E-commerce mental models of upper middle class Chinese female consumers in Beijing

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By Yunfan Song

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For the degree of Master of Science

Is approved by the final examining committee:

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Head of the Departmental Graduate Program Date
E-COMMERCE MENTAL MODELS OF UPPER MIDDLE CLASS CHINESE FEMALE CONSUMERS IN BEIJING

A Thesis
Submitted to the Faculty
of
Purdue University
by
Yunfan Song

In Partial Fulfillment of the
Requirements for the Degree
of
Master of Science

May 2016
Purdue University
West Lafayette, Indiana
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>List of Contents</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>vi</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>vii</td>
</tr>
<tr>
<td>CHAPTER 1.  INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1 Statement of Purpose</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Scope</td>
<td>2</td>
</tr>
<tr>
<td>1.3 Significance</td>
<td>3</td>
</tr>
<tr>
<td>1.4 Research Question</td>
<td>5</td>
</tr>
<tr>
<td>1.5 Definitions</td>
<td>6</td>
</tr>
<tr>
<td>1.6 Assumptions</td>
<td>7</td>
</tr>
<tr>
<td>1.7 Limitations</td>
<td>7</td>
</tr>
<tr>
<td>1.8 Delimitations</td>
<td>8</td>
</tr>
<tr>
<td>1.9 Summary</td>
<td>8</td>
</tr>
<tr>
<td>CHAPTER 2.  Literature Review</td>
<td>10</td>
</tr>
<tr>
<td>2.1 Mental Model</td>
<td>10</td>
</tr>
<tr>
<td>2.2 Hofstede’s Cultural Dimensions Theory</td>
<td>12</td>
</tr>
<tr>
<td>2.2.1 Power Distance (PDI)</td>
<td>15</td>
</tr>
<tr>
<td>2.2.2 Individualism vs. Collectivism (IDV)</td>
<td>16</td>
</tr>
<tr>
<td>2.2.3 Masculine vs. Femininity (LTO)</td>
<td>17</td>
</tr>
<tr>
<td>2.2.4 Uncertainty Avoidance (UAI)</td>
<td>18</td>
</tr>
<tr>
<td>2.2.5 Long-Term vs. Short-Term (LTO)</td>
<td>19</td>
</tr>
<tr>
<td>Chapter</td>
<td>Section</td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>2.2.6</td>
<td>Indulgence vs. Restraint (IND)</td>
</tr>
<tr>
<td>2.3</td>
<td>E-commerce in China</td>
</tr>
<tr>
<td>2.4</td>
<td>Summary</td>
</tr>
<tr>
<td>3.1</td>
<td>Research Type</td>
</tr>
<tr>
<td>3.2</td>
<td>Framework</td>
</tr>
<tr>
<td>3.3</td>
<td>Assessment instruments and data collection methods</td>
</tr>
<tr>
<td>3.4</td>
<td>Sampling</td>
</tr>
<tr>
<td>3.5</td>
<td>Data Analysis</td>
</tr>
<tr>
<td>3.6</td>
<td>Summary</td>
</tr>
<tr>
<td>4.1</td>
<td>Participants</td>
</tr>
<tr>
<td>4.2</td>
<td>Mental Models</td>
</tr>
<tr>
<td>4.2.1</td>
<td>Decide to shop online</td>
</tr>
<tr>
<td>4.2.2</td>
<td>Visit an e-commerce website</td>
</tr>
<tr>
<td>4.2.3</td>
<td>Explore products</td>
</tr>
<tr>
<td>4.2.4</td>
<td>Learn more about the products</td>
</tr>
<tr>
<td>4.2.5</td>
<td>Check out</td>
</tr>
<tr>
<td>4.2.6</td>
<td>Deliver</td>
</tr>
<tr>
<td>4.2.7</td>
<td>Return</td>
</tr>
<tr>
<td>5.1</td>
<td>Social Media</td>
</tr>
<tr>
<td>5.2</td>
<td>Trustworthiness</td>
</tr>
<tr>
<td>5.3</td>
<td>Suggestions</td>
</tr>
<tr>
<td>5.4</td>
<td>Limitations</td>
</tr>
<tr>
<td>5.5</td>
<td>Summary</td>
</tr>
</tbody>
</table>
CHAPTER 6. CONCLUSION.................................................................60

LIST OF REFERENCES........................................................................62

APPENDICES
Appendix A  Interview Protocol ..........................................................66
Appendix B  Demographic Survey.........................................................70
Appendix C  Recruitment Materials.....................................................71
Appendix D  IRB International Research.............................................73
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Hofstede's Five Cultural Dimensions</td>
<td>10</td>
</tr>
<tr>
<td>Appendix Table</td>
<td></td>
</tr>
<tr>
<td>A.1 Interview Questions</td>
<td>67</td>
</tr>
<tr>
<td>A.2 Interview Questions (Chinese)</td>
<td>69</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 China’s E-Commerce Market in 2014</td>
<td>4</td>
</tr>
<tr>
<td>1.2 Value of E-Commerce Transactions in the US and China, 2009-2015</td>
<td>5</td>
</tr>
<tr>
<td>2.1 Dimensions of Chinese Culture, in Comparison with United States (2015)</td>
<td>12</td>
</tr>
<tr>
<td>4.1 Mental Models of Chinese Consumers</td>
<td>36</td>
</tr>
<tr>
<td>4.2 Tasks in Towers in a Mental Space</td>
<td>37</td>
</tr>
<tr>
<td>4.3 Mental Space of Deciding to Shop Online</td>
<td>38</td>
</tr>
<tr>
<td>4.4 Mental Space of Visiting an E-Commerce site</td>
<td>41</td>
</tr>
<tr>
<td>4.5 Mental Space of Exploring Products</td>
<td>42</td>
</tr>
<tr>
<td>4.6 Mental Space of Exploring Products</td>
<td>43</td>
</tr>
<tr>
<td>4.7 Mental Space of Checking Out</td>
<td>46</td>
</tr>
<tr>
<td>4.8 Mental Space of Delivery</td>
<td>49</td>
</tr>
<tr>
<td>4.9 Mental Space of Returning</td>
<td>51</td>
</tr>
</tbody>
</table>
ABSTRACT

Song, Yunfan. MS, Purdue University, May 2016. E-Commerce Mental Models of Upper Middle Class Chinese Female Consumers in Beijing. Major Professor: Mihaela Vorvoreanu.

The purpose of this study was to understand and explore the mental models of Chinese consumers towards e-commerce. A mental model is a representation formed by consumers based on their experience and observation, which finally influence their task performances. Due to the different experiences and contexts, the mental models of Chinese consumers could be various. This study investigated one of the subgroups in depth, which is the upper middle class female in Beijing, China.

To achieve the purpose of the study, a qualitative research was conducted in China, and participants were interviewed about their perceptions of, and experiences with, online shopping. Data collected from the interviews were analyzed using a thematic analysis method in order to group the similarities together and generate themes. After grouping, a mental model was presented in a diagram, with tasks grouped into categories in different mental spaces. The bottom of the diagram showed the support functions for those tasks. The results could provide a deep understanding of this group of consumers and the relation structure between the users and the e-commerce service.
CHAPTER 1. INTRODUCTION

This chapter introduces the background of this research study. It consists of the purpose, scope, significance, definitions, research questions, and boundaries of the study.

1.1 Statement of Purpose

With the development of the World Wide Web, people are now beginning to realize that cultural constraints may determine certain usability problems on various websites. For instance, one website could be easily used by one group of people while demonstrating several usability problems for another group, especially for the structure and information architecture. *Culturability*, the merging of culture and usability, means that biases and preferences are part of users’ characteristics, and that these qualities take on special importance as factors that can determine the usability of designs for international audiences (Barber, 1998).

In this way, website and service localization processes should involve more than simple translation of the text. Translation only solves the problem of language, but there are a large number of other factors that need to be considered to ensure usability for the target culture, such as beliefs and value systems, education levels, traditions, and habits, among various other considerations (Shneor, 2014).
Based on these differences between cultures, web designers should consider some characteristics that may need to vary depending on the particular cultural context, such as language, layout, symbols, information architecture, multimedia, and color. Companies are constantly trying to attract local users and maintain their global image, but the challenges of website localization have become increasingly more important, since culturally appropriate website communication can help a company fit multiple needs across multiple cultures with fewer usability problems.

1.2 Scope

Culture here can be defined as the learned behaviors, shared beliefs, and mental process of a particular group of people in a human-made environment (Lee, McCauley & Draguns, 2013). In this study, I focused on the intersection of national culture, with the particular culture of the subgroups, as influence by their socio-economic standing. Specifically, a deep understanding of upper middle class female consumers in Beijing, China was the focus of this research. Feminism in HCI provides the support for choosing this particular group. Instead of providing one solution and forcing everyone to accept it, the user-centered design tries to analysis the particular users in a particular context, and creates new personas and scenarios for each solution, especially when the target users are not the majority (Bardzell, 2010). In this study, this particular group of people was considered as a subgroup of the entire Chinese consumers. In Hofstede’s theory, Chinese shared national cultures and provide the general description of characteristics of people as part of the society. For this particular group of consumers, share the
similar culture with other Chinese, but at the same time, they have their own mental models towards online shopping, due to their particular backgrounds and social contexts.

