

CONSUMER CHOICE BEHAVIORS IN SEQUENTIAL PURCHASES FOR  
EXPERIENTIAL PRODUCTS

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Yiwei Li

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# CONSUMER CHOICE BEHAVIORS IN SEQUENTIAL PURCHASES FOR EXPERIENTIAL PRODUCTS

Yiwei Li, Ph. D.

Cornell University 2021

This dissertation consists of four essays about consumer choice behaviors in sequential purchases, with a focus on experiential products such as leisure cruising. The first essay provides a thorough review of the variety seeking literature. It answers what variety seeking is and how it is measured, why consumers seek variety, and how consumers seek variety. A new, more comprehensive taxonomy of variety seek motives is proposed. Six research gaps in the variety seeking literature are identified, suggesting several potential directions for future research.

Based on data of 15,166 purchases made by 978 cruise passengers, the following essays explore consumer choice behaviors in a sequence of purchases for experiential products. More specifically, the second essay examines how cruise passengers seek variety by switching brands. Based on their variety seeking tendency, this research segments cruise passengers into four groups: enthusiasts, loyalists, two-branders, and explorers. Among them, enthusiasts never switch brands, while loyalists, two-branders, and explorers show different patterns in the particular ways in which they switch brands. The brand-switching probability of loyalists significantly declines during their first ten purchases; two-branders are the least likely to intensively switch brands in a relatively short period; explorers are the most likely to switch to dissimilar brands when seeking variety.

The third essay examines the association between the price tier of the brand that consumers chose in the previous purchase and their brand switching decision in the current purchase. Using multilevel logistic regression, this research found that when the interpurchase time is relatively long, the higher the price tier of the previous brand, the less likely consumers would switch brands; but when the interpurchase time is relatively short, the higher the price tier of the previous brand, the more likely consumers would switch brands.

Using both individual-level and group-level indicators, the fourth essay verifies the existence of a first-experienced advantage, i.e. consumers, in general, prefer their first-experienced brand over other brands. But the size of this first-experienced advantage and how it changes over time are dependent on the brand that consumers chose in the first purchase.

## **BIOGRAPHICAL SKETCH**

Yiwei Li received his bachelor's degree in Business Administration from Central University of Finance and Economics in Beijing, China. He joined the Hotel School at Cornell University in 2012 as a master's student and continued his doctoral research there from 2014. His research interest mainly resides in consumer behaviors, service marketing, applied statistics, and the leisure cruising industry. His research has been published in Journal of Travel Research, Journal of Hospitality and Tourism Research, and Journal of China Tourism Research.

Yiwei has a great passion for the hospitality and tourism industry. Leveraging the cutting-edge knowledge learned from Cornell's Hotel School, he started his own business and became a restaurant owner in 2015. After graduation, he hopes to continue his career in the hospitality and tourism industry as both a research and a practitioner.

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## TABLE OF CONTENTS

### **Chapter 1: Variety Seeking in Experiential Product Choices: A Review**

1.1 Introduction.....	1
1.2 What Is Variety Seeking? Definition and Measurements .....	9
1.3 Hedonic Goods vs. Experiential Products .....	14
1.4 Two Taxonomies of Variety Seeking Motives .....	17
1.5 Toward a New Taxonomy of Variety Seeking Motives.....	22
1.5.1 Motives for Unconscious Variety Seeking Behaviors .....	22
1.5.2 Motives for Conscious Variety Seeking Behaviors .....	25
1.6 Beyond Variety Seeking Tendency: How Consumers Seek Variety .....	40
1.7 Variety Seeking in Management: Segmentation and Prediction .....	42
1.8 Conclusion and Discussion.....	46
References .....	51

### **Chapter 2: Segmenting Cruise Passengers by Variety Seeking Tendency**

2.1 Introduction.....	73
2.2 Cruise Market Segmentations.....	76
2.3 Research Questions .....	81
2.4 Method.....	87
2.4.1 The Sampling Process .....	87
2.4.2 Data Cleansing.....	89
2.4.3 Variables.....	90

2.4.4 Statistical Analysis Procedures.....	97
2.5 Results .....	99
2.5.1 Segmenting Cruise Passengers by Variety Seeking Tendency .....	101
2.5.2 Efficiency of Segmentation Based on Variety Seeking Tendency.....	107
2.5.3 Variety Seeking Intensity by Variety Seeking Tendency Segments .....	109
2.5.4 Variety Seeking Temporal Patterns by Variety Seeking Segments.....	112
2.5.5 Dissimilarity of Contiguous Choices by Variety Seeking Segments .....	116
2.6 Conclusions and Discussion .....	117
2.6.1 Theoretical Implications.....	118
2.6.2 Managerial Implications.....	120
2.6.3 Limitations and Future Research .....	122
References .....	124

### **Chapter 3: Brand Price Tier and Brand Switching: The Role of Interpurchase Time**

3.1 Introduction.....	131
3.2 Literature Review.....	132
3.2.1 Brand Price Tier, Quality/Satisfaction, and Brand Switching.....	132
3.2.2 Brand Price Tier, Consideration Set Size, and Brand Switching .....	135
3.2.3 The Role of Interpurchase Time .....	138
3.3 Method.....	141
3.3.1 Dataset and Variables.....	141
3.3.2 Data Preparation .....	142
3.3.3 Analytic Methods.....	144

3.4 Results .....	145
3.4.1 Descriptive Statistics.....	145
3.4.2 Assumption Check.....	149
3.4.3 Empty Model.....	149
3.4.4 Model Comparison and Hypothesis Testing .....	150
3.5 Discussion.....	153
References .....	156

**Chapter 4: The Effect of The First-Experienced Brand on Customer Choice Behaviors in Sequential Purchases for Experiential Products**

4.1 Introduction.....	165
4.2 Literature Review and Research Questions .....	167
4.3 Data Structure and Definitions.....	171
4.4 Results .....	176
4.4.1 Descriptive Statistics of the Key Individual-Level Variables .....	176
4.4.2 Individual-Level Measurements for the First-Experienced Advantage.....	178
4.4.3 Population-Level Measurements for the First-Experienced Advantage .....	178
4.5 Conclusion and Discussion.....	192
4.5.1 Theoretical Contribution .....	193
4.5.2 Managerial Implication .....	194
4.5.3 Limitations and Future Research .....	196
References .....	198

## LIST OF FIGURES

Figure 1.1: An Outline of Chapter 1 .....	8
Figure 1.2: Hedonic/Utilitarian Product Map (Crowley et al. 1992).....	15
Figure 1.3: A Taxonomy of Varied Behavior (McAlister and Pessemier, 1982).....	19
Figure 1.4: Motivating Factors for Variety seeking Behaviors (Kahn, 1995).....	21
Figure 1.5: A New Taxonomy of Variety Seeking Antecedents .....	24
Figure 1.6: Summary of Chapter 1 and Variety Seeking Research Gaps .....	49
Figure 2.1: A Example of Data Source from Cruise Critic .....	88
Figure 2.2: The Optimal Number of Segments by Variety Seeking Tendency.....	103
Figure 2.3: A Typical Cruiser’s Choice Set of by Segments .....	107
Figure 2.4: Change of Variety Seeking Tendency over Time by Segments .....	113
Figure 2.5: The Optimal Number of Variety Seeking Temporal Patterns .....	114
Figure 3.1: Research Framework of Chapter 3.....	140
Figure 3.2: The Average Brand Price Tier of Individual Customers.....	148
Figure 3.3: The Average Interpurchase Time of Individual Customers .....	148
Figure 3.4: The Effect of $c.Tier_{i(t-1)}$ on $BS_{it}$ Moderated by $b.Interval_{it}$ .....	153
Figure 4.1: Research Data Structure of Chapter 4 .....	171
Figure 4.2: Individual Customers’ Probabilities of Returning to their First Brand.....	178
Figure 4.3: Distributions of Individual-Level EFA Indicators (N = 670).....	180
Figure 4.4: The Size of the First-Experienced Advantage by j .....	188
Figure 4.5: Dendrogram of the Hierarchical Clustering Structure .....	191

## LIST OF TABLES

Table 2.1: Sample Quotas for Each Cruise Line Forum by Cruise Line Tier .....	89
Table 2.2: Frequency Distributions of Brand <sub>t</sub> and Brand <sub>t-1</sub> .....	95
Table 2.3: Descriptive Statistics of Numerical Variables of Interest.....	96
Table 2.4: Descriptive Statistics of Variety Seeking Tendency at Different Levels .....	99
Table 2.5: Mediation Regression of the Ship-Level Variety Seeking Tendency .....	101
Table 2.6: Means of the Clustering Variable at Final Cluster Centers .....	104
Table 2.7: Differences in Cruise Choice Behaviors among Cruiser Segments .....	105
Table 2.8: The Association between Initial and Current Variety Seeking Segments.....	108
Table 2.9: Bivariate Correlations between Indicators of Variety Seeking Intensity .....	110
Table 2.10: Comparisons of Variety Seeking Intensity by Cruiser Segments .....	111
Table 2.11: Means of the Clustering Variable at Final Cluster Centers .....	115
Table 2.12: Association between VS Temporal Patterns and Cruiser Segments .....	116
Table 2.13: Crosstab of tier <sub>t-1</sub> by tier <sub>t</sub> (N = 6163).....	117
Table 3.1: Basic Information about Price Tiers of Cruise Lines .....	137
Table 3.2: Descriptive Statistics of Variables of Interests .....	146
Table 3.3: Mixed-Effects Logistic Regression Results of the Empty Model.....	150
Table 3.4: Coefficient Estimates and Model Comparison .....	152
Table 4.1: Descriptive Statistics of Key Individual-Level Variables (N = 978).....	176
Table 4.2: Descriptive Statistics of Individual-Level EFA Related Variables (N = 670)	179
Table 4.3: Wilcoxon Signed Ranks Test Results (N = 670) .....	181
Table 4.4: Comparison between the Center of Diff <sub>12i</sub> and Zero by F <sub>i</sub> .....	183

Table 4.5: Probabilities of Choosing Brand $k$ in the $j$ th Purchase ( $j \leq 5$ ) .....	185
Table 4.6: Probabilities of Choosing Brand $k$ at the $j$ th Purchase by Brand.....	186

## CHAPTER 1

### VARIETY SEEKING IN EXPERIENTIAL PRODUCT CHOICES: A REVIEW

#### *1.1 Introduction*

I would love to prologue this dissertation by reviving a scene in which my best friend, Atlas, and I were grocery shopping and talking about where to go for our summer vacations.

*(Yiwei grabs a 32-ounce Blueberry Chobani Greek Yogurt and starts talking.)*

**Yiwei:** Atlas, where do you want to visit during your coming summer break? Any travel plans?

**Atlas:** I am going back to Northeastern China soon. My parents and I have planned to revisit Changbai Mountains for a week. We travelled to that region almost every summer before I came to Cornell. Visiting there just seems like a family routine... Could you fetch me some Chobani? I want banana, strawberry, vanilla, coconut, and peach. One for each please—I love yogurt, but can get tired of the same flavor day after day. Thanks!

*(Yiwei puts five cups of Chobani into the cart and heads to refrigerators with Atlas.)*

**Yiwei:** Seriously? I can't imagine going to the same place every year. That must be boring.

**Atlas:** How come? For us, traveling to Changbai Mountains is super convenient—less than an hour by high-speed train. My dad has a friend who owns a hotel there. Anytime we want to visit, we just call his friend. No booking is needed. By the

way, we love that property. It offers a reasonable price and has friendly staff, great service, spacious guest rooms, and contemporary design. I am unsure if I would have the same good experience at other hotels.

**Yiwei:** Still, there is not much excitement in visiting the same place repeatedly.

**Atlas:** For me, it is more important to be with my family for a vacation. I enjoy jogging or having picnics in the woods with my parents. I prefer relaxation more than excitement, and so do my parents... Look! Haagen-Dazs has launched several new alcohol-infused flavors and is giving a new product promotion. I will take a cup of Rum Tres Leches ice cream. Do you want to try another new flavor?

**Yiwei:** I better stick with my favorite flavors, Sea Salt Caramel or Green Tea. They never disappoint me.

*(Atlas grabs two cups of Haagen-Dazs ice cream and we move towards the aisle with chips.)*

**Atlas:** So, what is your summer vacation plan? Visiting strange, tiny, and risky countries that I have never heard of again?

