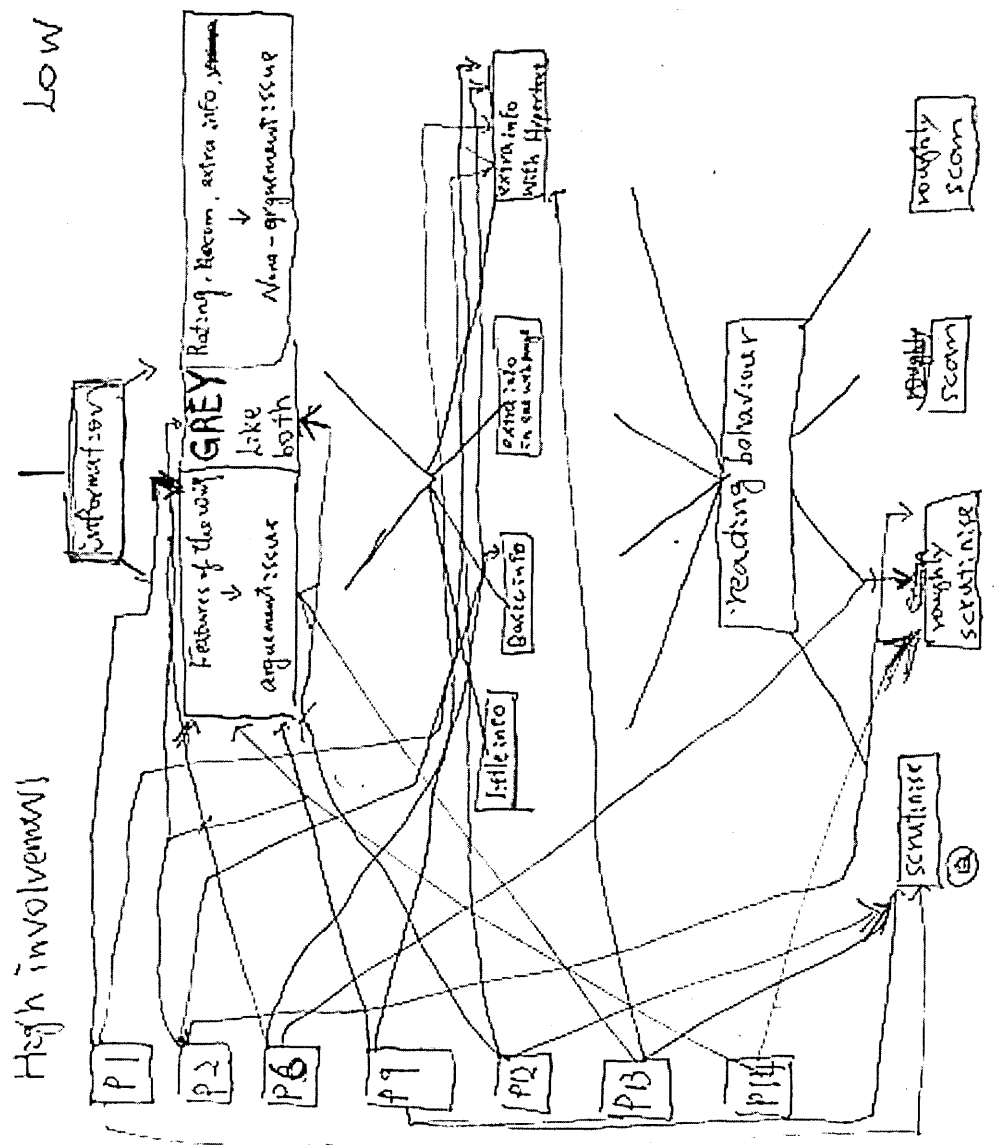
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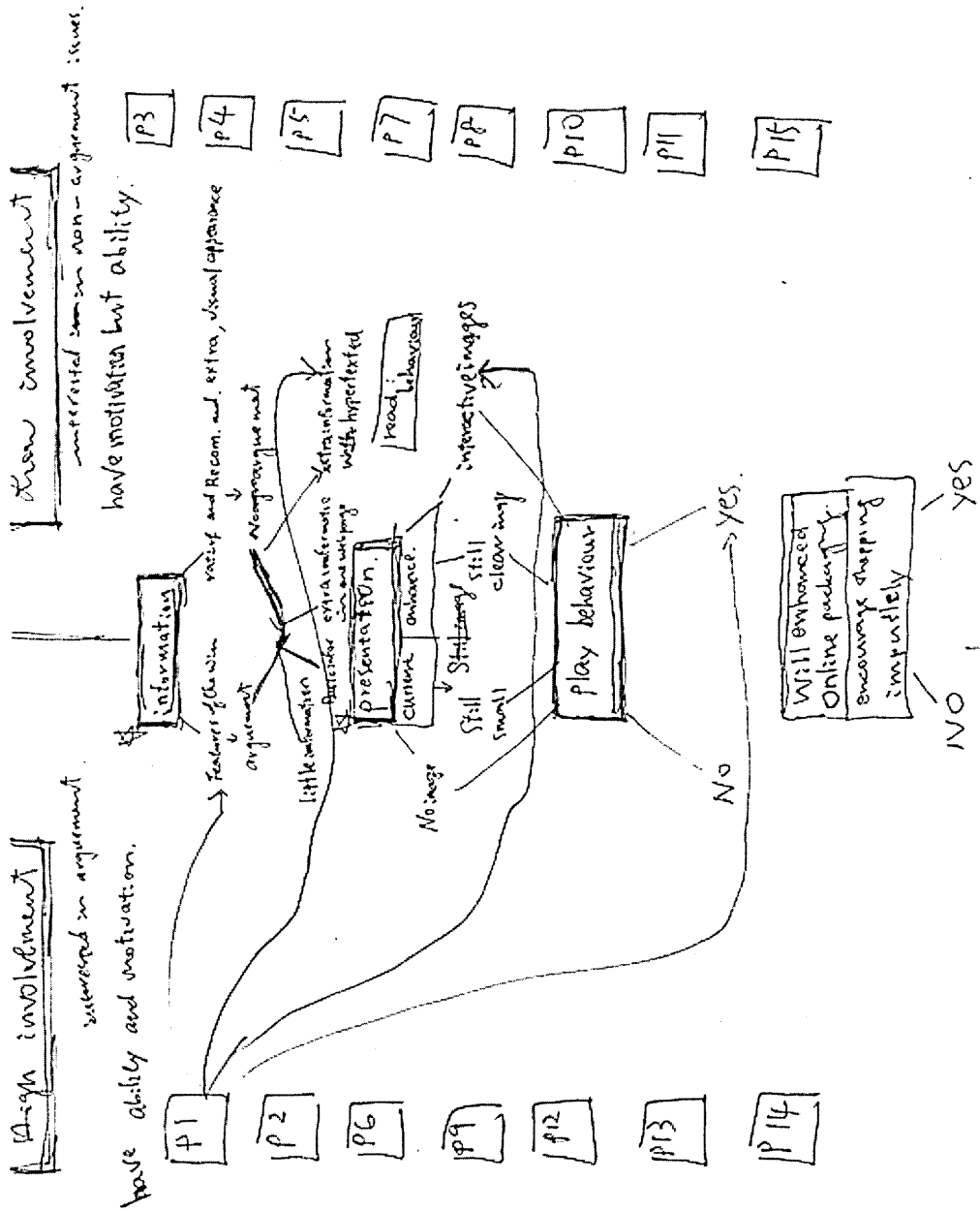


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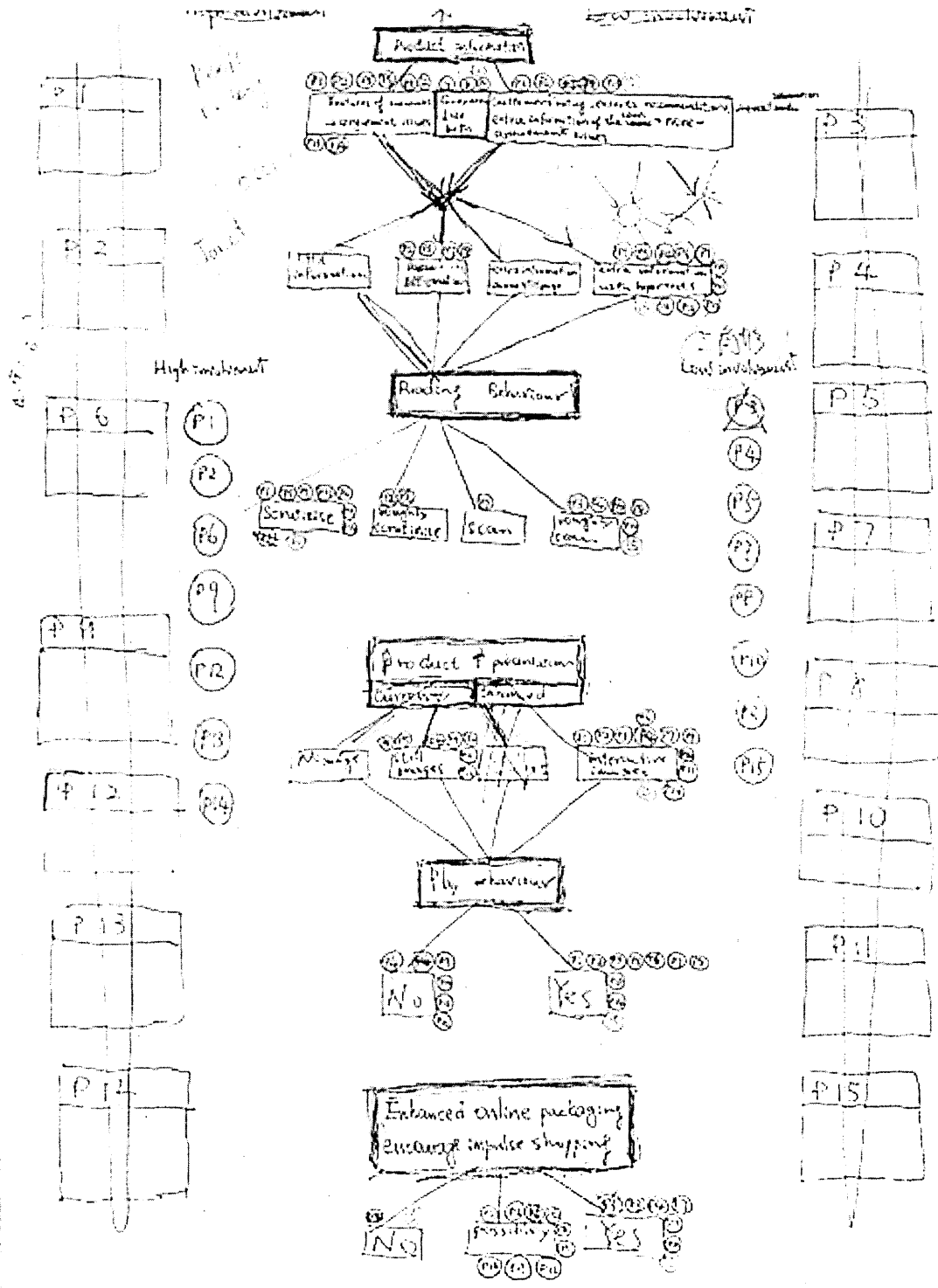


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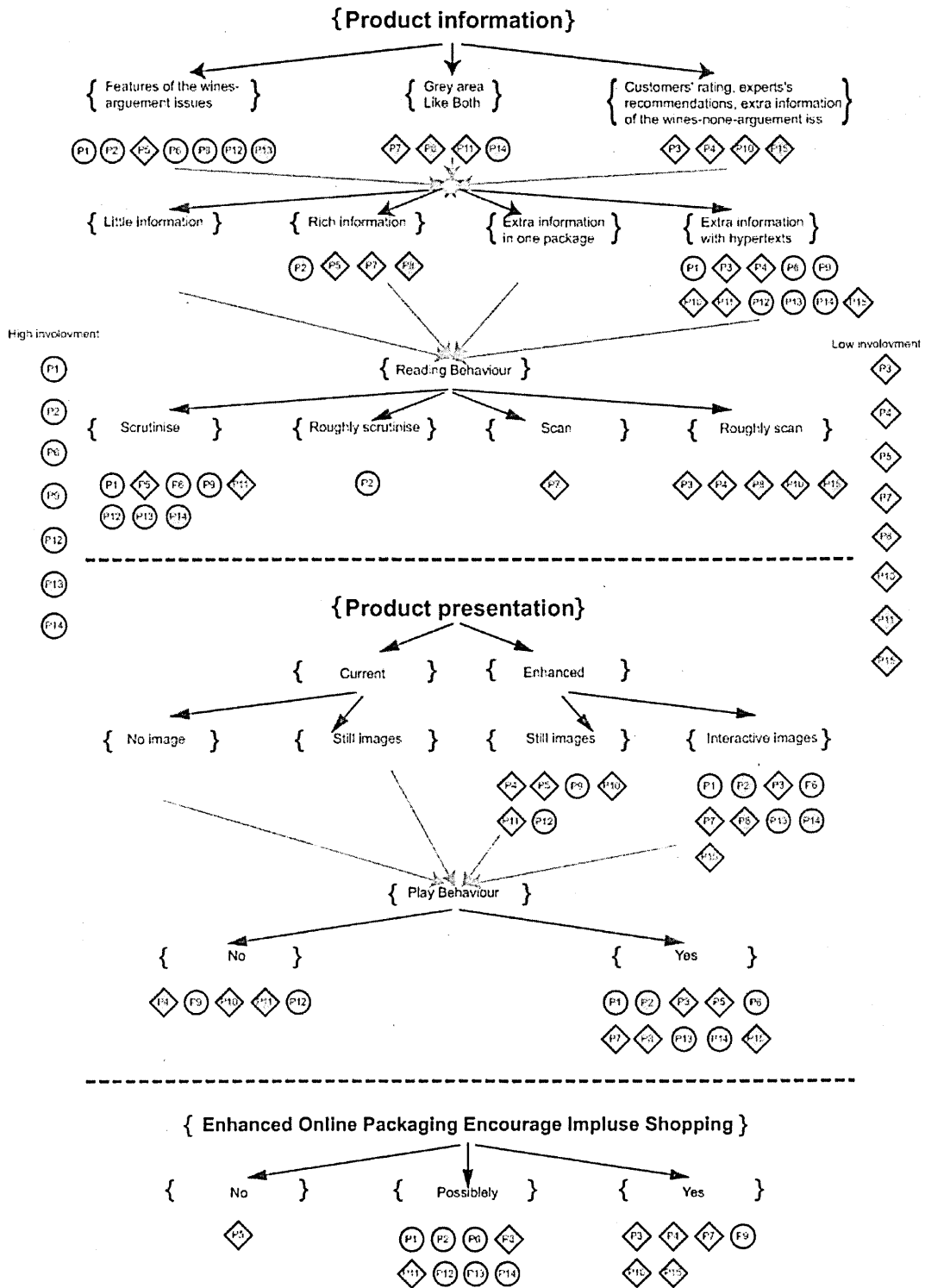
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The Matrix

Include/Exclude		Attention on presentation and information											Observation and questioning during the experiment	Short description of participant from interview			