Online shopping is one of the most important online activities in people’s daily lives in China (CNNIC, 2014). Furthermore, more online consumers in China are now interested in buying international products (CNNIC, 2015). At the same time, organizations that offer online shopping would like to enter the international market and provide more international shopping services for people from different countries. In order to be successful, online shopping websites need to communicate clearly and help customers satisfy their needs. In this case, it is reasonable to understand the mental model of this particular group of consumers toward e-commerce in China.

1.3 Significance

The purpose of this research is to understand Chinese consumers mental models toward e-commerce in China, and to provide advice to design an appropriate e-commerce website for Chinese online consumers.

Mental models are defined as a representation to the reality, based on users experience and observation (Wilson & Rutherford, 1989). They also included users’ behaviors or tasks and different ways of supporting matching behaviors (Young, 2008). The behaviors should be supported by the solutions. If not, there will be other solutions or opportunities to solve the problems. The mental models provide their understanding of the system and influence their task performance. Also, different user groups have
different mental models, which will affect their behaviors eventually. The understanding of Chinese online consumers’ mental models will help designers and researchers to learn more about their behaviors and support their needs, in order to design e-commerce websites for Chinese consumers.

Moreover, with the number of online shoppers increasing along with higher purchasing power and more online security, China has experienced an online revolution over the past 10 years (see Figure 1.1), and the number of online transactions is predicted to be even higher than the number in the U.S. (see Figure 1.2). Online shopping is still a large market that could be expanded, but how to design an appropriate e-commerce website to attract more female consumers is still unclear.

Figure 1.1. China’s e-commerce market in 2014
It is hoped that this study can help researchers and designers gain a better understanding of upper middle class female consumers in Beijing, China. As a result, it may help them to determine different mental models of people with different backgrounds. By understanding these differences, they can provide better design solutions for this particular group of people in this particular context. In this way, the design solutions fill the gap between users and the context.

1.4 Research Question

What are Beijing upper middle class female consumers’ mental models towards e-commerce in China?
1.5 Definitions

Culture, defined by Hofstede as the “collective programming of the mind which distinguishes the members of one group or category of people from those of another” (Hofstede, 1997, p.5).

Culturability, the merging of culture and usability, means that although biases and preferences are part of users’ characteristics, these still take on a special importance as determined factors in usability design for international audiences (Barber, 1998).

Internationalization is “the process of designing a software application so that it can potentially be adapted to various languages and regions without engineering changes” (Johanson & Vahlne, 1977, p24).

Localization is “the process of adapting internationalized software for a specific region or language by adding locale-specific components and translating text” (Cyr & Trevor-Smith, 2004).

Hofstede’s Dimensions includes six dimensions, which describe the variety of world cultures and their fundamental values (Hofstede, 2010). These six dimensions are:

(1) Collectivism vs. individualism,

(2) Femininity vs. masculinity,

(3) Long vs. short-term orientation,

(4) Power distance,

(5) Uncertainty avoidance,
(6) Indulgence vs. restraint.

1.6 Assumptions

The following assumptions are intrinsic to this research:

- Individual differences are systematic and reflect stable differences in perceptual and processing preferences.
- Individuals tend to selectively absorb, use, and manipulate information presented in a manner that matches their cognitive style and avoid or ignore information presented in a manner that does not match.
- The interview protocol is appropriate and can collect the data for further analysis.
- Participants have the ability to understand and answer interview questions properly.
- Participants provide honest and trustworthy answers to the interview questions.

1.7 Limitations

The following limitations are intrinsic to this research:

- There are other factors involved in the perception of browsing websites, such as computer experience, educational background, social relations, religious views, or other possibly immeasurable individual characteristics.
• The participants may be immersed in a new Internet culture. Thus, the differences among cultural groups of people may be reduced because they are exposed to similar information.

• The researcher is the interviewer, observer, and analyst of the data. The study uses scientific research methods, and attempts to stay free of biases and to be objective were made.

• Due to the diversity in China, the participants do not represent all types of online customers, but only the upper middle class female consumers in Beijing.

1.8 Delimitations

The following delimitations are intrinsic to this research:

• The research does not make an inclusive conclusion for all types of websites.

• The research does not examine all factors of the websites.

• The research only focuses on Chinese online consumers.

• The participants are only from a certain demographic group, with a focus on upper middle class females ages 35-50 in Beijing, China.

1.9 Summary

This chapter serves as the foundation for the study and provides the background and context of the research. With the rapid development of e-commerce in China, this study is necessary in order to develop an appropriate e-commerce service for upper middle
class female consumers in Beijing, China. Even though there are many different factors involved in making websites, due to the study’s limitations, this research deeply investigated this.
CHAPTER 2. LITERATURE REVIEW

To better understand the background, this section will review related theories and findings in the previous research. This section includes a review of mental models, Hofstede's cultural dimensions theory, and e-commerce in China.

2.1 Mental Model

The definition of mental model is by Toffler (1970): “Every person carries within his head a mental model of the world – a subjective representation of external reality” (p.139). Besides the psychology, the definition could also be domain-oriented. For example, Young (2008) states, “Mental models give you a deep understanding of people’s motivations and thought-processes, along with the emotional and philosophical landscape in which they are operating.” A mental model of the system consists of several sections, such as behaviors patterns of a task, and the ethnographic data from the participants. It is based on users’ previous experience, current perception and expectation to the future (Norman, 1983).

In terms of cognition, mental models could also be considered as a particular type of internal representation of the users (Wilson & Rutherford, 1989). It is like “a picture in mind”, which allow the users to “see” some abstract thought-processes. In
HCI, users’ mental models are always described by formal mappings between the tasks and the system (Wilson & Rutherford, 1989). Formal mapping provides a representation of how users interact with the system. While using mental models in human-computer interaction work, the idea of a “picture in the mind” provides general design guidance in order to enhance the system design and users’ task performance. It could also provide the estimation of complexity of the system and also description of users’ behavior with the reasons behind. The mental models could be various in different situations. It is necessary for researchers to determine which situation and user groups to investigate deeply.

Web design requires a complete understanding of target user groups. What users want to accomplish, their goals, and their awareness of the design are important to understand as a designer. To create a mental model, designers or researchers need to ask the target users about what they are doing, organize them based on similarities and provide design criteria from the models. An affinity diagram is a good way to look for patterns and generate models. Once the designers understand the line-up of behaviors, they need to consider the potential features of products and align them with people’s behaviors (Young, 2008). For one specific behavior, there could be several features or functions that the product provides. The resulting diagram provides an overview of the whole behavior, and how the current products accomplish users’ goals and strategies need to be thought about in the future.

For e-commerce, customers with different background in different context may have different mental models. Their previous experience and expectations may
influence their behaviors of online shopping behavior. As mentioned before, different cultures will have different way to organize and group things. Users will struggle and be frustrated if the design of a website does not correspond with their mental models. Take motivation as an example. If the website is designed for the purpose of entertainment while the goal of the users is academic, there will be usability problems, as the purpose of the website and the goal of the users do not match. So in order to design an appropriate website, it is important to understand the mental model of the target users.

For example, according to Rau, Choong and Salvendy’s (2004) study, Americans’ cognitive style is analytical-categorical (functional). Conversely, the Chinese cognitive style is relational-contextual (thematic). Finally, they create two information structures according to these two cognitive styles. Users can perform better when they use the websites that correspond with their mental models. However, this study only examined the cognitive styles and information structures; the current mental models of Chinese online consumers, especially the upper middle class females in Beijing, in their whole online shopping process are still unclear.