**Yiwei:** Risky? Well, safety is never a big issue in my past travels. I just believe visiting less popular destinations is a very cool thing to do. Don't you think so? I aim to be a global traveler and visit every single country in the world before my 40s. And you are right. Strange places again. I'm going to visit Fiji, Tuvalu, and Vanuatu in this coming summer.

*(Atlas rolls his eyes.)*

**Atlas:** I only know Fiji thanks to the premium water brand. Gosh! Where are Tuvalu and Vanuatu? Anyway, I already feel discouraged by the troublesome visa

application process and the tedious reservation-making work. Isn't it a bummer to have to consider a lot of factors just for a short trip, like the language barrier and the unfamiliar food? I would rather go to "boring" but comfortable places... Let's bring a 24-pack Fritos Lay Classic Mix to Rachel's party tonight. What do you think?

**Yiwei:** Actually, I like Nacho Cheese Doritos better. But since we don't know what flavors others like, your choice may be a better option in this situation. People can choose whichever flavor they prefer.

**Atlas:** Absolutely right.

*(Atlas grabs a box of Fritos Lay Classic Mix and we head to the cashier.)*

**Yiwei:** Come on! Travel is big thing in life. I read a lot of reviews and travel notes before I decide where to go. As a student with a limited budget, I also have to carefully compare offers of airlines, hotels, and tour companies to make sure I get the best deals. It takes me two to three weeks to finalize a trip to a new destination. You might think it is time-consuming, but for me, traveling to cool places is worthy of time investment.

**Atlas:** Well. Good luck. Wish you a pleasant journey in Fiji and the other two countries.

**Yiwei:** You too. Enjoy your family trip to Changbai Mountains... Let's go to Rachel's party.

As the above scenario illustrates, people seek variety for diverse reasons, and their choice behaviors may differ when buying different product categories. For example, Atlas likes variety

when selecting certain grocery items but prefers to visit the same destination for vacations with his family. On the other hand, when grocery shopping, I tend to purchase my preferred brands or flavors until I get tired of them and think about trying different things. Typically, after trying something new, I switch back to my preferred items because I like them better. On the other hand, when planning vacations, I avoid going to the same destinations twice, even if I had great experience at those places. This is because traveling to all countries on the planet is one of my dreams, and visiting the same destinations makes no progress to fulfill it. Moreover, I have been tagged by most friends with the label “world-traveler” who often visits less popular but cool destinations. I like what this says about me and want to enhance this identity by continually seeking variety in destination choices.

Since the 1970s, there has been extensive research on the factors that influence consumers to seek variety; a majority of these studies, though, used simple hedonic goods such as candy, yogurt, and snacks as the research context. There is little research on whether factors influencing variety seeking found for simpler hedonic goods consumption are applicable to the consumption of complex experiential products. Simple hedonic goods and complex experiential products both offer hedonic benefits, however, they differ in many other aspects. One fundamental difference is that consumers follow different decision-making processes when choosing simple vs. complex products. Selecting hedonic goods is a relatively simple task, and thus consumers may use heuristics or consider only a few factors to make their decisions fast. On the contrary, when making decisions for a complex experiential product such as a vacation package, consumers may go through a multi-stage cognitive process and consider many more factors (Kwortnik and Ross, 2007). For example, when choosing a jar of jam, consumers tend to use quality as a decision heuristic and repurchase the brand with high perceived quality (Hoyer

and Brown, 1990). This positive effect of perceived quality on repurchase intention may also exist when consumers choose from among complex experiential products such as restaurants, destinations, and cruises (Chua et al., 2015; Ha and Jang, 2010; Žabkar, Brenčič, and Dmitrović, 2010), but other factors such as novelty seeking can diminish it (Ha and Jang, 2013; Jang and Feng, 2007). Consumers may switch to new options even if they perceive high quality and feel satisfied with the old option (Bigné, Sánchez, and Andreu, 2009; Park and Jang, 2014; García et al., 2012).

Empirical research has found that satiation plays an important role in driving consumers to seek variety for soft drinks (McAlister, 1982), a typical simple hedonic goods. But for complex experiential products, does satiation influence variety seeking to the same extent? Given that experiences with even the same experiential product (e.g. the same restaurant or destination) can be vastly different in consecutive consumption occasions, can we assume that consumers are less likely to feel satiated in such contexts so that satiation is a less important driver of variety seeking? On the other hand, no research has examined the role of self-identity in driving variety seeking for hedonic goods. But for experiential products such as leisure vacations, consumers tend to choose items consistent with their self-images to shape their self-identity (Murphy, Benckendorff, and Moscardo, 2007; Rosenberg, 1979). This would suggest that self-identity influences variety seeking for experiential product choices in a way that it might not for hedonic goods. However, compared to the large amount of research on variety seeking for hedonic goods, research investigating variety seeking for experiential products is still limited (Line and Runyan, 2012). The main motivation of this chapter, therefore, is to offer a systematic review of the variety seeking literature, with a focus on variety seeking phenomena in experiential product consumption.

On the other hand, despite extensive research on *why* consumers seek variety, only limited attention has been paid to *how* consumers seek variety. Little research has examined the phenomenon of variety seeking patterns, i.e. the particular ways in which variety seeking behaviors happen in a sequence of purchases. But this topic can be an interesting and potential research area. For the same sequence of choices, different types of variety seeking patterns can be extracted from different aspects. For example, if segmenting customers by their consideration set sizes, marketers may find that some consumers choose from and switch among a small number of options, while others select from a larger consideration set with more options. Then, if segmenting customers by how their variety seeking behaviors distribute in a sequence of choices, marketers may find that some variety seekers seek variety at a relatively stable frequency (e.g. customers switch brand in every other purchase), while others intensely seek variety during one or more short time periods but repurchase the same products at other times (Bawa, 1990; Chintagunta, 1998). Lastly, if segmenting customers by what options they switch to, marketers may find that some customers often switch between similar brands, while others tend to switch between largely dissimilar brands (Menon and Kahn, 1995). No research has examined the relationships between these seemingly different types of variety seeking patterns. The second objective of this chapter is to provide a review of literatures about variety seeking patterns and specify some research gaps in this domain, which indicate potential future research directions.

The remainder of this chapter is organized as follows. The first section discusses what variety seeking is and introduces the definitions and measurements of variety seeking. The second section discusses two specific consumption situations examined in variety seeking research: hedonic goods and experiential products. The comparison between these two subtypes of hedonic products highlights their significant difference in the decision-making process and

purchase motives, suggesting that factors driving consumers to seek variety may differ for hedonic goods vs. experiential products. To systematically examine this proposition, the third section reviews two taxonomies of variety seeking discussed in the marketing literature and identifies influencing factors that do not fit these taxonomies. The fourth section, accordingly, proposes a refined framework and an extension of different variety seeking motives for experiential product choices. Despite the extensive research on variety seeking motives, limited research has investigated how consumers seek variety. Therefore, the fifth section discusses the particular ways of seeking variety, i.e. variety seeking patterns. The sixth section reviews two applications of variety seeking research in marketing management, variety seeking segmentation and prediction, and highlights that variety seeking patterns have been overlooked in these applications. The last section wraps up the review of variety seeking research and reiterates the gaps in the variety seeking literature. Figure 1.1 below provides an outline of how the following sections review the literature of variety seeking.



### **Definition and Measurements: What is Variety Seeking?**

- Variety seeking is the tendency of individuals to seek diversity in their choice behaviors, which can be measured with 3 types of methods.
- Narrower definitions: variety seeking is brand-switch behaviors that occur when consumers have low involvement or high commitment.
  - Variety seeking is more than brand-switching and also happens at the attribute and product-category level.
  - Highly involved consumers also seek variety in buying complex products, but whether seeking variety motives and patterns differ by product category remains unexamined.

### **Hedonic Goods vs. Experiential Products: Variety Seeking Contexts**

- A majority of variety seeking research is conducted with contexts of choosing simple hedonic goods.
- Hedonic goods and experiential products are both subtypes of hedonic products, but they differ in many aspects.
  - When choosing experiential products, consumers go through a complicated decision-making process and consider more factors
  - It remains unclear (1) whether variety seeking motives found for hedonic goods also influence variety seeking in experiential consumption, and (2) which factors play more important roles in leading to variety seeking in choices for experiential products.

### **Variety Seeking Motives: Why Consumers Seek Variety?**

- McAlister and Pessemier (1982) and Kahn (1995) established two taxonomies of variety seeking, but some newly found influencing factors of variety seeking cannot fit into both taxonomies, such as sense of control and activated change mindset.
- A new taxonomy is proposed, which dichotomizes variety seeking behaviors into unconscious and conscious variety seeking.
  - Unconscious variety seeking motives include environmental cues, activated mindsets, and affect.
  - Conscious variety seeking occurs when consumers are motivated to pursue variety for instrumental or experiential benefits.
    - Instrumental motives include change in choice problems, switching cost, and future preference uncertainty.
    - Experiential motives include sense of control, stimulation, self-related goals, and social goals.

### **Variety Seeking Patterns: How Consumers Seek Variety?**

- Research has focused on examining factors influencing variety seeking tendency, but limited research investigated variety seeking patterns.
- A consumer may exhibit multiple patterns of seeking variety in a sequence of choices, determined by different factors, including distribution frequency of selected items, variety seeking timing, and similarity of items in two consecutive choices.

### **Variety Seeking in Management: Segmentation and Prediction**

- Research has developed several segmentation schemes based on variety seeking tendency, but the pattern of information is largely excluded.
- Prediction models have been developed to forecast variety seeking tendency by psychological, demographic, and transactional variables, but again, these models do not predict variety seeking patterns.

**Figure 1.1: An Outline of Chapter 1**

## ***1.2 What Is Variety Seeking? Definition and Measurements***

Variety seeking has been recognized as a common choice behavior of consumers, but is defined in different ways in popular marketing textbooks (Kotler and Armstrong, 2017; Peter and Olson, 2010). Based on the degree of customer commitment and the number of brands purchased in a particular period, Peter and Olsen (2010) developed a two-by-two matrix of consumer purchasing patterns. In this matrix, repeat purchase refers to habitually buying a brand without a cognitive commitment to it; brand loyalty refers to being intrinsically committed to repurchasing a particular brand; derived varied behaviors are motivated in response to external cues in the environment; and lastly, *variety seeking* is defined as a cognitive commitment to purchase different brands because of factors such as the stimulation involved in trying different brands, curiosity, novelty, or overcoming boredom with the same old thing. On the other hand, Kotler and Armstrong (2017) identified four categories of consumer buying behaviors based on customer involvement and the difference among available brands. Complex buying behavior happens when consumers are highly involved in choosing among significantly different brands; dissonance-reducing buying behaviors occur under conditions of high consumer involvement and little brand difference; habitual buying behavior happens in situations where consumer involvement is low and competing brands are similar; and lastly, *variety seeking* buying behaviors occur if consumers have low involvement and perceive significant differences among available brands.

Both typologies of choice behaviors above define variety seeking as a brand-switching behavior of consumers. But besides brand switching, variety seeking behaviors can also occur in the forms of choosing varied product attributes (Inman, 2001; Ratner, Kahn, and Kahneman, 1999) or varied product categories (Carlson et al., 2015; Chowdhury, Ratneshwar, and Desai,

2009; Etkin, 2016; Rahinel and Redden, 2013). When a choice set consists of single-branded items with different attributes (e.g. flavors, colors, sizes, packages, etc.), consumers might seek variety by selecting varied attributes. For example, a consumer can seek variety by purchasing the 24-pack Frito Lay Classic Mix chips with six flavors or switching from the vanilla flavored Haagen-Dazs to the green-tea flavored Haagen-Dazs. On the other hand, when a choice set is composed of items in multiple product categories, consumers can seek variety at the product-category level to fulfill varied demands. For example, a consumer can seek variety by buying both beer and soft drinks or by switching from skiing to cruising for a winter vacation.