		Product presentation			Product information												
		Buy behaviour	Enhanced	Current	Reading behaviour		Design			Content							
Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No		
																	Participant 1 High involvement, regular drinker 5-6 years wine experience online shopper
																	Participant 2 High involvement, regular drinker 4-5 years wine experience online shopper
																	Participant 3 Low involvement, very limited wine experience online shopper
																	Participant 4 Low involvement, very limited wine knowledge online shopper
																	Participant 5 Low involvement, never buys wine very limited wine knowledge online shopper
																	Participant 6 High involvement, regular drinker 6 years wine experience online shopper
																	Participant 7 Low involvement, only buy wine few times, few wine knowledge, internet users
																	Participant 8 Low involvement, regular drinker Limited wine knowledge online shopper
																	Participant 9 High involvement, regular drinker 8 years wine experience, internet user
																	Participant 10 Low involvement, a beginner of regular drinker very little wine knowledge, online shopper
																	Participant 11 Low involvement, regular drinking for 8 years limited wine knowledge, internet user
																	Participant 12 High involvement, regular drinker 10 years wine knowledge, online shopper
																	Participant 13 High involvement, regular drinker 4 years wine experience, online shopper
																	Participant 14 High involvement, regular drinker 7 years wine experience, internet user
																	Participant 15 Low involvement, irregular drinker very limited wine knowledge, online shopper