2.2 Hofstede's Cultural Dimensions Theory
Hofstede was a psychologist, and his division of the dimensions of culture is one of the most well-known theories in cross-cultural usability. Cultures around the world, and even those within some countries, are very different. There are subcultures within
subgroups of a society. In his theory, cultures are evaluated in term of nations. There are six dimensions to consider when defining a culture, which include power distance, collectivism/individualism, masculinity/femininity, uncertainty avoidance, long-term/short-term orientation, and indulgence vs. restraint (Hofstede, Hofstede & Minkov, 2010). The descriptions of each dimension are as follows in Table 2.1:

Table 2.1. Hofstede's Cultural Dimensions (Hofstede, 2010)

<table>
<thead>
<tr>
<th>Cultural Dimensions</th>
<th>Explanations</th>
</tr>
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| Power Distance      | **Addresses how people perceive equality, or inequality, between peoples of a particular nation or culture.**
|                     | A high score suggests that there is a huge difference between the rich and poor and people expect the difference. A low score suggests that people should have equal rights and small differences. |
| Individualism vs. Collectivism | **Focuses on the degree to which individuals have ties to others around them.**
|                     | Individualistic people tend to look for personality and freedom. Collectivistic people consider themselves as a member of the group and develop their social networking. |
| Masculinity vs. Femininity | **Refers to the preferences in society placed on traditionally male or female values.**
|                     | Masculine cultures value the achievement, success and rewards. Feminine cultures focus more on the relationship and social cohesion. |
| Uncertainty Avoidance | **Focuses on the degree of tolerance for uncertainty and ambiguity.**
|                     | Cultures with strong uncertainty avoidance level have little
Table 2.1 (continued)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
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<tbody>
<tr>
<td>Tolerance for</td>
<td>tolerance for uncertainty and ambiguity. Low uncertainty avoidance countries tend to be adaptable and free.</td>
</tr>
<tr>
<td>Uncertainty and</td>
<td></td>
</tr>
<tr>
<td>Ambiguity</td>
<td></td>
</tr>
<tr>
<td>Long term vs. Short</td>
<td>Describes how people perceive their future versus the past and present.</td>
</tr>
<tr>
<td>Term</td>
<td>In long-term oriented societies, people tend to be persistent and work hard to prepare for their future. In short-term oriented societies, people tend to respect their traditions, fulfill their social duties, and preserve one’s “face”.</td>
</tr>
<tr>
<td>Indulgence vs.</td>
<td>Stands for the degree that people are able to have fun and enjoy their lives.</td>
</tr>
<tr>
<td>Restraint</td>
<td>Indulgence countries tend to enjoy their leisure time and value friendship. Restraint countries believe satisfaction should be repressed and value moral behaviors.</td>
</tr>
</tbody>
</table>

This theory considers culture in a national level. Each country has own scores in each dimension and two countries could be compared with those scores. However, the diversity in China is huge. Even though they may have shared beliefs, in the purpose of this study, it is hard to consider the entire Chinese consumers shared the same beliefs and philosophies to e-commerce. Based on their personal experience and social context, the scores of subgroups could be different from the average national culture scores in each dimension. However, it is still necessary to understand each dimension in detail and how they are related to e-commerce.
In this case, according to the previous six dimensions, China’s scores (Hofstede, Hofstede & Minkov, 2010) are as follows; each dimension will be discussed in the following sections:

![Bar chart showing dimensions of Chinese culture in comparison with United States](image)

**Figure 2.1. Dimensions of Chinese culture, in comparison with United States (2015)**

### 2.2.1 Power Distance (PDI)

Power Distance is defined as “the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally” (Hofstead, 1997). This dimension means that the less powerful members in the society believe the power is distributed unequally. The higher score in this dimension means people accept their hierarchical order and need no further
justification. The lower degree of power distance means people demand justification of inequalities of power. The basic idea behind the power distance is how a society handles inequalities among people (Hofstede, 1997).

China has the score of 80 in PDI, which is a high ranking among other countries. In other words, the inequality is acceptable for people living in this kind of society (Hofstede, Hofstede & Minkov, 2010). This score means there is no defense against power abuse by superiors. People in a high PDI society are influenced by authority and order. They accept it and should not have aspirations beyond their rank (Hofstede, Hofstede & Minkov, 2010). Due to the high PDI score in China, wealth inequality is serious and most people accept their position to some degree. This would influence their online shopping behavior, considering their social class and income levels, and they would not consider change.

2.2.2 Individualism vs. Collectivism (IDV)

Individualism implies that “everyone is expected to look after oneself or immediate family, but not necessarily anyone else” (Hofstede, 1997, p4). The United States, Great Britain, Australia, and Canada have the highest individualism scores based on Hofstede’s research. On the other hand, collectivism implies that “people are integrated from birth into strong, cohesive groups that protect them in exchange for unquestioning loyalty” (Hofstede, 1997, p4). Latin America and certain Asian countries are collectivist cultures.
When it comes to web design, Marcus (2000) believes that individualism and collectivism may influence the motivation of users, images of success, rhetorical style, emphasis on change and willingness to provide personal information.

For e-commerce websites, customers who are from individualistic or collective cultures may have different expectations and perceptions while browsing or making purchasing decisions. In this case, “China is a highly collectivist culture where people act in the interests of the group and not necessarily of themselves” (Hofstede, Hofstede & Minkov, 2010, p4). Chinese online consumers consider their families or organizations more than themselves. They consider themselves as part of the group, so they conform to the group. For example, if an individual finds that most people in the group have an item, he/she likely wants to buy this item, too.

2.2.3 Masculine vs. Femininity (LTO)

A masculine society means men need to be competitive and tough. A high degree of masculinity indicates that the society will be driven by challenge, earnings and success, “with success being defined by the winner / best in field – a value system that starts in school and continues throughout organizational life” (Hofstede, 1997, p5). A low score of masculinity, which is considered femininity, means that the dominant values in society are caring for relationships and quality of life. “A Feminine society is one where quality of life is the sign of success, and standing out from the crowd is not admirable” (Hofstede, 1997, p5). The basic idea is whether people want to be the best or like what they do.
China is a masculine society, which means it is success-oriented and driven. The need to succeed and achieve compels many Chinese choose to work hard, even if they have to sacrifice their family and leisure time. When it comes to e-commerce service, people (such as customer service) will provide services until very late at night. Shipping service is always available all the time and provides quick delivery in big cities. For example, in the news, during this year’s shopping festival, one consumer received his package 14 minutes after he placed the order at midnight.

2.2.4 Uncertainty Avoidance (UAI)

The uncertainty avoidance dimension considers how a society deals with the unknown future (Hofstede, 1997). Different cultures have different ways to deal with this ambiguous situation: “should people try to control the future or just let it happen” (Hofstede, Hofstede & Minkov, 2010, p5). So the uncertainty avoidance score reflects the degree to which a culture feels threatened by ambiguous or unknown future situations and also how people try to avoid these situations. A high UAI score means people are threatened by ambiguity and need stable and predictable workplaces. They rely on rules. On the other hand, a society with low UAI embraces the unpredictable future and has fewer adherences to rules, procedures or hierarchies.

In this case, China has a relatively low score on uncertainty avoidance. “Adherence to laws and rules may be flexible to suit the actual situation and pragmatism is a fact of life” (Hofstede, Hofstede & Minkov, 2010, p5). The Chinese
accept ambiguity and the uncertain future. Chinese are adaptable and entrepreneurial (Hofstede, 2010). When it comes to the e-commerce, the majority of Chinese online businesses tend to be small or medium-sized. On China’s largest e-commerce platform, people can open their own businesses and design and organize by themselves.

### 2.2.5 Long-Term vs. Short-Term (LTO)

This dimension relates to how the society links to their history while facing challenges in the future. Long-term oriented (LTO) societies are focused on the future. They encourage people to use practical methods to prepare for their future. In contrast, short-term oriented (STO) societies are focused on the present and the past, “rewarding reciprocity in social relations and the fulfillment of social obligations” (Hofstede, 1997, p5). Short-term oriented societies also focus on traditions and norms and expect social changes (Rau, Plocher, & Choong, 2012). China, Hong Kong, Taiwan, Japan, and South Korea are examples of highly long-term oriented cultures (Rau, Plocher, & Choong, 2012). The United States has a relatively lower score in this dimension, which means the society is short-term oriented.

Shah (2013) found that long-term oriented countries value relationships as “a source of information, credibility, and content that is focused on practical value,” whereas short-term oriented countries prefer content based on “truth, a desire for immediate results, and the more rapid achievement of goals.” Furthermore, when it comes to web design, visual elements are valued more in low LTO countries, but high LTO cultures place more emphasis on morally good behavior (Shah, 2013). As a result, in
high LTO cultures, content and navigation are more important because they show the long-term goals and statements of the business.

Shah (2013) also provided China as an example of one of the most long-term orientation cultures in the world. According to an example provided by Shah (2013), “the information architecture of the site has surfaced their CSR initiatives on the homepage. The visuals and their slugs talk about responsibility, reciprocity and efficiency to create a better world.” Chinese people show an ability to adapt traditions and make efforts in education to prepare for the future.

On the other hand, within the countries that are more short-term oriented, companies also operate on a short-term basis (Shah, 2013). They focus on their profits and losses in a short period of time and require their employees to achieve their goals in a short time.

2.2.6 Indulgence vs. Restraint (IND)

This dimension is a measure of happiness, or if the joy of people has been fulfilled (Hofstede, 2010). Indulgence is defined as “a society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun” (Hofstede, 2010). Also, it emphasizes the extent to which people try to control their desires and urges. A low indulgence score means people have a tendency toward cynicism and pessimism (Hofstede, 2010).
China is a restrained society with a relatively low score in this dimension. The Chinese do not put much emphasis on leisure time and control their needs or desires. People are regulated by strict norms. They hardly express their happiness and other positive emotions. However, Qiu (2015) states that younger generations are increasingly willing to pay to enjoy their life. The Chinese consider shopping as one of their favorite leisure activities.