Moreover, variety seeking behaviors at different levels may interactively affect each other. If the need for variety is satisfied at one level, consumers may reduce variety seeking tendency at other levels. Or, if the need for variety cannot be satisfied at one level, consumers can seek variety at other levels. Inman (2001) found that consumers tend to switch more intensively between levels of a sensory attribute (e.g. different flavors or textures) than between brands, but when a single brand lacks variety in the sensory attribute, consumers must switch brands in order to change the sensory attribute. Rahinel and Redden (2013) found that seeking variety at the product-category level may undermine brand-level variety seeking tendency, because using the same brand across multiple product categories can increase total consumption utility and make the joint consumption experience more enjoyable. For instance, it is commonly seen that consumers use iPhone and MacBook together, because the interoperable systems and software provide greater convenience.

In the marketing literature, variety seeking is more widely conceptualized as *the tendency of individuals to seek diversity in their choice behaviors* (Kahn, 1995; McAlister and Pessemier, 1982). It implies a reduction in the probability of repeating purchase (Givon, 1984) and indicates

behavioral disloyalty (Dick and Basu, 1994; Kahn, Kalwani, and Morrison, 1986). Under this broader definition, variety seeking refers to the choice behavior of either selecting different items in a sequence of choices (Bass, Jeuland, and Wright, 1976; Givon, 1984; Huber and Reibstein, 1978; Kahn et al., 1986; Lattin and McAlister, 1985; McAlister and Pessemier, 1982) or including multiple distinct items in a purchase assortment (Levav and Zhu, 2009; Ratner et al., 1999; Simonson, 1990; Yoon and Kim, 2018), regardless of the customer commitment or involvement. Hence, the variety seeking definitions provided by Kotler and Armstrong (2017) and Peter and Olson (2010) can be problematic. Derived varied behavior is only one part of variety seeking (McAlister and Pessemier, 1982), and highly involved consumers can also exhibit variety seeking behaviors in choosing complex products (Ariffin and Maghzi, 2012; Jang and Feng, 2007; Legoh  rel, Hsu, and Dauc  , 2015; Niininen, Szivas, and Riley, 2004). For example, consumers are highly involved in a complicated process of choosing vacation destinations (Crompton, 1992); novelty-seeking tourists tend to seek variety with little intention to revisit the same places (Jang and Feng, 2007).

Next, how is variety seeking measured? Depending on the sequential vs. simultaneous setting of choice decision tasks, variety seeking tendency is primarily measured by observing consumers' actual choices in two different ways. When consumers make choices *sequentially*, they seek variety by switching from one option to a distinct new option in a subsequent decision. Imagine that a consumer has made  $N$  consecutive choice decisions to fulfill the same demand, and his or her  $i^{th}$  choice is *option<sub>i</sub>*. After the first consumption, this consumer has  $N-1$  opportunities in total of deciding whether to seek variety. For the  $i^{th}$  choice, if the consumer decides to seek variety and makes a discrete choice change, his or her current choice is distinct from the previous choice ( $option_i \neq option_{i-1}$ ); whereas if he or she decides not to seek variety,

his or her current choice is equivalent to the previous choice ( $option_i = option_{i-1}$ ). The variety seeking tendency of this consumer is then calculated by dividing the total number of discrete choice changes by  $N-1$ .

In some other decision situations when consumers make multiple choices *simultaneously*, they seek variety by including more unique items in the choice assortment. By extension, another approach to measuring variety seeking is calculating a *variety seeking index*, which is the ratio of unique items over total items in a single choice assortment. This index reflects the extent of aggregated diversification within a purchase set. An advantage of this approach is that consumers simultaneously make multiple choices within a relatively short time, making it efficient to obtain variety seeking data. Not surprisingly, a majority of the experiment-based variety seeking research has applied this method. But using this method to measure variety seeking tendency in sequential choices (e.g. Haws, Liu, et al., 2017; Haws, McFerran, and Redden, 2017) can be problematic and result in an underestimate of actual variety seeking tendency, because the variety seeking index neglects the ordinal information in sequential choices. For example, imagine that a consumer makes four choices sequentially, which are A, B, A, and B in chronological order. The consumer's actual variety seeking tendency is 1 (3/3); but with the variety seeking index approach, his or her variety seeking tendency is largely underestimated to be 0.5 (2/4). As this example suggests, calculating a variety seeking index is not an appropriate method to measure variety seeking tendency when choices are made sequentially.

Beyond these two variety seeking measures based on actual consumer choices, an alternative approach to measure variety seeking tendency is using self-reported psychometric scales that are related to the variety seeking construct, including need for change (Wood and Swait, 2002), perceived variety (Etkin and Mogilner, 2016), choice rule (Drolet, 2002), variety

seeking mindset (Durante and Arsena, 2015), interest in variety (Fishbach, Ratner, and Zhang, 2011), and switch intention (Jiang, Zhan, and Rucker, 2014). For example, Wood and Swait (2002) developed a six-item scale to measure customer need for change, asking people to estimate and then report their attitudes using the following questions: “When I see a new or different brand on the shelf, I often pick it up just to see what it is like;” “I like introducing new brands and products to my friends;” “I enjoy taking chances in buying unfamiliar brands just to get some variety in my purchase;” “I often read the information on the packages of products just out of curiosity;” “I get bored with buying the same brands even if they are good;” and “I shop around a lot for my clothes just to find out more about the latest styles.” A common concern about these survey-based scales resides in the measurement reliability. Respondents may differentially construe the same scale items and provide biased responses due to social desirability (Fisher, 1993; Nederhof, 1985). Therefore, in general, self-reported scales are less reliable than observed consumer choice behaviors.

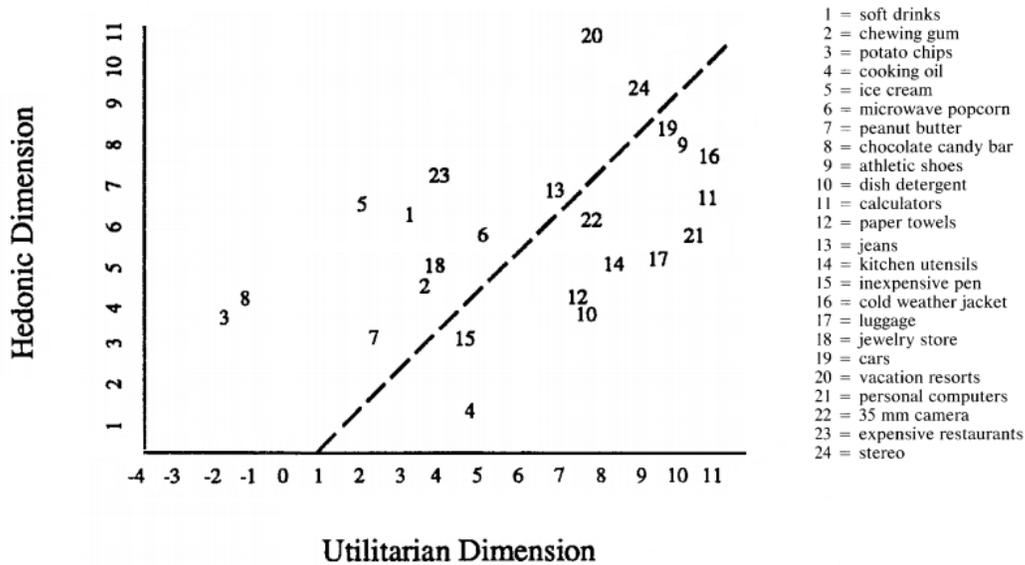
To summarize, variety seeking refers to the phenomenon of seeking diversity in customer choice behaviors (Kahn, 1995; McAlister and Pessemier, 1982), which can be measured by three different types of approaches. In past decades, marketing scholars have intensively examined what factors cause this phenomenon of variety seeking. Most studies, though, used simple products such as candy, and yogurt as the research context. The salient differences between simple and complex products suggest that motivations and patterns of variety seeking behaviors may differ by product categories. Therefore, the next section discusses research contexts in the variety seeking literature, highlights the difference between simple hedonic goods and complex experiential products, and explains why variety seeking may differ between these two types of products.

### ***1.3 Hedonic Goods vs. Experiential Products***

Consumers seek more variety among *hedonic products* than among utilitarian products (Ratner et al., 1999; J. C. M. Van Trijp, 1995). Therefore, not surprisingly, most variety seeking studies used simple hedonic goods—a subtype of hedonic products—such as candy, snacks, soft drinks, and yogurt as the research context. Using these simple products to measure consumer variety seeking tendency also makes lab experiments feasible and efficient. However, the category of hedonic products is broader than just hedonic goods and covers a wider scope of product types (Kwortnik, 2003). Most products possess both hedonic and utilitarian components, but the weights of the hedonic and utilitarian components may vary from product to product (Batra and Ahtola, 1990; Crowley, Spangenberg, and Hughes, 1992). The hedonic components provide consumers sensory pleasure, fantasy, and fun (Hirschman and Holbrook, 1982), while the utilitarian components satisfy consumers' basic needs and accomplish functional tasks (Strahilevitz and Myers, 1998). In the marketing literature, hedonic product is defined as a product that provides *more* hedonic consumption such as pleasure, fun, and excitement than utilitarian consumption (Dhar and Wertenbroch, 2000). Generally then, as long as the hedonic value of a product exceeds its utilitarian value, it is a hedonic product.

Under this definition, a wide range of products can be labeled hedonic products, from wine (Bruwer and Alant, 2009) to music (Lacher, 1989) to river-rafting journeys (Arnould and Price, 1993). For example, Crowley et al. (1992) proposed a hedonic-utilitarian (H/U) categorization of products and developed a two-dimensional H/U product map (see Figure 1.2). On this map, the dashed line indicates H/U equivalence, and all products positioned above the line are hedonic products providing *more* hedonic value. As we can see from the map, seemingly very different products, from potato chips and ice cream to expensive restaurants and vacation

resorts, are all called hedonic products. Presumably, vacation resorts are much more important to one's life than potato chips, because potato chips are a typical unhealthy junk food and provide limited, temporal pleasure, whereas vacation resorts offer not only good accommodation and services but also memorable experiences. As this example suggests, distinct subtypes of hedonic products exist (Kwortnik, 2003).



**Figure 1.2: Hedonic/Utilitarian Product Map (Crowley et al. 1992)**

Kwortnik (2003) developed a classification scheme and identified five subtypes of hedonic products, including hedonic goods, symbolic goods, hedonic activities, experiential products, and extraordinary experiences. A hedonic good is a *simple* product that mainly provides sensory pleasure, such as candy, flowers, and television programs. As mentioned earlier, this category of hedonic products has been widely used as the context in variety seeking research. But little research has examined variety seeking for more *complex* hedonic products,

such as experiential products. In the marketing literature, the term “experiential product” still lacks a clear definition and has been used to label an array of products/services. This dissertation applies Kwortnik’s definition (2003) and conceptualizes an experiential product as “a *blended* product/service offer that is delivered in a special consumption setting and features at its core experiences designed to be meaningful and memorable.” It is a complex fusion of tangibles and intangibles, providing both hedonic and utilitarian consumption in a gestalt-like fashion. Under this definition, most products and services in the tourism and hospitality industry are experiential products, such as tour packages, cruise vacations, concerts, fine dining, and spectator sports.

The decision-making process and motives for choosing simple hedonic goods (e.g. potato chips) vs. complex experiential products (e.g. vacation resorts) largely differ. Customers usually play the role of receiver when consuming hedonic goods, while they tend to be actively involved as co-producers in experiential product consumption (Kwortnik, 2003). The higher customer involvement when choosing experiential products, accordingly, induces a more comprehensive decision-making process (Celsi and Olson, 1988). Customers may spend just a few seconds deciding which candy to buy, but the choice decision for experiential products such as destination vacations (Crompton, 1992) and leisure cruises (Petrick, Li, and Park, 2007) is much more time-consuming and often made through a multiple-stage process (Kwortnik and Ross, 2007). This difference in the decision-making process is also determined by the complexity and importance of products per se. Hedonic goods are usually simple and less important with little utilitarian value, and thus customers are likely to follow a quick, heuristic decision-making process (Gigerenzer and Gaissmaier, 2011; Shah and Oppenheimer, 2008). On the contrary, experiential products have many salient features in both hedonic and utilitarian dimensions. Customers, therefore, are likely to evoke a more complicated, rational-and-experiential-mixed

view in the experiential product decision-making process, motivated and influenced by more factors (Addis and Holbrook, 2001). By extension, customers buy hedonic goods mainly to pursue sensory pleasure and self-stimulation, while motivations for consuming experiential products are more diverse and important to self-construction (Kwortnik, 2003). Customers can be motivated by not only multisensory pleasure but also other hedonic features such as symbolic, social, and self-enhancing benefits of experiential-product consumption. For example, customers take cruise holidays for not only relaxation but also social recognition, learning, socialization, and bonding (Hung and Petrick, 2011).