2.3 E-commerce in China
Consumers’ online behavior is different in nature from traditional consumer behaviors due to the unique characteristics and interaction of technology and culture (Chau, Cole, Massey, Montoya-Weiss & O’Keefe, 2002; Christou & Kassianidis, 2002). It is important for target consumers to interact with the websites that correspond with their characteristics and cultures. In this case, the e-commerce websites in China developed dramatically in past decades. During the development of e-commerce, some characteristics of Chinese consumers were discovered, but some still need to be explored. Those characteristics directly influence the way of design.

Tan and Ouyang (2004) pointed out some barriers of diffusion of e-commerce in China:

- The lack of solid foundation of consumers and their cognition towards online shopping,
• The lack of integration of different business models
• The barriers of security issues and the insufficiency of policy and laws
• The low credibility between sellers and consumers
• And the troublesome return process and other support services.

Currently, the information architecture of most Chinese e-commerce websites is simply a copy of western sites, even though there are huge cultural differences between the customers (Tan & Ouyang, 2004). Imagine an e-commerce website being visited by users from different parts of the world: Are there elements that may be difficult for people from certain cultures to navigate? Are there metaphors that some people cannot understand? Do some people need different information for making decisions? With the dramatic growth of e-commerce services in China over the past decade, people have started to think about a more appropriate structure for Chinese customers, but more research is still needed.

2.4 Summary

Based on these related theories, in order to understand Chinese consumers’ mental models that are relevant to the development of e-commerce, to establish and achieve the goals of both Chinese and international companies, and to explore the perceptions and behaviors of female consumers in Beijing, the methods of collecting data, sampling strategies, and analysis will be discussed in the next chapter.
CHAPTER 3. METHODOLOGY

This chapter describes the method that was used to begin answering the research questions of this study. This includes the research type, the framework, data collection and analysis methods, and sampling strategies.

3.1 Research Type

To understand the mental models and behaviors of Chinese online consumers, a qualitative study was conducted. The purpose of qualitative research is to understand and explain each participant’s personal experience and the meaning that he or she draws from it, and then to further understand their beliefs in their social context and other related social phenomenon. Rather than showing the information and the phenomena, this qualitative research focuses more on determining the reason behind the phenomena.

Qualitative researchers generally maintain that social life is always dynamic and developing (Berg & Lune, 2012). Social live involves a complex series of activities, and so qualitative research is a dynamic and malleable process. Moreover, qualitative research pays more attention to individual experiences because these are the bases for understanding social phenomena (Berg & Lune, 2012). Berg and Lune (2012) have also
mentioned that individual daily routines and experiences can be observed and viewed as objectively measurable data. In this way, due to the individual conditions of each participant, the research results cannot easily be duplicated and applied to other situations.

The qualitative point of view focuses on the reason behind events. Qualitative researchers are interested in the in-depth explanation of problems and the provision of solutions to such problems. Instead of providing quantitative information, the qualitative perspective provides an explanatory comprehension of the world through an analysis of human experience. For instance, when qualitative researchers want to understand some particular social phenomenon, they prefer considering the phenomenon in context in order to understand the processes involved in the event.

During the process of data collection, I used qualitative research methods in order to understand their behavior. Also, when I analyzed participants’ interview answers, I tried to find patterns in their behaviors from their answers.

My view was established according to my background and it helped me to understand the social context in Beijing, China. I spent my 18 years living in Beijing, China and received education from kindergarten to high school there. I learned Chinese culture, geography, humanity, politics and laws in the class and still can recall them now. Mandarin Chinese is my native language so I can speak, read, and understand Mandarin Chinese thoroughly. I conducted my interview in Beijing and the primary language using in Beijing is Mandarin Chinese. The whole interview process will be in Mandarin Chinese. It is comfortable for interviewee to answer the questions and also good for me to
interpret their answers. My parents were considered as upper middle class consumers in this case. Especially my mother had the similar demographics to the participants, who were upper middle class females consumers in Beijing. She had her Master’s degree and lived with other family members. It was helpful to understand the participants’ situation and their answers after talking with my mother. Because I was not have similar demographics with my participants and also I left China for 5 years. My biases of previous stereotypes of e-commerce in China may influence the data analysis.

3.2 Framework

According to the previous literature, the Hofstede’s culture dimensions can only provide an overview understanding of the culture in the national level. However, the subculture within the society could be unique and related to their background and social contexts. In order to understand one particular subgroup, feminist HCI could provide a theoretical framework for this study.

Based on feminist HCI, “the experience of all human beings is valid and must not be excluded from our understanding” (Bardzell & Bardzell, 2011, p.677). Bardzell (2010) provided some qualities of feminist interaction. Pluralism suggests that the human-centered is more important than universal because human is diverse and complex. A universal solution may not able to satisfy all users with cultural difference in different contexts. Participation means the relationship between researchers and users “lead to the creation and evaluation of design prototypes” (Bardzell, 2010, p1306). Advocacy allows designers “to question their own position to assert what an ‘improved society’ is
and how to achieve it” (Bardzell, 2010, p1306). Those qualities of feminist HCI allowed me to focus more on the small scale among Chinese consumers and investigated deeply on the experience of this subgroup. Their experience should be considered in the social science research. In feminist HCI, researchers are not only concerned about the efficiency of the system, but also cultures, social contexts, and their influence towards the user experience. It can also let researchers have a critical thinking about the design solutions and how they related each individual. With feminist HCI, there are more possibilities of solutions, instead of accepting the major and universal one. The human-computer interaction is complex because the interaction or relation could be different if the target users and their contexts are different. Every design solution is unique for a particular group of users in a particular context. It makes the design more flexible but natural for the users to interact with.

When it comes to this study, the experience and opinions of each individual are valuable to understand their mental models for future design purpose. In this case, the participants’ experience of online shopping was valuable in order to understand this particular group of users, which were upper middle class females in Beijing, China. Their experience in a certain context helps to understand their purposes, procedure, behaviors, and barriers, which are variables that need to be measured during the interview.
3.3 Assessment instruments and data collection methods

After realizing the differences between cultures, while using e-commerce websites, users may perform better and have more positive experiences with information architecture that is more compatible with their cognitive style. To understand the correlation between culture and user performance, an exploration interview was conducted to grasp Chinese consumers’ mental models towards online fashion retailers.

The collected data included the participants’ shopping experience, motivation, difficulties, barriers, usage between desktop and mobile device and so on. Interviews help complete my understanding of Chinese consumers’ shopping experience and mental models behind the behaviors.

To collect data, I conducted interviews with 19 Chinese consumers. Each session lasted about 30 minutes, including pre-questionnaire and interview questions about their experience. Before the interview session, each participant was asked to complete a questionnaire. The questionnaire included two parts: demographic and online shopping characteristics. The demographic questions included age, gender, location, educational levels, occupations, income levels and households (see Appendix B). The online shopping characteristics questions included context, decision making, online shopping behavior, and online shopping cost.

After participants finished the questionnaire, an interview was conducted in order to understand their behavior in the test and general online shopping experience. Based on their shopping experience, the interview questions could be adjusted and reordered for clarification (Berg & Lune, 2012). During the data collection procedure, all
text and interview questions were translated to the appropriate Mandarin Chinese and the interview transcripts were translated back to English for analysis afterwards.

Two groups of participants were recruited; one group had experienced online shopping, but the other group had not. They answered different interview questions according to their previous experience. For the group with online shopping experience, I asked them to show the e-commerce websites they like to use and to discuss the bad shopping experiences they had encountered. For the group without any shopping experience, their worries and barriers were discussed. By doing this, both the usability problems of current customers and worries of potential customers could be found.

The interview protocol (see Appendix A) used in this study was developed based on Young (2008). Young introduced a procedure to develop a tool to define the mental model of specific group of users. Based on the concepts that I want to understand, the scope of the interview was set and the list of interview prompts was developed afterwards. Moreover, the interview was audio recorded with permission for future analysis.

3.4 Sampling

The participants were recruited using the criterion sampling strategy and the snowball sampling strategy.

Criterion sampling has predetermined important criterions and then finds samples in accord with the criterions (Patton, 2001). Even though the sample size may be small, criterion sampling can provide the most information-rich cases in order to
determine important patterns among a specific group of people. In this case, it helped in obtaining high quality, detailed descriptions of each case, which is useful when it comes to the analysis phase and is important in finding patterns across cases (Patton, 2002).

For this study, participants from Beijing were recruited. Chinese people from different areas, or provinces, may have different levels of income, costs of living, habits, dialects, and so on. Among all provinces, Beijing is the capital city of China and one of the largest cities in China. The population of Beijing is about 22 million (WPR, 2015) and the number is still growing continuously. Also, Beijing is the powerhouse of the Chinese economy. With the quick economic expansion, people from other provinces of China came to work in Beijing (Beijing Population, 2013). I chose Beijing to provide in-depth and various data.

Snowball sampling also provides information-rich cases, which also fulfill my research needs (Patton, 2002). Snowball sampling is the most frequently used method of sampling across the social science (Noy, 2008). The basic concept is the researcher accesses participants through contact information provided by other participants. This process is repeatable and accumulative (Noy, 2008). This strategy also provided samples that meet the criterion. After the participants agreed to do the interview, I asked each participant to bring a friend that they think has a similar cultural background with them.

At the same time, as online customers, participants needed to have access to the Internet and sufficient income for shopping. The previous studies and the associated research point to two barriers of the development of e-commerce in China: “economic and technological developments in China” and “the unique characteristics of Chinese
culture” (Efendioglu & Yip, 2004). The latest China Internet Network Information Center (official data collector for the Chinese government) figures show that 55.7% of China’s 361 million web users have bought products online (CNNIC, 2014, 2015). However, even though the amount of people who shop online has increased dramatically over the past few decades, when considering the population of China, only about 23% of Chinese people have online shopping experience. Half of the people who have Internet access have never shopped online before. Therefore, there is still huge market potential that could be expanded and explored.

In terms of the age range, according to the CNNIC report (2013), most online consumers in China are between 20-29 years old, comprising about 56.4% of the online shopping population. The second largest group is 30-39 years old, which comprise about 22.5% of the population. Since the younger generation has already become familiar with technology and thus learned about it more quickly, for the purpose of this study, which is to attract more potential consumers, the age range was 35-50 years old.

3.5 Data Analysis

When it comes to the data analysis procedure, the thematic analysis method was adopted to analyze the interview answers. Thematic analysis is driven by the researcher’s theoretical or analytic interests in the area. It is used to organize and sort raw data into codes and themes to identify key features (Braun & Clarke, 2006). It is an appropriate method here since it helps me to find patterns in the raw data and organize the chaotic but rich data in an efficient way. There were basically six phases in thematic
analysis: familiarization with data, generating initial codes, combine codes to themes, reviewing themes, defining and naming themes, and producing the final report (Boyatzis, 1998).

First, with the notes and audio records of the interview, I began transcribing their interview answers into written form. Even though all participants were Chinese and they answered all interview questions in Chinese, I did not translate the interviews until later on in the analysis process, in order to reduce the inaccuracy and misunderstanding of their raw interview answers. Thus, transcription of interview answers was also in Chinese. Reading and re-reading the data were performed to check both semantic and latent meanings of their answers. After this stage, I was familiar with their answer and some potential codes were noticed during the process of transcription, because they were repeated or similar in one or more than one interview. Some start codes could be identified and prepared for the next phases. Based on Young’s (2008) methods of generating mental models, I also analyzed the transcript and identify each quote if it was task, belief, philosophy, feeling or other categories.

Second, after familiarization with the data, I started to find some initial codes. The coding process was looking for the repeating information that also related to my research question. They were important moments in the raw data and the researchers should be able to identify them based on their understanding without interpretation. In this case, I, as a researcher and as a Chinese as well, finished this phases after going through every interview transcription. With the assigned types of each quote, codes also
have different types, such as tasks, beliefs, feelings and so on. During this process, codes may be modified or combined.

Third, among codes, I grouped them and searched for themes. I tried to look for their similarities and some broader patterns. After grouping and combining those codes, I generated themes. For codes about behaviors, they were grouped first based on their major tasks. Those tasks were grouped together based on which shopping phases they were in. This was the start point of creating the mental models diagram. For codes about beliefs and feeling, they were also organized and grouped if they were similar to generate themes. In this process, I had a better understanding of relationships between codes, themes and their hierarchy, which would be a foundation of a mental model diagram afterwards. Fourth, with those potential themes, I reviewed them by looking back the coded data and exploring if the themes could be combined or split. With the idea of mental models, I tried to review and organize the themes in the sequence of behaviors. It was easy to generate the mental models later on.

Finally, themes were defined and I translated them into English. Each theme had a name to provide users a sense of its content and codes were blocks within each theme. Themes were presented in the results chapter and the mental model was generated based on the codes and themes, in the diagram format. With the codes and themes from the raw data, the mental model was the organization of those patterns from bottom up into a model.
3.6 Summary

This chapter provides an overview of the process of answering the research question. It includes the research type, the framework, data collection and analysis methods, and sampling strategies. Successful completion of this study will generate themes of mental models of Chinese online customers.
CHAPTER 4. RESULTS

The previous chapter covered the goal, research question, and methodology. In this chapter, the data and results will be presented in a diagram that shows the mental models of Chinese consumers toward e-commerce. There are seven stages in the online shopping process: (1) decide to shop online, (2) visit an e-commerce website, (3) explore products, (4) learn more about the products, (5) check out, (6) deliver, and (7) return. Each stage consists of several tasks and support functions from the website side.

4.1 Participants

There were 19 participants, all age 35-50, with an average age of 40.47 years. According to the criterion sampling, only females who lived in Beijing, China were recruited. Some demographic information was collected to understand their shopping habits (see Appendix B). Six (31.5%) participants had bachelor’s degrees and 13 (68.5%) had master’s degrees, which is relatively higher than the average level. The occupations of participants were varied: eight (42%) participants were employees in private companies, and eight (42%) participants were government officials. One (5%) was a high school teacher, and two (11%) were unemployed or retired. Because they had different occupations, income levels varied. Amounts were stated in Chinese RMB (¥) per month
on the questionnaire, but results are presented in USD ($) per year here, for better understanding. One participant (5%) had annual income of $2,000-$5,000, and another (5%) earned $5,000-$10,000. Eleven (58%) participants had incomes between $10,000-$15,000, and five (27%) earned $15,000-$20,000. Only one (5%) participant had an income of $30,000-$35,000. The average salary of urban employees in Beijing was $16,475 in 2015, which was ranked as No.1 among 34 provinces in China. The average salary of Chinese employees was about $9,000 in 2015. The income level of participants was similar to the average level in Beijing, but higher than the average of entire Chinese employees.

Household size is another important factor for online shopping. Most participants’ households had three members, and the average was 3.15 members. A few participants’ households had five members, including their parents and a child.

This demographic information shows the current characteristics of this group of people in Beijing, China. They had steady incomes and relatively high educational levels, and they lived with their family members. Their backgrounds ultimately affected their shopping habits and the items they bought.

### 4.2 Mental Models

After data analysis, the mental models of Chinese e-commerce consumers are presented in a diagram. In the diagram, there are several mental spaces, indicating the phases of online shopping (see Figure 4.1). In each mental space, task boxes are grouped together and organized as towers (see Figure 4.2).
Figure 4.1 Mental models of Chinese consumers
There are seven mental spaces for Chinese consumers: (1) decide to shop online, (2) visit an e-commerce website, (3) explore products, (4) learn more about the products, (5) check out, (6) deliver, and (7) return. Each space consists of several towers.

4.2.1 Decide to shop online

This is the first mental space of Chinese consumers, which is the motivation for online shopping. There are two towers in this mental space: need-based and price-based (see Figure 4.3). When participants have the desire to shop, they have different reasons and use various philosophies when deciding whether to buy items online or in-store.
First, most participants mentioned that they would like to purchase items that they *need*. They rarely browsed the recommendation list or were influenced by advertisements. One participant said, “I won’t buy something just because it’s cheap or on sale.”

![Figure 4.3. Mental space of deciding to shop online](image)

Another important reason for shopping online was the difficulty in purchasing heavy products. This group of people felt it was much easier to buy heavy products online and have them delivered to the home directly rather than go to a store and carry back home. The participants decided to buy some cooking supplies online, such as
cooking oil, rice, and flour. Moreover, people recently wanted to try some non-local products. For example, some participants said they would buy some snacks from other countries, but those snacks are only available online. They also had some worries:

I am worried about damage of my products. So if it is fragile, I won’t buy it online.

I will go to stores. Once I received my fresh fruit, it was not fresh anymore. The quality of the products is not good enough. So I always choose the brand that I am familiar with, even though others may be cheaper.

In addition to need, price is an important reason for people to shop online. Every November 11, most Chinese e-commerce sites have a shopping festival where most products are on sale. Participants stated that they have always saved several products in their online shopping carts and waited for the sale days. They also bought some things that were really cheap but might not be necessary. Some consumers did not like to buy expensive products (e.g., television, air conditioner) online, but their definitions of “expensive” may differ. Additionally, there is a trend of consumers shopping for electrical appliances online.