Variety seeking is a decision of choosing varied items in repeated or simultaneous purchases. Given the significant difference in buying motives as well as the decision-making process between hedonic goods and experiential products, factors driving customers to seek variety may differ for hedonic goods vs. experiential products. For example, consumers may consider more factors when choosing experiential products, such as self-identity. But the influence of such factors on customer variety seeking is largely unexamined. It also remains unclear whether variety seeking motives found in consumption for hedonic goods have the same influences in consumption for experiential products. Before investigating this gap, the following section offers a systematic review of why consumers seek variety by elaborating on two existing taxonomies of variety seeking motives that have been commonly discussed in the marketing literature.

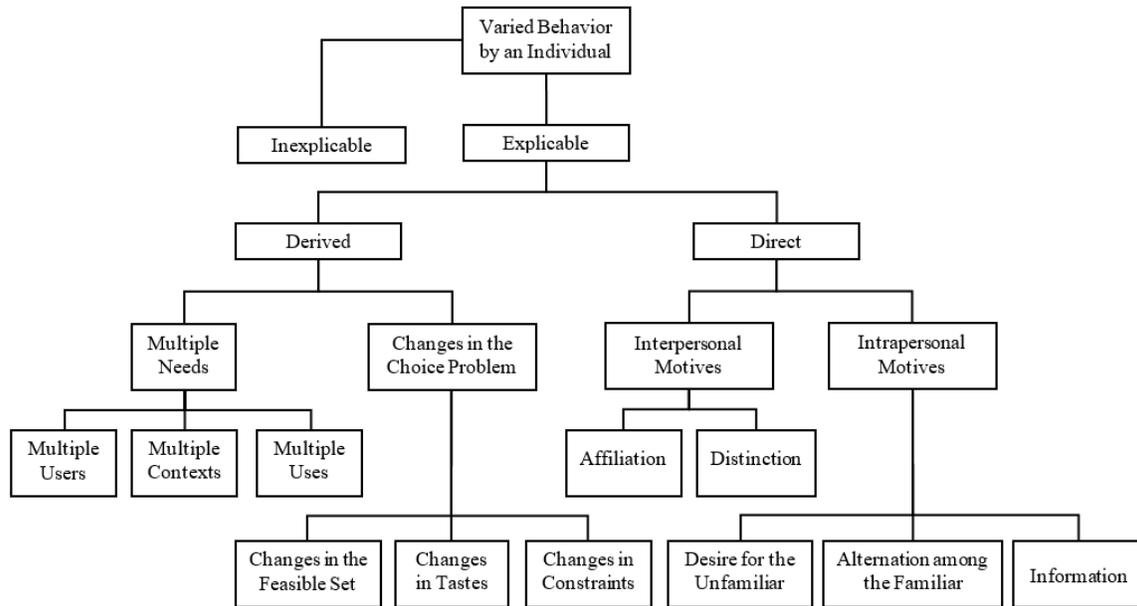
#### ***1.4 Two Taxonomies of Variety Seeking Motives***

In the marketing field, variety seeking motives have been intensively studied since the 1970s. McAlister and Pessemier (1982) systematically reviewed this topic and proposed a

fundamental taxonomy of variety seeking motives. This model (See Figure 1.3) classified customer variety seeking behaviors into derived and direct varied behaviors. Derived varied behavior is defined as variety seeking driven by external or internal forces that are irrelevant to the preference for change per se, including multiple needs and changes in choice problems (McAlister and Pessemier, 1982). Multiple needs can arise among multiple users, in multiple situations, or for multiple uses (Laurent, 1978). When choices are made for multiple users with heterogeneous preferences, individuals may sacrifice their own interests by choosing less preferred items to balance group goals and boost social utility (Ariely and Levav, 2000; Loewenstein and Thompson, 1989). Substantial empirical evidence has verified the impact of contextual factors on customer variety seeking behaviors, such as social context (Drolet, 2002; Ratner and Kahn, 2002), ambient odors (Mitchell, Kahn, and Knasko, 1995), visual displays (Deng et al., 2016; Maimaran and Wheeler, 2008), spatial confines (Levav and Zhu, 2009), purchase quantity (Mittelman et al., 2014; Simonson, 1990), and emotions (Kahn and Isen, 1993; Menon and Kahn, 1995; Roehm and Roehm, 2005). Moreover, when pursuing different functions of a product, customers may also seek variety in choice decisions (Laurent, 1978).

Changes in the choice problem include external changes in feasible choice sets and customer internal changes in their tastes and constraints (McAlister and Pessemier, 1982). As marketing offerings—such as quality, prices, promotions, and distribution—vary by brand, time, and region, customers are likely to seek variety with their changing perceptions of the utility of available options in the choice set (Dodson, Tybout, and Sternthal, 1978; Gupta, 1988; Kahn and Louie, 1990). Internally, customer tastes and preferences can change by life status (Andreasen, 1984) and life events (Mathur, Moschis, and Lee, 2003), which in turn drive customers to switch choices. Changes in wealth, time, and energy constraints can result in fluctuating tendencies for

seeking variety. For example, Carlson et al. (2015) found that a sudden budget contraction can depress customer variety seeking behaviors.

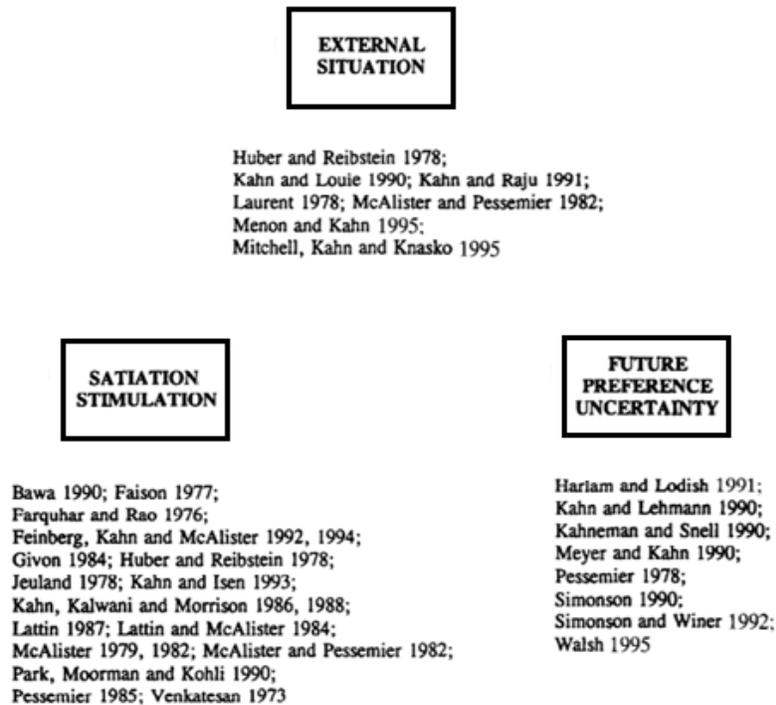


**Figure 1.3: A Taxonomy of Varied Behavior (McAlister and Pessemier, 1982)**

On the other hand, direct varied behavior refers to variety seeking motivated by the inherent satisfying feature of changing behavior (Maddi, 1968), both intrapersonally and interpersonally (McAlister and Pessemier, 1982). Intrapersonally, each customer has a specific optimum stimulation level (Raju, 1980). After reaching this optimum stimulation level, customers start feeling satiated and experience reduced physiological enjoyment in consumption (Redden, 2008). To mitigate the feeling of satiation, consumers seek more variety by trying unfamiliar alternatives (King, 1964; Robertson, 1971), alternating among familiar alternatives (Venkatesan, 1973; Faison, 1977), or searching for new and discrepant information (Hirschman, 1980). In addition to the intrapersonal desire for stimulation, interpersonal motives such as

building and promoting certain public images can also lead consumers to seek or avoid variety. For example, customers are more likely to exhibit varied behaviors if they want to show their social distinctiveness (Fromkin and Snyder, 1980) or their nonrigid personality (Drolet, 2002), but they are less likely to seek variety if they want to signal to others that they are the experts of something or have strong preferences and associations with something (Robinson, 1961; Sela et al., 2019).

Based on McAlister and Pessemier's (1982) taxonomy, Kahn (1995) developed an expanded framework for classifying the motives of customer variety seeking behaviors. In this modified framework (See Figure 1.4), Kahn proposed three categories of factors motivating variety seeking: external situation, satiation (or stimulation), and future preference uncertainty. As discussed above, external situation influences customer derived varied behaviors, and satiation (or stimulation) is a driving force of customer direct varied behaviors. The key contribution of Kahn's model was that it pointed out that customers might be uncertain about their future preferences (Kreps, 1979) and thus tend to choose assortments with more variety to hedge against their potential changes in tastes (Pessemier, 1978; Simonson, 1990). This impact of future uncertainty on variety seeking, however, is only salient when customers make choice decisions simultaneously (Simonson, 1990). That means, customer variety seeking behaviors in sequential choice decisions are not likely caused by uncertain future preferences.



**Figure 1.4: Motivating Factors for Variety seeking Behaviors (Kahn, 1995)**

Since Kahn's review (1995) of variety seeking motives, additional research on this topic has been conducted in the marketing field, revealing some new influencing factors. Among them, however, a few factors do not fit into either McAlister and Pessemier's (1982) or Kahn's (1995) classification schemes, suggesting the need for a refined framework. For example, Yoon and Kim (2018) found that sense of control, which is an intrapersonal factor that are linked with consumers' optimal level of stimulations, may induce direct varied behaviors. But it is different from any existing factors under intrapersonal motives in McAlister and Pessemier's framework (1982). Sense of control also belongs to none of the categories in Kahn's classification scheme (1995); it is an internal factor different from satiation or future preference uncertainty.

The next section develops a new taxonomy of variety seeking motives, which consists of

ten different factors driving variety seeking behaviors. It then provides elaborated reviews on how each factor influences consumer choice decisions. Studies using experiential products as the research context are highlighted. Whether variety seeking motives found for simple hedonic products consumption are applicable to the consumption of complex experiential products (i.e. the generalizability of the influence of variety seeking motives) is discussed.

### ***1.5 Toward a New Taxonomy of Variety Seeking Motives***

Both McAlister and Pessemier's (1982) and Kahn's (1995) frameworks were largely premised on conscious consumers, namely that consumers are aware of and able to explain why they seek variety. Consumers switch to a new item to achieve certain goals, gaining added consumption value. But on some occasions, consumers might seek variety without such an activated goal (Dijksterhuis et al., 2005). Based on this, an initial step for developing a new classification scheme for variety seeking motives can be dichotomizing variety seeking behaviors into unconscious vs. conscious variety seeking (see Figure 1.5).