4.2.2 Visit an e-commerce website

Two towers are in this mental space, indicating the mental devices used while visiting e-commerce websites (see Figure 4.4). Among 19 participants, 13 (68.4%) of them preferred to use mobile applications rather than using computers. They reported that almost every popular e-commerce company has its own smartphone app, and the
respondents had installed those apps on their own phones. The employed participants said they were too busy to visit e-commerce websites. Instead, they could browse and shop using smartphone apps, especially on their commutes. However, participants who still preferred visiting web versions of e-commerce sites felt using a laptop or desktop was more trustworthy. On one hand, mobile versions may omit some information; also, the font size is too small for many users in this age group. One participant said, “I cannot find important information on [the] mobile version.” On the other hand, some participants were worried about the safety of their bank account if they lost their phones.
4.2.3 Explore products

After visiting an e-commerce website, consumers had two styles of exploring—browsing or searching—which are two towers in this mental space (see Figure 4.5). This phase was highly related to the participants’ motivations for shopping. Consumers who had clear desires liked to search using keywords directly in order to save time. Some
participants also mentioned that they searched their shopping history to buy the same products again. Saving time was important for them, and their objectives were to shop online, then receive their products in a short time.

![Diagram of shopping history options]

Figure 4.5. Mental space of exploring products

By contrast, the other participants liked to spend time browsing the page. They were willing to skim through the suggested or popular items. They did not have clear objectives and wanted to explore something new. Other than some random advertisements, participants also pointed out that they preferred the suggested products that generated from the participants’ browsing histories, or browsed newly arrived items in their saved stores.
4.2.4 Learn more about the products

After exploring products in different ways, while considering several products, consumers had their own philosophies and different focuses when making decisions. There are four towers in this mental space: sorting, review, size and colors—four aspects that consumers are most concerned about (see Figure 4.6).

Figure 4.6. Mental space of learning more about the products
First, when considering similar products, the first choice for Chinese consumers was sorting. Most participants chose to sort the search results by number of sales. The reviews of the stores were also important. Only a few of them chose to sort by price. Some other sorting criteria were mentioned, including location.

Second, other than comparing and sorting product information, reading reviews was one of the most important consumer behaviors before making shopping decisions. Most participants said they were not going to buy a product if it had negative reviews or evaluations. Reviews with pictures helped consumers to learn more about the real color and quality of the products. Pictures uploaded by other buyers seemed more persuasive than those posted by sellers. However, participants were also worried about the reliability of the positive reviews, because they had heard talk of misleading positive reviews. One participant shared: “The online review is not credible. I heard some business owners pay for somebody else to provide them good reviews online.”

Third, women were always deeply distressed about the sizes of clothes or shoes while they were shopping online. Participants stated that size charts were not accurate enough, so they consulted with the sellers directly by chatting online. Consumers sent their heights and weights to the sellers in order to get appropriate sizes to order. Some participants also mentioned that, since it was hard to decide their sizes, they tried on the clothes or shoes in the physical stores first, and then placed orders online with the appropriate sizes. After this type of purchase process, they decided to keep buying the same brands because they already knew the sizes. A few participants bought two items and then returned the inappropriate ones after receiving packages.
Fourth, color difference is another aspect that consumers were concerned about. Sellers take pictures of products in a really ideal environment, with perfect lighting and background, and some sellers even edit the photos before uploading. Thus, most consumers already understand and admit the color differences while placing orders. To make sure the color was what they wanted, participants said they checked the reviews with pictures, tried to find other pictures on search engines, or asked their friends’ opinions when friends had bought the items before.

4.2.5 Check out

After learning details of products, consumers finally decided to buy them. There are three towers in the checking out mental space: log in, review order information, and pay (see Figure 4.7).
Figure 4.7. Mental space of checking out

First, most e-commerce websites require consumers to log in their account before placing orders. Most participants stated that they used the same username and password for all e-commerce websites because it was easier for them to memorize just one login. Also, several participants mentioned they relied on the autofill function of their browser or even wrote on memo pads to catalog their usernames and passwords. Some websites required different passwords for login and payment, so it was hard for participants in this age group to memorize every password. This participant described:
“It’s hard for me to memorize all the accounts and passwords. And I feel unsafe if I use the same password for all accounts.”

Second, before placing orders, consumers needed to review their order information again. In this tower, the most important task buyers had was to decide addresses for delivery. As employees or officers, most participants worked from Monday to Friday and from early morning to night. As a result, they were not able to receive their packages at home, so they selected their office addresses for delivery. For heavy products, however, they continued to choose their home addresses.

Third, payment platforms in China are different from those in the United States. Chinese consumers used to ask for free shipping if they bought several items in one store, but they are now willing to pay shipping fees for better delivery service. There are various payment methods in China, and some e-commerce websites only accept selected methods. Alipay is one of the major payment platforms in China (Hendrichs, 2015). This is a third-party platform, which means that when receiving products, consumers need to confirm receipt and ask this platform to make a transaction to the sellers. Some consumers thought it was safe to pay a third-party platform, but other consumers were still worried about the safety of their bank accounts. In order to avoid fraud, some consumers decided to open new bank accounts only for online shopping and only put a small amount of money in the dedicated account before connecting it with the payment platform. Alipay is not the only third-party payment platform in China; shoppers need to register and have accounts with every platform in order to be competitive with every e-commerce website. This participant talked about the
competition between platforms: “I cannot use Alipay on JingDong because they are rival. I have to have many accounts on different payment platforms.”

For consumers who would like to shop with their smartphones, payment could be easier, but with higher risk. They said they were worried about losing their phones and leaking personal information. For people who do not have any online banking service, or who do not trust the payment platforms, they may have the option to pay on receipt. A few participants in this age group were not open to the new technology; they liked to choose payment on receipt because they felt much more secure in paying after receiving their packages.

4.2.6 Deliver

Delivery services are quite unique in China, and there are several courier service companies in the market. Figure 4.8 shows the tower of delivery service in this mental space. The tower of confirmation is not required for every website, and it only applies when consumers pay with third-party payment platforms. China overtook the United States and has had the highest express delivery volume in the world since 2014 (Top 10 courier services in China, 2015). Some e-commerce companies even have their own delivery systems. In this way, consumers in large cities (e.g., Beijing, China) expect to receive their packages in two to three days. E-commerce websites with their own delivery systems could deliver shipments on the same day the orders are placed. Once the packages are shipped, consumers can check the tracking information on the e-commerce websites. Consumers said they expected phone calls from the couriers when
deliveries arrived. If the consumers were not available, they could ask the couriers to leave the packages somewhere or attempt delivery the next day.

For some e-commerce websites, if the consumers paid with third-party platforms, after receiving the packages, they were required to log back into their accounts and click “confirm.”

Figure 4.8. Mental space of delivery
4.2.7 Return

Figure 4.9 shows the three towers in this mental space: communicate, apply for return, and ship back. Not every participant had used return service; participants thought return service was troublesome, and they were not familiar with the return policies. They said if the product size was not appropriate or had some bearable problems, they would give it to friends or keep it rather than returning it. Consumers felt confused about the return processes and said it always took a long time to complete paperwork. One participant stated, “It took me two months to get my money back.” Participants also worry about shipping costs when returning items. Most sellers asked consumers to pay for the return shipping fees. Some participants said they bought return insurance during payment, which would cover the return shipping fees.
Figure 4.9. Mental space of returning
CHAPTER 5. DISCUSSION

Based on the results, besides functions and interface design, this chapter attempts to understand the mental models that presented in the previous chapter. By investigating the female consumers in Beijing, China deeply, some suggestions are provided for designers to consider while designing e-commerce websites for this particular group of consumers and international companies to enter the Chinese market.

5.1 Social Media

Others’ opinions play an important role when female consumers, in Beijing, are making decisions. Social media is one of the places where consumers can read other people’s opinions. Before making shopping decisions, the female consumers like to search and read other people’s feedback on products on social media. Some products are popular on social media because some celebrities recommend them. Other than advertisement, female consumers like this kind of recommendation. One of the participants said, “I never buy items after watching advertisement, but the recommendation by someone I know make more sense to me.” In order to feel part of the group or organization, the female consumers would consider buying these products. Besides, the reviews on e-commerce websites provide the consumers the most
meaningful feedback from other consumers; consumers also like to share their own experiences or opinions towards the products.

For Chinese consumers, online shopping is not just the activity of buying desired products. Viewing and sharing opinions with other people becomes social networking, and also a way of understanding the trends of daily life. Some people start to sell something in small scale in their friend circles. Female consumers in Beijing think it is interesting because they can try some new products from their friends. Other people in the same friend circle would also like to share their opinion to this product. Other people could also be the sellers and bring some new products to the social networking. This new business model is acceptable for them due to its unique social context.

5.2 Trustworthiness

It is hard for female consumers in Beijing to trust online shopping completely. They worry about fraud or inaccurate information. In the phase of learning more about the products, consumers think the product information and pictures uploaded by the sellers are not credible. One participant expressed this feeling:

The photos uploaded by sellers are always perfect. I am guessing they take pictures in a really ideal environment and edit a lot. I used to receive a product that looked totally different from the picture. The color difference is also serious if the sellers adjust the color of the pictures. The colors of pictures are always bright and pretty.
In payment phase, consumers still cannot trust the payment system; thus, paying directly with credit or debit card numbers is not popular. Consumers do not want to provide their card numbers to the e-commerce websites. Instead, the third-party payment platforms prove necessary – consumers pay the third-party platform first while placing orders. Because the money is not paid directly to the sellers, Chinese consumers feel more secure. After receiving the package, consumers must confirm receipt on the e-commerce websites in order to request that the third-party platforms complete the transactions. By doing this, both sellers and buyers feel more comfortable because they only conduct transactions with the third-party platforms.

Regarding delivery, one of the reasons that consumers decided to choose their office addresses for delivery was that they did not trust the courier services. A participant said:

I don’t feel safe to provide my home address for delivery. During workdays, only children and the senior are at home. I think it is dangerous for them to answer the door to receive packages. Also, I will always cross out my name and address on the board box before throwing them away. I do not want other people know my name and my address.

Compared to the consumers in the mature shopping environment, this group of people is still in the process of learning and accepting new concepts and technologies. According to their educational and income level, they have critical thinking style and money in their bank account. Also, in China, many people own their e-commerce stores
personally. It is hard to trust strangers and pay large amounts of money before receiving any packages. Consumers still need more time to build trust in e-commerce websites and the entire online shopping system.

5.3 Suggestions

In the diagram of mental models, the bottom part represents the functions required to support the tasks above it. In this section, suggestions are provided by phases, based on the mental models.

To attract more consumers, according to their different motivations, the e-commerce websites should have various products, both local and non-local, from which consumers may choose. At the same time, regular promotions or sales are necessary to stimulate shopping behavior. It is also important for sellers to emphasize that the online prices are cheaper, or that some products are only available online.

To better serve busy consumers with full-time jobs, e-commerce companies should develop their own smartphone apps, with large font sizes and complete information. Other functions and security measures should also be included in the app.

The websites should have functions that allow consumers to search by keywords as well as within their shopping histories. Target advertisements can also be used to draw consumers’ attention. Besides basic sorting functions and detailed product information, reviews with pictures, sorting by sales numbers, and live consumer service are necessary functions. Reviews with pictures could help consumers gain a
comprehensive understanding of the details of products. Sorting by sales numbers is a technique that corresponds to Chinese consumers’ cultural dimensions. Live consumer service could support and answer consumers’ questions immediately.

While facilitating customers who are checking out, it is better for sellers to support different payment methods, such as third-party platforms, credit cards, debit cards, and cash. Return insurance and free returns could provide consumers more options and help them feel more comfortable when they place orders.

In summary, a list of suggestions includes:

• Various products
• Promotion or sales
• Ability to save favorite stores or products
• Large font size on smartphone app
• Full, organized product information on smartphone app
• Advertisements or suggested products based on personal interests
• Ability to search in history
• Sorting capability by sales numbers
• Information about the credibility of payment
• Ability to write reviews with pictures
• Live consumer service
• Synchronization of products in cart if logged in from different devices
• Competition with different payment methods
• Ability to purchase return insurance
• Clear flow chart of return process

5.4 Limitations

There are still some limitations before applying these suggestions. This study investigated the mental models of upper middle class female consumers in Beijing. It should be noted that the results and mental models were based on the participants’ background and experiences. The results were not able to generalize to all kinds of Chinese consumers without any changes.

Firstly, besides mental models, some other factors also affect the consumers’ perception while online shopping, such as their computer experience, social relations, or other individual characteristics. The situations may be various according to their personal experience. Among participants, even though they were in a same age group, some of them started to learn and use computers earlier than others. It is easier for them to accept new concepts and learn new technologies. The results in this paper only summarize the similarities of their perceptions to generate the mental models.

Secondly, the cultural differences exist but are not as obvious as before. Nowadays, people who have ability to access the World Wide Web are exposed to similar information. Even though their perceptions are somewhat influenced by their culture backgrounds, the differences are getting smaller. This study focuses on mental models of using e-commerce websites. Each age group may have a different
understanding of the Internet and this new business model based on their exposure to worldwide information.

Thirdly, the diversity in China is significant, but this study only recruited one demographic group. This study may not have represented all types of Chinese consumers. Due to the quick development of China, consumers are at different levels of shopping and payment. For example, some are accustomed to paying with their credit card; others still choose to pay with cash. Their needs are also different according to their different daily lives. It is better for e-commerce websites to provide them all possible solutions in order to attract consumers from different areas of China at different levels. Further research is needed to understand more types of Chinese consumers in different areas.

Fourthly, the researcher is the interviewer, observer, and analyst of the data. In order to circumvent the personal preference, some strategies are applied in this study to increase the validity and credibility. Even though participants had similar demographics, they were recruited from two and more sources. The interview protocol was generated according to Hofstede's cultural dimensions theory and Young's mental models theory. Triangulation of data sources and theories overcomes the inadequacy of single-investigator and single-method study. The entire procedure of recruitment and interview protocol were approved by an expert who was familiar with the Chinese culture. The representativeness of participants was always checked during the process of coding categories and using them as examples to present the data.
5.5 Summary

This chapter discussed the mental models in the previous chapter. The investigation of this group of consumers provide designers and researchers a deep understanding, which could help them provide design solutions to attract more consumers in this group. Design suggestions were provided based on the understanding in order to provide better service for Chinese consumers.
CHAPTER 6. CONCLUSION

The purpose of this study was to understand and explore the mental models of Chinese consumers towards the e-commerce websites. To achieve this purpose, a qualitative research was conducted in China. Nineteen Chinese consumers were interviewed about their perceptions and online shopping experiences. Data collected from the interview was analyzed using the thematic analysis method, in order to group the similar together and find patterns. After grouping, the mental models were presented in a diagram, with tasks in categories in different mental spaces. The bottom of the diagram shows the support functions for those tasks, which becomes the suggestion for designers to explore the functions on the e-commerce websites.

A mental model is a representation formed by consumers based on their experience and observation, which finally influence their task performances. Due to the different culture background and shopping environment, the mental models within China are various. This study investigated the case of female consumers, age 35-50, in Beijing, China. They would like to consider online shopping as part of their social networking and listen to others’ opinions and recommendations. Moreover, they always doubt the information and pictures on the e-commerce websites. They do
not trust the payment and delivery service either. They are still in the process of learning and accepting this new model of shopping.

Some suggestions for designers are formulated. In order to provide consumers enough product options, appropriate functions, and convey trustworthiness, the e-commerce websites should be well-organized. The first recommendation is to let consumers upload pictures while writing reviews. The second recommendation is to develop an intuitive smartphone app for busy consumers to shop in their free time. The third recommendation is to be competitive with different payment platforms. Based on their unique characteristics, designers and researchers can explore design solutions of e-commerce for them, to attract more consumers in the future and to enter the Chinese market.
LIST OF REFERENCES
LIST OF REFERENCES


Appendix A  Interview Protocol

English:

Topic Domain: Chinese online consumers mental models

Recruit Agency: I am Yunfan Song, a graduate student at Purdue University. My goal is to learn your opinion and experience of online fashion retailer stores. This is a confidential conversation. The interview will last about 30 minutes. I will give you a small gift after the interview.

Are you in a comfortable place to speak for 30 minutes?
Do I have your permission to record this conversation for transcription purposes?
(if so, turn on recording and ask for the record.)
Lead-off Question: Did you buy clothes, shoes or any other fashion items this month?
Tell me something about your experience.
Follow-up questions: Do you shop online?

Appendix Table A.1 Interview Questions

<table>
<thead>
<tr>
<th>Concepts</th>
<th>Online Shoppers</th>
<th>Not online shoppers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience</td>
<td>• How do you usually shop?</td>
<td>• How do you usually shop physically?</td>
</tr>
<tr>
<td></td>
<td>• What products do you usually buy online?</td>
<td>• What products do you usually buy?</td>
</tr>
<tr>
<td></td>
<td>o How about fashion products?</td>
<td>• How much would you like to spend for shopping every month?</td>
</tr>
<tr>
<td></td>
<td>• How do you usually pay while shopping online?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• How much would you like to spend for online shopping every month?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o How much would you like to spend on fashion products?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Could you tell me some of your experience about receiving packages?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• What are advantages and disadvantages of home delivery?</td>
<td></td>
</tr>
</tbody>
</table>
Appendix Table A.1 continued

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Expectation</th>
<th>Barriers</th>
</tr>
</thead>
</table>
| • Have you ever used mobile phones to shop online? How was the experience like? | • What make you shop online? | • What are your difficulties while shopping online?  
  o Could you please show me some examples?  
  o How would you overcome the difficulties finally? |
| • What are advantages and disadvantages of using mobile phones? | / | • What are your expectations of online shopping?  
  • What are functions or features that will make you want to try online shopping? |
| • What are advantages and disadvantages of using mobile phones? | • What are your expectations of online shopping?  
  • What are functions or features that will make you want to try online shopping? | • What stops you from online shopping?  
  • What are you worried about online shopping?  
  • Are you afraid of fraud?  
    o If so, could you tell me your experience or story you heard before?  
  • What the advantages and disadvantages of online shopping do you think? |
Chinese:
我是宋云帆，现在是美国普渡大学的研究生。

我研究的目的是了解您对于网购服饰的经历和想法。这是一次秘密的谈话。采访
讲持续大约30分钟。采访结束时您将得到一份小礼品。您现在的姿势是否方便继
续谈话30分钟?