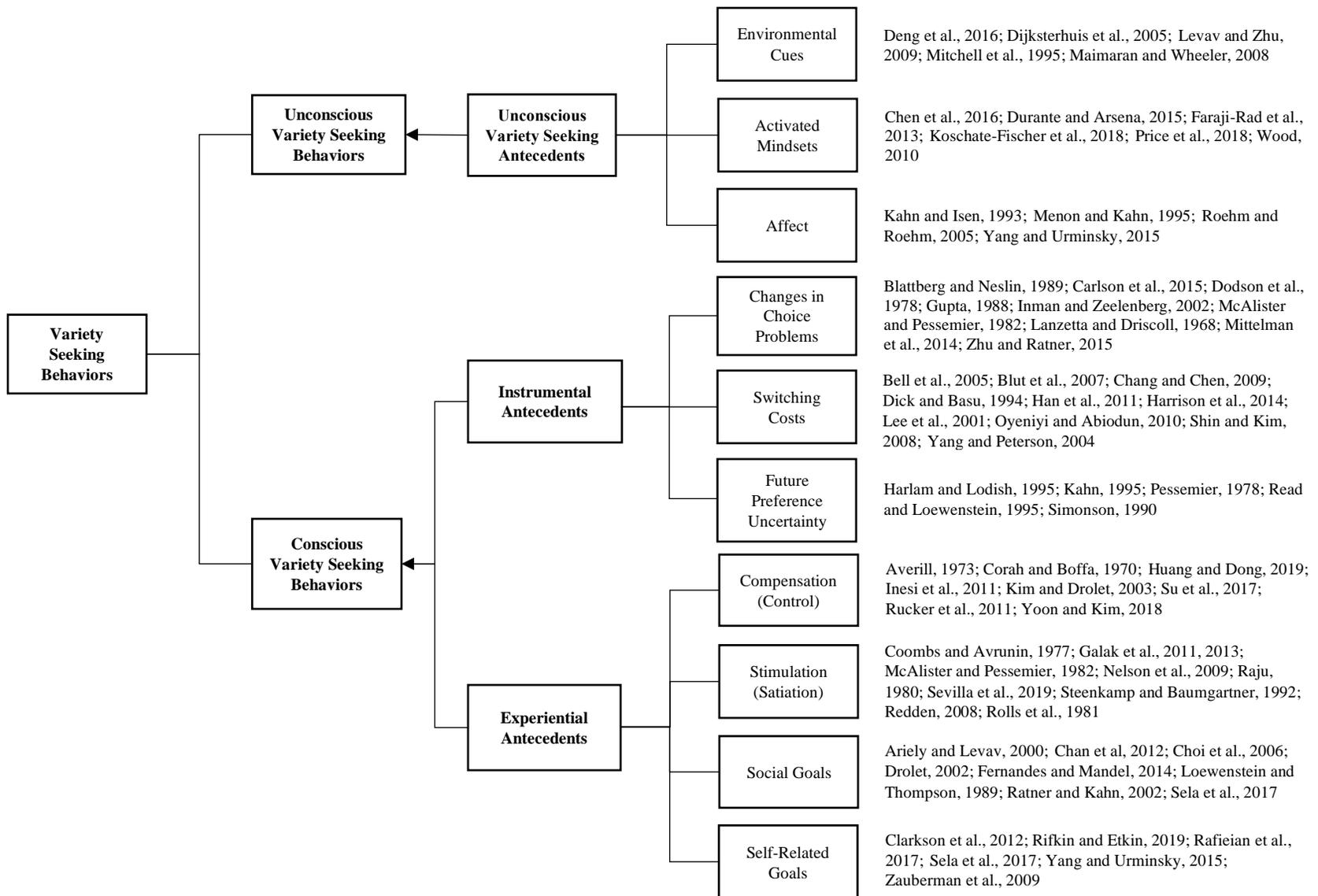
#### **1.5.1 Motives for Unconscious Variety Seeking Behaviors**

Unconscious variety seeking refers to seeking variety in choice decisions without activated goals. The influence of unconscious thinking on decision choices has been established (Dijksterhuis, 2004; Hart, 2005; Newell and Shanks, 2014). Consumers may automatically seek variety in response to certain environmental cues, aroused mindsets, or affective status.

Consumers are exposed to a wealth of external environmental cues in daily consumption and certain cues might influence consumer variety seeking decisions unconsciously (Dijksterhuis et al., 2005). For example, when external scents are congruent with a target product category (e.g.,

spice odors in a spice shop), consumers tend to spend more time processing information holistically and seek more variety in choice decisions (Mitchell et al., 1995). Certain visual stimuli can increase variety seeking. For example, both an array of different geometric shapes (Maimaran and Wheeler, 2008) and horizontal product displays (Deng et al., 2016) can increase customer-perceived variety, which then influences consumers to seek more variety in actual choices (Kahn and Wansink, 2004). Spatial confines, such as crowdedness and narrow aisles, can also lead to more consumer variety seeking behaviors (Levav and Zhu, 2009).

In addition to the impact of the external environment, variety seeking can be also induced unconsciously by intrapersonal factors such as mindset and affect. A mindset is a cognitive process activated and persisted in response to a given task or environmental cues (Gollwitzer, 1990). Once activated, a mindset might influence consumer judgments and decisions in subsequent situations (Wyer and Xu, 2010). If a fresh start mindset (Price et al., 2018) or a change mindset (Wood, 2010) is evoked—which can be activated under special circumstances such as female ovulation (Durante and Arsena, 2015; Faraji-Rad, Moeini-Jazani, and Warlop, 2013), time of uncommitment in romantic relationship (Chen, Zheng, and Zhang, 2016), time of upheaval (Wood, 2010), and life events (Koschate-Fischer et al., 2018)—consumers are more likely to seek variety unconsciously by choosing novel options.



**Figure 1.5: A New Taxonomy of Variety Seeking Antecedents**

Another intrapersonal factor driving unconscious variety seeking is affect. In the psychology and marketing literature, affect has been long recognized as a pivotal factor influencing consumer decision making (Lerner et al., 2015; Shiv and Fedorikhin, 1999). Research reveals that positive affect may unconsciously induce consumer need for stimulation and thus lead to variety seeking behaviors (Kahn and Isen, 1993). But this conclusion is based on the premise that all items in the choice set are satisfying (e.g. safe and enjoyable). If some items come with salient negative features (e.g., bad tastes), this conclusion becomes invalid. Menon and Kahn (1995) found that external stimulation from other product categories can reduce variety seeking in the focal product category, but this reduction in variety seeking is mitigated by positive affect. However, Roehm and Roehm (2005) revisited this relationship between positive affect and variety seeking and found discordant findings. If the positive affect becomes extreme, its impact on variety seeking reverses, i.e. consumers suppress variety seeking when they are experiencing extreme positive affect (Roehm and Roehm, 2005). Research has also suggested that negative affect can induce variety seeking. For example, Yang and Urminsky (2015) found that people tend to seek more variety when feeling pessimism about an upcoming event. These contradictory findings suggest a potential research direction—how affect influences variety seeking is still uncertain.

### **1.5.2 Motives for Conscious Variety Seeking Behaviors**

Compared to unconscious variety seeking behaviors induced by certain environmental cues, activated mindsets, or affect, conscious variety seeking behaviors have been researched more intensively. In the following paragraphs, I elucidate the motives driving conscious variety seeking behaviors and discuss the applicability of their influences on variety seeking for

experiential product consumption.

Conscious variety seeking is conceptualized as proactively seeking variety to maximize the total value of the end result. In this case, consumers are aware of their motivations for and goals of their variety seeking behaviors. Depending on what benefits that consumers pursue, conscious variety seeking behavior can be further classified as instrumental-benefit driven and experiential-benefit driven (Choi and Fishbach, 2011). In some situations, consumers strategically seek variety to maximize instrumental value, the external benefit obtained from products or services that consumers choose. They make their variety seeking decisions rationally, by trading off among present preferences, future uncertainty, and switching costs. In other situations, however, their goals are to improve experiential value, the internal benefit derived from the process of making choices such as psychological compensation, stimulation, and the fulfillment of self-related or social goals. Similar to Choi and Fishbach's (2011) classification scheme, Su et al.'s (2017) framework classified motives of consumer switching behavior into utility-driven (instrumental) and process-driven (experiential). By switching from an incumbent option to a new option, consumers expect to gain greater instrumental utility and/or more psychological benefits.

#### *1.5.2.1 Instrumental Variety Seeking Motives*

Instrumental variety seeking motives are external factors related to the products in the choice set. By rationally comparing and evaluating possible options, consumers decide which ones are the best in offering the most instrumental benefits. In this comparison and evaluation process, consumers may think of the marketing mix of each option, the criteria of evaluating options, the cost of switching to a new option, and their need for a diverse assortment that can

hedge against their uncertain future preference. The next section discusses how change in marketing mix or evaluation criteria, i.e., change in choice problems, influences variety seeking.

### Change in Choice Problems

Research has specified three sources of change in choice problems (McAlister and Pessemier, 1982), including change in the feasible set, change in taste or preference, and change in constraints. Change in feasible set is a change about the availability, performance, or price of options in the choice set, while the change in taste and constraints is a change in how consumers evaluate options in the choice set. All these changes in choice problems can induce customer variety seeking behaviors.

Markets are dynamic with plentiful items introduced or updated regularly. A brand-new product, a modified price, a newly established distribution channel, or a newly launched promotion campaign—all of these can evoke salient changes in the choice set of a consumer. Even selling the same products as a bundle provides consumers a new option and influences their tendency for seeking variety. Mittelman et al. (2014) found that consumers seek more variety when purchasing single items vs. bundled packages. In general, to rationally make the choice decision among varying options, consumers compare the expected utility of the new option with that of their old option (Ng, Kim, and Rao, 2015). For example, research has found that customers are likely to switch to a new option when their past experience with the old option was unpleasant (Inman and Zeelenberg, 2002) or when the new option comes with some promotional deals (Dodson et al., 1978). Sales promotion influences brand decisions (Gupta, 1988) and is perhaps the most immediate inducement for consumers to choose something different (Blattberg and Neslin, 1989). Consumers are likely to switch to new brands with ongoing promotional

activities but keep loyal to their old favorites when promotions are retracted (Kahn and Louie, 1990). Variety seeking is also influenced by the supply sufficiency of a product category. When customers perceive scarcity in supply in a product category, they are more likely to choose their most-preferred item and seek less variety (Zhu and Ratner, 2015).

In addition to rapidly changing marketing offerings, the consumer evaluation process can also change over time because of altered preferences or constraints, resulting in variety seeking behaviors. Preference is a malleable attitude that might change in response to marketing efforts, such as repeated advertising (Tellis, 1988) and brand-consumer interaction on social media (Hutter et al., 2013). Intrapersonal maturation can also lead to change in preference (McAlister and Pessemier, 1982). On the other hand, consumption constraints governing consumer choices—such as personal wealth, time, and energy—may also change from time to time. These changes in constraints can amend the likelihood of seeking variety. For example, Yoon and Kim (2018) found that consumers with low socioeconomic status seek more variety than others. In addition, Carlson et al. (2015) found that, when facing a budget contraction, consumers tend to select assortments with reduced variety to avoid the psychological feeling of loss caused by spreading allocation cuts across many items.

In conclusion, research has found that variety seeking can be influenced by the change in feasible choice set as well as the change in evaluation processes. First, choice decision tasks start with an identified feasible choice set. Therefore, the influence of feasible choice set on variety seeking should be applicable to consumption in any product category, including experiential products. Notably, Lanzetta and Driscoll (1968) found that consumers generate more alternatives for important decision tasks, which lead to increased decision uncertainty and thus higher information search effort. Since experiential products are generally more important to consumers

than hedonic goods, consumers can be expected to gather and consider more information in choosing experiential products. Second, consumers only go through the evaluation process for cognitive decision-making. If a customer applies a heuristic decision-making strategy, his or her variety seeking decision is not likely to be influenced by the change in the evaluation process. Consumers are highly involved in a complicated, rational-experiential-mixed decision-making process (Addis and Holbrook, 2001) when choosing experiential products (Kwortnik, 2003). That means the influence of change in the evaluation process on variety seeking should also be applicable to experiential product choice.

### Switching Costs

Switching from an old option to a new option comes with costs, which can be relational, financial, or procedural (Burnham, Frels, and Mahajan, 2003). A high switching cost has a lock-in effect in situations where the old option is not the most satisfying one, hindering consumers from switching to better new options (Bell, Auh, and Smalley, 2005; Dick and Basu, 1994; Harrison et al., 2014). Empirical research (Han, Kim, and Hyun, 2011; Oyeniya and Abiodun, 2010; Shin and Kim, 2008) has provided evidence supporting this moderation effect of a high switching cost on the relationship between customer satisfaction and switch intention. For example, using the Nigerian mobile phone market as the empirical context, Oyeniya and Abiodun (2010) showed that even for customers not satisfied with their current service providers, their intentions to switch are low because of a high switching cost. On the other hand, when customers do feel satisfied with the old option, a high switching cost shows an amplifying effect by strengthening the relationship between satisfaction and repurchase behavior (Blut et al., 2007; Chang and Chen, 2009; Lee, Lee, and Feick, 2001; Yang and Peterson, 2004). Both the lock-in

effect and the amplifying effect suggest that, in general, consumers are less likely to seek variety when the switching cost is high.

This impact of switching cost on variety seeking is observed in diverse product categories, such as telecommunication services (Oyeniya and Abiodun, 2010), financial services (Colgate and Lang, 2001), and internet-enabled businesses (Chen and Hitt, 2002). Research has also examined the effect of switching costs on variety seeking in experiential product choices. For example, Han et al. (2011) used upper-middle-scale hotels as the research context and found a significant moderation effect of switching costs on the relationship between customer satisfaction and switching intention. Lehto, Park, and Gordon (2015) revisited this phenomenon in the lodging industry and found that the impact of switching cost on variety seeking behavior was only observed among business travelers. Using restaurants as the research context, Han and Ryu (2012) found that customers have stronger intentions to revisit a restaurant when the switching cost is high. Han, Hwang, and Lee (2018) confirmed this relationship between switching cost and repurchase intention in another experiential product setting, luxury cruises. To conclude, these studies indicate that the influence of switching cost on variety seeking is generalizable to experiential product choices.

#### Future Preference Uncertainty

It is well established in the marketing literature that when consumers are uncertain about their future preferences (Kreps, 1979), they will tend to choose assortments with variety to hedge against potential changes in tastes (Kahn, 1995; Pessemier, 1978). Simonson (1990) was a pioneer in testing this motivator of variety seeking. By conducting a series of laboratory experiments, he found that consumers desire more variety if they are asked to anticipate their

future preferences. This phenomenon was conceptualized as a diversification bias (Read and Loewenstein, 1995) and supported by additional empirical evidence in Harlam and Lodish's (1995) study using scanner data. Simonson (1990) found this diversification bias is only salient when choice decisions are made simultaneously. However, choice decisions for experiential products (e.g. fine dining, vacation packages, and cruises) are more likely to be done over time. Accordingly, it is not surprising that no empirical research has tested the influence of future preference uncertainty on variety seeking in experiential product consumption.

#### *1.5.2.2 Experiential Variety Seeking Motives*

In addition to instrumental motives, variety seeking behaviors can be induced by experiential motives, namely factors related to the process of making choices or the desired outcomes gained from the process of making changes. On many occasions, consumers do not choose the option with the highest utilitarian value. Instead, they also consider hedonic benefits and thus are assumed to make "irrational" choice decisions or switch to "imperfect" options to gain additional psychological benefits. Research has identified at least four types of experiential motives, including compensation or sense of control, satiation or stimulation, social goals, and self-related goals.

#### **Compensation or Sense of Control**

In many Western cultures, choice is viewed as a form of exerting control over and mastering one's environment (Iyengar and Lepper, 1999; Stephens, Markus, and Townsend, 2007). For consumers, therefore, the process of making a choice is a means to obtain a sense of control (Langer, 1975; Taylor, 1989). Seeking variety in choices further facilitates consumers'

perceived control, because it highlights their ability to have alternative options (Averill, 1973; Corah and Boffa, 1970). For example, Kim and Drolet (2003) found that seeking variety in choice decisions can boost consumers' sense of individuality and agency, two pivotal components of perceived control (Rucker, Dubois, and Galinsky, 2011). Therefore, for individuals short of personal control, variety seeking behaviors can be used to restore their sense of control. For example, Inesi et al. (2011) found that, when deprived of a source of control, consumers prefer large assortments conferring a greater variety of options as compensation.

Research has identified several groups of consumers who lack sense of control and examined how they make choice decisions in consumption. First, economically stuck consumers are trapped by and anticipate little chance of escaping their current situation, thus feeling a deficiency of personal control (Landau, Kay, and Whitson, 2015). This feeling turns on a compensatory mechanism (Cutright, 2012) that motivates them to seek sense of control through making more diverse choices in daily consumption (Yoon and Kim, 2018). But when sense of control is enhanced via other means, this phenomenon disappears, and consumers do not seek a different level of variety (Yoon and Kim, 2018). Second, socially excluded individuals are ignored, disliked, rejected, isolated, or ostracized by others (Baumeister et al., 2005; Williams, 2007) and experience depression caused by lack of personal control (DeWall et al., 2012). Su et al. (2017) found that consumers who have been socially excluded—either chronically or temporarily—exhibit more switching behaviors to regain perceived control. Third, people experiencing a romantic crush are highly uncertain about whether a romantic relationship will start and thus feel lack of control. Huang and Dong (2019) found that this deprivation of perceived control caused by a romantic crush can drive consumers to make more varied choices in consumption. But this effect disappears when sense of control is enhanced from other sources.

To conclude, this impact of sense of control on variety seeking only applies to certain groups of consumers who are experiencing a deprivation of perceived control but is independent from product categories. It has been observed in consumption for utilitarian products such as washing machines (Su et al., 2017), hedonic goods such as yogurt and candies (Yoon and Kim, 2018), and hedonic experiential products such as lunch dining (Su et al., 2017) and hotel stays (Huang and Dong, 2019).

### Satiation or Stimulation

Need for stimulation is a basic desire of human beings. Research has observed that, for many occasions, consumers seek variety to satisfy their desire for stimulation (McAlister and Pessemier, 1982; Steenkamp and Baumgartner, 1992). Interestingly, consumers tend to seek more variety when feeling sleepy and choose to pursue arousal and stimulation (Huang et al., 2019). Consumers prefer a certain level of stimulation, which is termed the optimum stimulation level (Raju, 1980). If a consumer has already reached his or her optimum stimulation level for consuming a product, any further repetitive consumption of this product yields satiation. Since the late 1970s, satiation has been intensively researched as a focal influencing factor of consumer variety seeking behaviors (Coombs and Avrunin, 1977). Satiation is commonly defined as feeling full or feeling beyond capacity or desire (Sevilla, Lu, and Kahn, 2019), and this feeling can be either physiological or psychological.

Researchers measure satiation by observing the decline of physiological enjoyment of a stimulus over time (Redden, 2008; Rolls et al., 1981). Physiological satiation is a function of the consumption quantity. The more quantity consumed, the more satiation is experienced (Mook and Votaw, 1992; Roll et al., 1981). In addition to consumption quantity, consumption rate and

consumption fluency can also affect consumer physiological satiation. Consumers may avoid satiation and experience more pleasure if they choose to consume less frequently (Galak, Kruger, and Loewenstein, 2011, 2013). If consumption is interrupted, consumers feel more pleasure and enjoyment (Nelson and Meyvis, 2008; Nelson, Meyvis, and Galak, 2009).

Recent research has investigated satiation as a psychological factor and focused on the construct of perceived satiation, examining how perceived satiation is affected by cognitive factors such as attention, memory, categorization, and metacognition. First, perceived satiation is affected by both how much attention and what aspect of an experience a consumer pays attention to. Consumers will perceive less satiation when they pay less attention to the quantity consumed (Haws and Redden, 2013; Sevilla and Redden, 2014) or when they pay attention to the differential rather than the similar aspects of a consumption experience (Redden, 2008). For example, if customers pay attention to both the positive outcome (e.g. enjoyment) and the negative outcome (e.g. boredom) of repeated consumption, they are less likely to feel satiated (Poor, Duhachek, and Krishnan, 2012). Second, consumers' memory about past consumption also has an impact on perceived satiation. For example, consumers satiate more slowly when persuaded that their last consumption occurred farther back in time (Galak et al., 2014) or when retrieving memories of past consumption is a tough task (Redden and Galak, 2013). Third, concrete categorization slows consumer satiation rate (Redden, 2008), because focusing on specific aspects of the consumption experience produces less repetitiveness. Fourth, perceived satiation can be gained through metacognition processes such as imagination and evaluation. Without any actual consumption, consumers can feel satiated by only imagining (Morewedge, Huh, and Vosgerau, 2010) or evaluating (Larson, Redden, and Elder, 2014) repeated consumption.

Pleasure is the fundamental nature of hedonic consumption. As a special case of hedonic products, experiential products are also consumed for enjoyment. Therefore, when this enjoyment decreases, namely as satiation increases, consumers are motivated to seek variety in their experiential product consumption. Research has provided empirical evidence for this statement. For example, Park and Jang (2014) and Line, Hanks, and Kim (2016) both used restaurants as the research context and found that satiation was positively associated with customer switching intention. Additionally, Park, Bufquin, and Back (2019) used a winery as the research context and found tourist revisit intention drops after a certain number of repeat visits. However, for less frequently purchased experiential products such as tourism packages, consumers are less likely to seek variety simply to alleviate satiation and boredom (Niininen, Szivas, and Riley, 2004; Ryan, 1995; Van Trijp, Hoyer, and Inman, 1996). Therefore, the influence of satiation on variety seeking is applicable to choices for experiential products, but the strength of this influence seemingly depends on purchase frequency.

### Social Goals

Hedonic consumption provides consumers with many social benefits (Hirschman and Holbrook, 1982), and thus seeking variety in hedonic consumption may be motivated to achieve social goals, such as satisfying needs of multiple users or displaying a distinctive personality (McAlister and Pessemier, 1982). It is not uncommon for individuals to sacrifice their own interests by choosing less preferred things to please others and boost social utility (Loewenstein and Thompson, 1989). For example, if consumers believe that others satiate at a faster rate from repeated consumption, they are more likely to seek variety to diminish satiation for others (Choi et al., 2006). Another interesting example is about political conservatives. Fernandes and Mandel

(2014) found that, although political conservatives in general have a higher desire for control and thus prefer invariableness and stabilization, they seek more variety in consumption to follow social norms. Consumers also tend to seek variety to balance group and individual goals (Ariely and Levav, 2000). For example, Chan, Berger, and Van Boven (2012) found that consumers assimilate to their group on identity-signaling dimensions (such as brand) but differentiate themselves on uniqueness-seeking attributes (such as color).

In other situations, due to the inherent satisfying feature of change per se, variety seeking has been used by consumers to promote certain positive public images. For example, consumers may seek more variety in public to act like a nonrigid or interesting person (Drolet, 2002; Ratner and Kahn, 2002) or to look distinctive in a socially acceptable way (Fromkin, 1968; Szybillo, 1973). On the contrary, if consumers want to express a consistent self-identity to the public, they avoid seeking variety in consumption. For example, if a consumer wants to signal a stronger preference for or association with one item, such as being an expert of a product category, he or she will refrain from choosing other items (Sela et al., 2017).

Social benefit comes with hedonic consumption by nature, and this nature is particularly salient in experiential product consumption, supported by empirical evidence. For example, many consumers take cruises for a socialization and bonding purposes (Hung and Petrick, 2011), backpackers travel for social interactions (Murphy, 2001), and tourists build friendships with destination residents (Teye, Sirakaya, and Sönmez, 2002). Because of this social nature of experiential products, consumers are likely to seek variety in experiential product consumption to fulfill social goals, such as to gain more social utility and promote positive public images.

## Self-Related Goals

Besides social goals, consumers can also leverage variety seeking in consumption to achieve self-related goals, such as self-regulation (Rafieian, Huang, and Kahn, 2017), self-expression and self-continuity (Rifkin and Etkin, 2019; Yang and Urminsky, 2015), self-enhancement (Clarkson et al., 2012; Sela et al., 2017), and memory protection (Zauberman, Ratner, and Kim, 2009).

First, when a self-regulatory goal is activated (e.g. living healthily), people seek less variety in goal-inconsistent acts (e.g. eating high-sugar snacks) to reduce anticipated guilt but more variety in goal-consistent acts (e.g. keeping an athletic lifestyle) to maximize anticipated fulfillment of the goal (Rafieian, Huang, and Kahn, 2017). Second, when people have an active self-continuity goal, they tend to seek less variety in consumption, because perceiving greater variety in a self-expressive assortment can undermine the feeling of self-continuity (Rifkin and Etkin, 2019). A related study identified preference for self-continuity as a significant mediator between local optimism—which refers to the current optimism about a specific upcoming event—and reduced variety seeking (Yang and Unminsky, 2015). Third, when people have an activated self-enhancement goal, such as becoming an expert, they tend to seek more variety. However, variety seeking strategies differ by the expertise level (Clarkson et al., 2012; Sela et al., 2017), as novices and true experts define expertise in idiosyncratic ways. Novices deem greater assortment variety as an indication of category expertise, whereas experts think that less varied assortments show their expertise (Sela et al., 2017). Novices tend to seek a wide set of diverse experiences (e.g. different hotel brands) to broaden their consumption knowledge, while experts tend to seek variety in a much narrower but more specialized set of options (e.g. different hotel properties of a single brand) to deepen their consumption knowledge (Clarkson et al.,

2012). Fourth, when consumers have an activated goal of protecting special memories, they are likely to switch to less-preferred items, because memories of special experiences are customers' intangible assets to protect whereas repeating consumption might impair these experiences (Zauberman et al., 2009).