您是否允许我录下此次对话的内容以便日后的转写和分析？

（如果是，打开录音设备并且请求录音。）

热身问题：您这个月是否买了衣服，鞋子或者其他任何服饰商品？您能分享一下您
购买这些产品时的经历吗？

跟进问题：您是否是在网上购买的这些商品？

<table>
<thead>
<tr>
<th>Appendix Table A.2 Interview Questions (Chinese)</th>
</tr>
</thead>
<tbody>
<tr>
<td>概念</td>
</tr>
</tbody>
</table>
| 经历          | • 您平时是如何购物的？  
• 您网购一般购买什么商品？
  ○ 您在网上购买服饰吗？
 | • 您平时是如何实际消费的？
• 您一般都会购买什么商品？
• 您每个月在购物上的消费大概是多少钱？
 | • 您网购都是如何付款的？
• 您平均每个月在网购上的消费大概是多少钱？
  ○ 其中服饰商品大概花费了多少？
 | • 您能告诉我一些您收包裹的
经历吗？
• 您认为送货上门的好处和
坏处是什么？
 |
### Appendix Table A. 2 continued

<table>
<thead>
<tr>
<th>动机</th>
<th>• 您网购的原因是什么？</th>
<th>/</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• 在什么情况下您会选择网购而不是上街购物？为什么？</td>
<td>• 您认为网购的好处和坏处是什么？</td>
</tr>
<tr>
<td>预期</td>
<td>• 您对网购的预期（要求）是什么？</td>
<td>• 您对网购的预期（要求）是什么？</td>
</tr>
<tr>
<td></td>
<td>• 有什么功能或者特征会让您想尝试一下网购？</td>
<td></td>
</tr>
<tr>
<td>障碍</td>
<td>• 您在网购的时候遇到过什么问题吗？</td>
<td>• 您不网购的原因是什么？</td>
</tr>
<tr>
<td></td>
<td>• 您能给我看一些例子吗？</td>
<td>• 您最担忧的问题是什么？</td>
</tr>
<tr>
<td></td>
<td>• 后来您是如何解决的？</td>
<td>• 您担心诈骗吗？</td>
</tr>
<tr>
<td></td>
<td>• 如果是，您原因讲一下您的经历或者听到的故事吗？</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• 您认为网购最大的弊端是什么？</td>
<td></td>
</tr>
</tbody>
</table>
### Appendix B  Demographic Survey

**English:**

**Demographic**

- **Gender:**
- **Age:**
- **Location:**

**Educational Level:**
- ☐ Elementary school
- ☐ Middle School
- ☐ High School
- ☐ College, no degree
- ☐ Bachelor’s degree
- ☐ Master’s degree

**Occupation:**

**Income Level:** (RMB: ¥ / monthly)
- ☐ 1000-3000
- ☐ 3000-5000
- ☐ 5000-8000
- ☐ 8000-10000
- ☐ 10000-15000
- ☐ 15000-20000
- ☐ above 20000

**Households:**

---

### Chinese:

**个人信息**

- **性别:**
- **年龄:**
- **所在城市:**

**教育程度:**
- ☐ 小学及以下
- ☐ 初中
- ☐ 高中或中专
- ☐ 大专
- ☐ 大学
- ☐ 研究生及以上

**职业:**

**收入范围:** (人民币: 元/月)
- ☐ 1000-3000
- ☐ 3000-5000
- ☐ 5000-8000
- ☐ 8000-10000
- ☐ 10000-15000
- ☐ 15000-20000
- ☐ 20000 以上

**共同生活的人口数:**
Appendix C  Recruitment Materials

English:

“Hello, my name is Yunfan Song. I am a graduate student at Purdue University in the Computer Graphics Technology, and I am in China undertaking research that will be used in my master thesis.

I am studying the perception and expectation of Chinese consumers towards online shopping environment of fashion products. I would like to ask you serious of questions about your experience of online shopping or normal physical shopping and current barriers. The information you share with me will be good for researchers and designers to make cultural appropriate websites.

The interview will take about 30 minutes.

There is a small risk of a breach of confidentiality, but all efforts will be made to everything you tell me in the strictest confidentiality. I will not collect your name and use your personal information in the text of my thesis or any other publications. There are no other expected risks of participation.

Participation is voluntary. If you decide not to participate, there will be no penalty or loss of benefits to which you are otherwise entitled. You can, of course, decline to any questions, as well as to stop participating at any time, without any penalty or loss of benefits to which you are otherwise entitled.

I would like to make an audio recording of the interview, so that I can have an accurate record of the information that you provide to me. It is only for memory purpose. I will transcribe that recording by hand, and will keep the transcripts confidential and securely in my possession. I will destroy the demographic questionnaire and audio recording after I transcribe it.

If you have any additional questions concerning this research or your participation in it, please feel free to contact me, my principle investigator, Dr. Vorvoreanu, (mihaela@purdue.edu , 1-765-496-7709) or our university research office (1-765-494-5942) at any time. ”

Do you have any questions about this research? Do you agree to participate?

If so, we can start arrange the time. Thank you.”
Chinese:
“你好，我是宋云帆。我是美国普度大学计算机图形技术专业的研究生，我现在在中国为我的研究生论文研究收集一些数据。

我正在研究中国消费者对于在网上购买服饰商品的看法和要求。我将会问您一些有关于您关于网购或者日常消费的问题，以及现在存在的障碍。您提供的信息将有助于研究者和设计师开发适合中国消费者的网购网站。

采访将持续 30 分钟。

所以您告诉我的信息将会全部保密，如果泄密风险也会很小。我不会记录您的姓名，您的个人信息也不会在我的论文或其他出版物中出现。除此之外不会有其他的风险。

参加研究是自愿的。如果您决定不参加，将不会导致任何处罚或者损失。当然您也可以拒绝回答某些问题，并在任何时候终止参加这次研究，同样不会导致任何处罚或者损失。

您的采访内容将被语音录音以便于我可以准确记录您提供的信息。录音只用于记录内容。我将会把录音内容转写，并且放在安全保密的地方。一旦录音和调查问卷被转写，原本将被销毁。

如果对自己作为此项研究参与者的权利有疑问，您可以与我的导师 Vorvoreanu 博士（mihaela@purdue.edu，1-765-496-7709），或者我们大学的科学研究监督办公室联系，电话是 1-765-494-5942。

请问您对这次采访有什么问题？您是否同意参与？

如果您同意参与，我们可以约好时间进行采访。谢谢您的配合。”
Appendix D    IRB International Research

Researcher Narrative

I am a 23-year old Chinese woman, who is currently pursuing my Master’s degree in the U.S. I was born and grown up in Beijing, China. When I was young, my family encouraged me to explore the world by using computer and the Internet. I was able to access the Internet since I was 8 years old. My aunt and her husband came to the U.S. when I was in elementary school and worked in the IT industry until now. They provided me a lot of inspiration and encouragement about my dream of technology.

I spent my 18 years living in Beijing, China and received education from kindergarten to high school there. I learned Chinese culture, geography, humanity, politics and laws in the class and still can recall them now. Mandarin Chinese is my native language so I can speak, read, and understand Mandarin Chinese thoroughly. I will conduct my interview in Beijing and the primary language using in Beijing is Mandarin Chinese. The whole interview process will be in Mandarin Chinese. It is comfortable for interviewee to answer the questions and also good for me to interpret their answers.

While doing research about user experience and design in America, based on my international background, I realized the cultural difference of target users may cause problems when they are using the websites. As a Chinese, I am also aware of the development of China, technically and economically. It is a good timing to think about the importance of culture in design and provide better service or experience for Chinese customers. According to my own experience of working in design teams of different
countries, I believe that understanding the role of cultural-sensitive design is helpful for designers and company to decide between standardization and adaption during their process of internationalization.

At the beginning of this study, participants will be my personal acquaintance. It is easier for them to share their experience and personal opinion with me. At the end of their interview, I will ask them if they know any other people that meet the criteria. Snowball sampling works well in China because people will trust me if I am introduced by someone they know. This sampling strategy will provide me information-rich cases and participants are willing to share their opinion with me at the same time.

During the conduct of the research, since I will be in China, I will email my principle investigator, Dr. Vorvoreanu if there are any changes or problems.