Self-construction has been recognized as an important factor of choosing experiential products (Kwortnik and Ross, 2007). For example, tourists may visit destinations with a learning purpose (Fodness, 1994), especially when visiting heritage attractions (Poria, Butler, and Airey, 2004) or museums (Jansen-Verbeke and Van Rekom, 1996). The essential reward of consuming experiential products, in turn, is self-expression (Kwortnik and Ross, 2007). For example, a vacation tour provides tourists an opportunity to shape their identity or self-concept (Rosenberg, 1979). Therefore, a consumer is more likely to visit destinations with a brand personality that is consistent with the self-image (Murphy et al., 2007). In conclusion, self-related goals should play an important role in consumer decisions for buying experiential products, including variety seeking decisions.

In summary, this section reviewed factors that influence variety seeking, addressing the question "why do consumers seek variety?" McAlister and Pessemier (1982) established a fundamental taxonomy of variety seeking motives and classified variety seeking behaviors into direct and derived behaviors. Building on their work, Kahn (1995) developed a refined framework, adding future preference uncertainty as a third motive that drives customers to seek variety. Recently revealed factors that influence variety seeking, however, do not fit into both schemes, such as sense of control, memory protection, and aroused change mindsets. Therefore, I propose a new, more inclusive taxonomy, which dichotomizes customer variety seeking

behaviors into unconscious and conscious variety seeking. On the one hand, consumers may unconsciously seek variety in response to certain environmental cues, activated mindsets, and affect, without motivated goals. On the other hand, consumers may be motivated to seek variety consciously to achieve certain goals, obtaining instrumental and/or experiential benefits.

Instrumental variety seeking motives are external factors related to the products in the choice set, including change in choice problems, switching costs, and future preference uncertainty; whereas experiential motives are factors related to the process of making choices or the desired outcomes gained from the process of making changes, including sense of control, stimulation, social goals, and self-related goals. Since the influences on variety seeking were largely tested using hedonic goods as the research context, I also discussed in this section whether the influences of these factors on variety seeking are applicable to experiential product choices.

During this review process, I have reinforced my belief in how important variety seeking research is. Based on this research, abundant managerial implications have been provided to industry practitioners, from strategies of promoting new products to tactics of preventing customers from switching away. For example, to encourage customers to try a new item, marketers can launch short-term sales promotions (Blattberg and Neslin, 1989), offer bundle packages with multiple distinct items (Simonson, 1990), or create positive but mild shopping affect for customers (Kahn and Isen, 1993). Or, to avoid customer satiation with a brand and switching to other brands, marketers can introduce new items with distinct sensory attributes (Inman, 2001), increase the financial or psychological switching costs (Han and Ryu, 2012; Han et al, 2018), offer a stimulating retail environment (Menon and Kahn, 1995), or promote distinct rather than similar aspects of the brand in different marketing campaigns (Redden, 2008). However, I also realized that most studies discussed why customers seek variety, and very little

research focused on the particular ways in which customers seek variety—that is, variety seeking patterns. Variety seeking patterns may be an important research topic, and understanding variety seeking patterns may help marketers deliver appropriate promotion efforts to the right customers at the right time. The next section introduces three specific types of variety seeking patterns.

### ***1.6 Beyond Variety Seeking Tendency: How Consumers Seek Variety***

Variety seeking patterns, the particular ways in which variety seeking behaviors happen in a sequence of choices, can be portrayed from different aspects using different factors. This section focuses on three factors, which are (1) the frequency of all distinct items selected in the sequence of choices, (2) the distribution of variety seeking behaviors in the sequence of choices, and (3) the similarity of distinct items selected in two consecutive choice occasions. First, in a sequence of choices, variety seeking pattern may be determined by the frequency distribution of distinct items selected. Two sequences of choices with the same the number of successive switches—a successive switch is counted each time a choice is different from its preceding choice (Mitchell et al., 1995)—have the same variety seeking tendency, but they may differ in the frequency of each distinct item selected. For example, choice patterns “A-B-A-B” and “A-B-C-D” both have 100% variety seeking tendency with three successive switches. But the former choice pattern indicates repeated switching between two brands, each of which has a 50% proportion of purchase; while the latter choice pattern indicates consistently switching to different new brands, each of which has a 25% proportion of purchase.

Second, variety seeking patterns in a sequence of choice occasions may also be determined by the timing of variety seeking behaviors, i.e. how variety seeking behaviors distribute in the choice sequence. Bawa (1990) argued that individuals exhibit buying inertia and

variety seeking at different times in their purchase history. Trivedi (1999) proposed the concept of variety seeking intensity to capture the variance of variety seeking distribution. If variety seeking intensity is low, consumer variety seeking behaviors are scattered; if it is high, consumers seek variety intensively within a more limited time period. But Trivedi's research (1999) did not identify, for consumers with high variety seeking intensity, in which stage of the choice sequence they are more likely to seek variety. Consumers may seek variety after many repeat purchases due to satiation (McAlister and Pessemier, 1982; McAlister, 1982). Or they may seek variety for the first several purchases in a product category for a learning purpose (Ratner and Kahn, 1999), but become more loyal to items that they prefer after becoming familiar with choice alternatives (Horng et al., 2012). For example, people seek more variety as new customers, especially as first-timers, in experiential product consumption such as hotel resorts, destination vacations, and white-water rafting (Ariffin and Maghzi, 2012; Fluker and Turner, 2000; Gitelson and Crompton, 1984). This is an interesting but unresolved question.

Third, variety seeking pattern may be also determined by the similarity of two consecutive choices. For each successive switch in a sequence of choice, consumers may switch from the previous item to a similar item (e.g. Coke and Pepsi) or a dissimilar item (e.g. Coke and Snapple) (Menon and Kahn, 1995). When items in consecutive choices are dissimilar rather than similar, consumers tend to perceive more variety (Lattin and McAlister, 1985; McAlister and Pessemier, 1982; Pessemier, 1985). Most variety seeking research examines how consumers choose among similar hedonic goods with comparable product attributes and price ranges. However, items in a single choice set within a product category may vary considerably in price and performance, especially for experiential products. For example, my spouse travels to Pittsburg for business every week and usually chooses among Hyatt Place, Westin, and Marriott

for hotel stays. Hyatt Place (an upscale hotel brand) costs about \$100 for one night but only provides standard accommodation, whereas Westin and Marriott (upper upscale hotel brands) charge about \$200 for one night but offer premium hotel experiences. Switching from Westin to Marriott is seeking variety between similar brands, while switching from Hyatt Place to Marriott is seeking variety between dissimilar brands. It remains unclear what factors lead consumers to switch to dissimilar rather than similar alternatives within the same product category.

In summary, consumers can simultaneously exhibit multiple types of variety seeking patterns in their sequential choices. Research examining this phenomenon of variety seeking patterns remains limited (Bawa, 1990; Kumar and Trivedi, 2006; Trivedi, 1999). This gap may indicate a potential domain for future research. In the next section, I review two streams of empirical research that might be more practical for industry practitioners, which are variety seeking segmentation and variety seeking prediction.

### ***1.7 Variety Seeking in Management: Segmentation and Prediction***

Understanding variety seeking is important because it provides marketers potentially useful insights about consumer behavior for purposes of market segmentation. For example, by segmenting the market based on variety seeking, marketers can distinguish variety avoiders from variety seekers. Then, appropriate marketing strategies can be designed to retain variety avoiders or attract variety seekers. Or, by establishing forecast models that predict when and how variety seeking occurs, marketers may develop efficient promotions to prevent consumers from switching away.

Market segmentation is a core element of marketing management. A few studies have attempted to segment the market by variety seeking (Givon, 1984; Kumar and Trivedi, 2006;

Trivedi, 1999; Trivedi and Morgan, 2003), acknowledging that the likelihood of seeking variety varies among customers. For example, Givon (1984) segmented the cereal market into variety seekers, variety avoiders, and indifferent customers and found that people from younger households are more likely to seek variety. Trivedi (1999) proposed a two-dimensional variety-seeking segmentation scheme and classified customers into four groups based on the (high vs. low) extensity and (high vs. low) intensity of their variety seeking behaviors. The notation of variety seeking extensity was conceptualized as the mean amount of variety seeking behaviors, while variety seeking intensity was defined as the likelihood of engaging in the variety seeking behaviors represented by the mean, or variance of variety seeking behaviors. To retain customer loyalty, promotional incentives should be delivered to customers with low variety seeking extensity as well as low variety seeking intensity (Trivedi, 1999). By examining the frequency distribution of customer variety seeking behaviors at both brand level and product attribute level, Kumar and Trivedi (2006) developed a simple but effective pattern-based variety-seeking segmentation scheme with four customer segments. Customers in the brand loyal segment are primarily loyal to one brand; customers in the pure variety seeking segment typically choose products with not only different brands but also different attributes on consecutive purchase occasions; customers in the regular variety seeking segment often choose the same or similar product but may also switch to a different product on some occasions; customers in the switching segment do not have particular loyalty to any brands and thus often switch among different brands, but their chosen products may share similar attributes.

For experiential product choices, Legohérel et al. (2015) used the two-stage chi-square automatic interaction detection (CHAID) method to generate a variety seeking segmentation scheme with three traveler segments. This study found differences in demographics and

preferences between variety seekers and non-variety seekers. For example, a major group of non-variety seeking travelers were young male business travelers who are members of loyalty programs; compared to variety seekers, non-variety seeking travelers showed higher interest in trying local foods. Notably, the authors measured variety seeking with self-reported survey questions, whose responses may deviate from customers' actual decisions or variety seeking behaviors.

There are two major gaps in the variety seeking segmentation literature. Research has found that the effect of sales promotions on variety seeking can vary by variety seeking segments. Variety seekers vs. variety avoiders respond to sales promotions and then make switching decisions in different ways (Givon, 1984; Trivedi, 1999). However, scholars have provided contradicting conclusions. Givon (1984) suggested that short-term sales promotions can attract variety seekers, whereas Trivedi (1999) found these sales promotions should be delivered to variety avoiders who have low variety seeking extensity as well as intensity. More generally, how customers in different variety seeking segments behave and make decisions remains unclear.

A second gap in variety seeking segmentation research is that most scholars used variety seeking tendency to establish segment schemes, largely excluding variety seeking patterns from the segmentation process. However, variety seeking patterns carry meaningful information about how customers seek variety that are not captured by variety seeking tendency. As discussed in the previous section, consumers with the same variety seeking tendency may exhibit very different choice patterns and vice versa. To deliver the appropriate promotional efforts to the right customers at the right time, marketers need to consider not only variety seeking tendency of customers but also their variety seeking patterns. In other words, segmenting consumers by both

variety seeking tendency and patterns produces more informative segments.

Besides variety seeking segmentation, another useful application of variety seeking in management is variety seeking prediction. Marketers can forecast consumer variety seeking decisions by developing models where certain influencing factors on variety seeking are predictors. For example, Tang and Chin (2007) established a logistic regression model, where variety seeking was predicted by a group of individual or product characteristics, including need for variety, purchase frequency, perceived distance between brands, number of available alternatives, variety seeking decision for the last purchase, gender, and product type. This model explained 26% of the variance in variety seeking decisions and had a 70.7% prediction accuracy rate. Depending on the marketing research budget and expected accuracy rate, more forecasting models can be developed with other psychographic, demographic, or transactional predictors.

As implied by the section discussing variety seeking motives, psychological factors (e.g. perceived control, perceived satiation, and need for stimulation) can serve to predict variety seeking. In addition, demographic factors such as age (Givon, 1984; Novak and Mather, 2007), gender (Nicklaus et al., 2005; Tang and Chin, 2007), culture or nation (Kim and Drolet, 2003), and social economic status (Yoon and Kim, 2018) may also predict variety seeking. For example, Givon (1984) found that younger household are more likely to seek variety. Novak and Mather (2007) found that older consumers are less likely to seek variety than younger consumers in choosing products purchased not for immediate consumption. Nicklaus et al. (2005) found that boys seek more variety in products made from animal than girls do, though Tang and Chin (2007) found that females are more prone to be variety seekers in general. Kim and Drolet (2003) found that individualists vs. collectivists process distinct cultural meanings of uniqueness and thus seek different levels of variety. Yoon and Kim (2018) found that people with a low

socio-economic status are more likely to seek variety in consumption choices for the purpose of compensation.

Besides psychological features and demographics of the consumer, transactional information may also predict customer variety seeking decisions, such as purchase time of day (Gullo et al., 2019), purchase quantity (Kahn and Wansink, 2004; Ratner and Kahn, 2002), switch decision in the last choice (Tang and Chin, 2007), and product categories (Tang and Chin, 2007). More specifically, customers seek more variety when purchasing in the afternoon (Gullo et al., 2019), when purchasing a large quantity of products (Kahn and Wansink, 2004; Ratner and Kahn, 2002), when having switched for the last choice occasion (Tang and Chin, 2007), or when purchasing from product categories with a large number of alternatives (Tang and Chin, 2007). But relationships between variety seeking decisions and many other transactional factors remain unexamined.

Lastly, a limitation of existing variety seeking prediction models is, again, that variety seeking patterns are overlooked. Existing models made predictions based on whether or not consumers will switch to a new item. How consumers switch (i.e., the switching pattern) is not predicted. By predicting variety seeking patterns, however, marketers will have a better understanding of when variety seeking happens as well as what factors drive consumers to switch to similar/dissimilar items. This is another potential research topic.

## ***1.8 Conclusion and Discussions***

As summarized in Figure 1.6, this chapter gives a thorough review of the variety seeking literature, addressing three major questions—what variety seeking is, why consumers seek variety, and how customers seek variety. It contributes to the variety seeking literature by

identifying six research gaps in this domain (the dotted-line arrows and boxes in Figure 1.6).

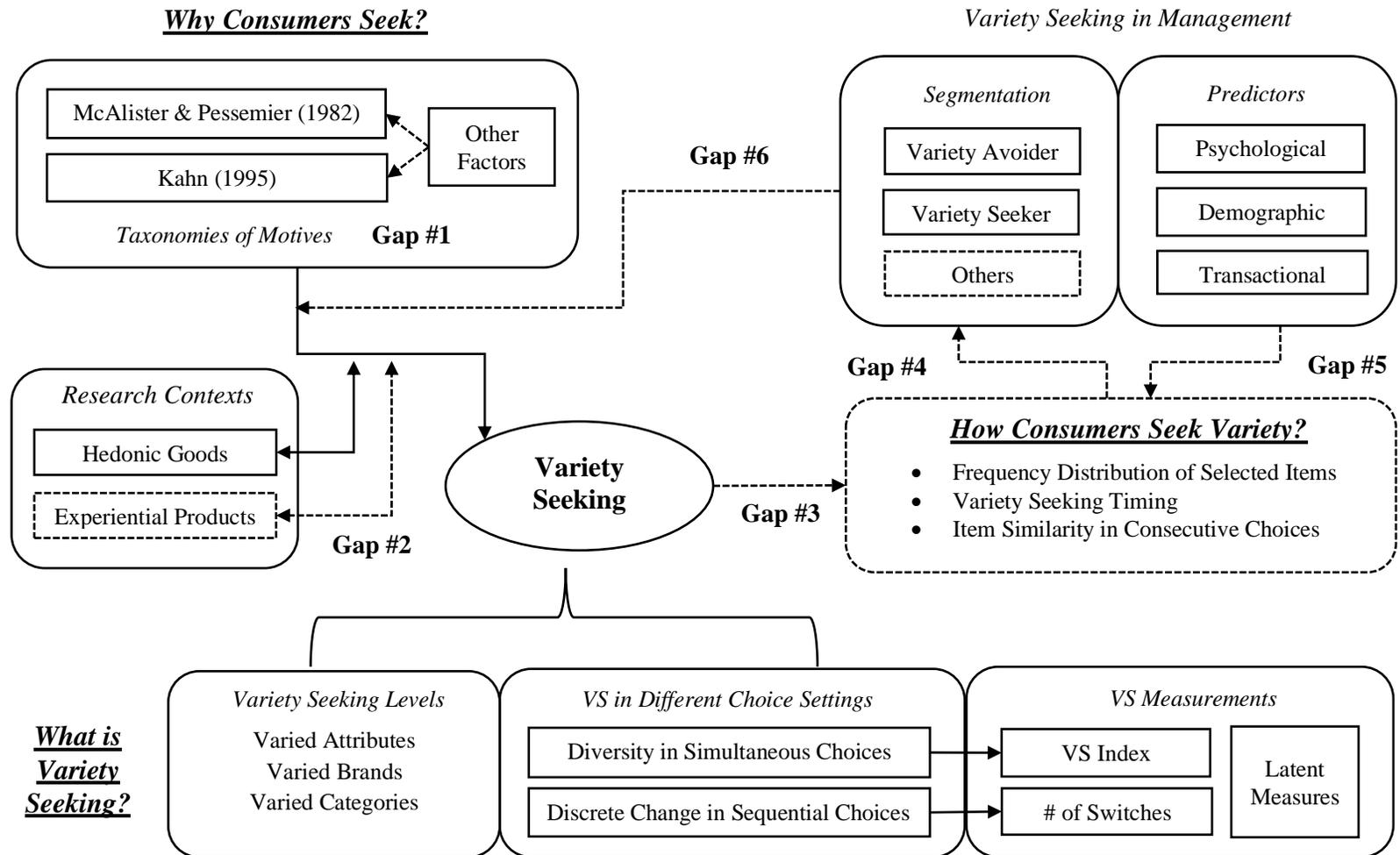
First, what is variety seeking? Variety seeking is commonly conceptualized as the tendency of individuals to seek diversity in their choice behaviors (Kahn, 1995; McAlister and Pessemier, 1982). More specifically, it is customer choice behavior of either selecting different items in a sequence of choices or including multiple distinct items in a purchase assortment. Based on customer choice decision settings, variety seeking is primarily measured in two different ways. When customers make sequential purchases, their variety seeking tendency is determined by the number of times when they switch to new options; when customers buy multiple items in a single purchase, their variety seeking tendency is determined by the number of unique items included in their choice assortment.

Second, why do consumers seek variety? There is abundant variety seeking research exploring customers' motives for seeking variety. Based on extensive reviews of previous studies, McAlister and Pessemier (1982) and Kahn (1995) proposed two fundamental taxonomies to categorize variety seeking motives. However, additional variety seeking research has been conducted in recent years, and new variety seeking motives have been revealed. Some of these motives do not fit into the existing taxonomies, indicating a research gap calling for a more comprehensive scheme to classify variety seeking motives (Gap #1). A new framework was, therefore, established in this chapter (see Figure 1.5). In this new taxonomy, variety seeking behavior was first divided into unconscious vs. conscious variety seeking behaviors.

Unconscious variety seeking refers to seeking variety in choice decisions without activated goals—customers may seek variety unconsciously when they are influenced by certain environmental cues, activated mindsets, and affect. On the contrary, conscious variety seeking refers to proactively seeking variety in choice behaviors to maximize the total value of the end

result. Two streams of motives may induce conscious variety seeking behaviors. First, instrumental variety seeking motives are external factors related to the products in the choice set, including change in choice problems, switching costs, and future preference uncertainty. Second, experiential motives are factors related to the process of making choices or the desired outcomes gained from the process of making changes, including sense of control, stimulation, social goals, and self-related goals. This new taxonomy is more comprehensive. It embraces variety seeking motives that are excluded from previous taxonomies, such as memory protection and sense of control.

Notably, most research on variety seeking motives have used simple hedonic products as the research contexts. Little research has examined whether the influences on variety seeking found for simpler hedonic-goods consumption are applicable to the consumption of complex experiential products, such as holiday vacations and leisure cruising. This is another gap in the variety seeking research area (Gap #2). In this review, therefore, studies investigating variety-seeking phenomena in experiential product consumption were highlighted. Some factors such as change in choice problems and switching costs induce variety seeking behaviors in similar ways, regardless of product categories. Nonetheless, theoretically, when customers choose complex experiential products (vs. simple hedonic products), the influence of satiation may be less on variety seeking, whereas self-identity may play a more important role in influencing variety seeking. Future research can empirically examine these propositions.



**Figure 1.6: Summary of Chapter 1 and Variety Seeking Research Gaps**

Third, as for how consumers seek variety, little research has explored the particular ways in which customers seek variety, i.e., variety seeking patterns (Gap #3). For example, although variety seeking tendency has long been used as a segmentation basis to group customers, only a few studies have focused on segmenting customers by variety seeking patterns (Gap #4). A handful of prediction models have been established to predict customer variety seeking decisions, but none of them predicts if customers decide to seek variety, how they will do so (Gap #5). These gaps all suggest that variety seeking pattern is another under-researched topic.

Lastly, for marketing practitioners, it is important to understand how customers with different variety seeking tendencies respond to promotional efforts and make choice decisions. However, this question still remains unclear, and contradictory results have been found in different studies (Gap #6). This indicates a potential direction for conducting meaningful empirical studies.

In conclusion, this chapter provides a thorough review of variety seeking and contributes to the literature by identifying six research gaps. It is beyond the scope of this dissertation to address each of these gaps, but they consolidate my determination to do more research about variety seeking and become an expert on this phenomenon. In the next chapter, I conduct an empirical study on this topic. Based on the behavioral information extracted from customer purchase history data, a multilevel prediction model is developed to speculate whether a customer would switch brands on a certain purchase occasion.

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## CHAPTER 2

### SEGMENTING CRUISE PASSENGERS BY VARIETY SEEKING TENDENCY

#### ***2.1 Introduction***

Customer behavioral loyalty is an important element of marketing that contributes to both short-term sales and the long-term profitability of companies (Gupta and Zeithaml, 2006; Hallowell, 1996; Meyer-Waarden, 2007). Before designing strategies to improve customer behavioral loyalty, marketers first need to understand the determinants of loyalty (Han, Kworntnik, and Wang, 2008). Numerous studies have found a significant impact of customer satisfaction on customer behavioral loyalty (Chen and Tsai, 2007; Cronin, Brady, and Hult, 2000; Hallowell, 1996; Han et al. 2008). For example, in the travel context, research indicates that satisfied cruise passengers have stronger intentions of returning to the same cruise lines (Li and Petrick, 2008; Petrick, 2004). However, actual behavior often deviates from intentions, particularly in hospitality and travel where the satisfaction-loyalty link is tenuous (Skogland and Siguaw, 2004). For instance, Carnival Cruise Line customers had an extremely high 98% satisfaction rating but low repeat-guest rates, which puzzled the company's executives (Applegate, Kworntnik, and Piccoli, 2005).

Research has provided a possible explanation for this phenomenon in the travel industry. For infrequently purchased experiential products such as holiday vacations, even very satisfied customers may choose new options, at least in the near term, if they possess high variety seeking tendency (Bigné, Sánchez, and Andreu, 2009; García et al., 2012). That is, the impact of satisfaction on behavioral loyalty can be moderated by the desire to seek variety in one's

experience. Therefore, segmenting customers by variety seeking may shed light on what factors drive customer behavioral loyalty for low-frequency experiential products. Using leisure cruising as the context, this study aims to develop a segmentation approach based on cruise travelers' variety seeking tendency, which refers to the propensity of individuals to seek diversity in their choice behaviors (Kahn, 1995; McAlister and Pessemier, 1982) and is usually measured by the proportion of successive switches or unique items in a set of choices.

The study of segmentation based on variety seeking tendency is not new. Using product categories such as soft drinks and restaurants, scholars have developed different segmentation schemes based on variety seeking tendency (Givon, 1984; Legohérel, Hsu, and Daucé, 2015; Trivedi, 1999; Trivedi and Morgan, 2003). For example, based on customer brand-switching probabilities, Givon (1984) segmented the cereal market into variety seekers, variety avoiders, and indifferent customers. Using customer variety seeking intention as the clustering variable, Legohérel et al. (2015) segmented hotel and restaurant guests into variety seeking vs. non-variety seeking travelers.

A few studies have also attempted to segment customers by variety seeking patterns (Kumar and Trivedi, 2006; Trivedi, 1999). Unlike variety seeking tendency, which focuses on the likelihood that variety seeking behaviors occur, variety seeking patterns focus on the particular ways in which variety seeking behaviors happen in a sequence of choices. For example, by considering variety seeking intensity, which can be thought of as the variance of customer variety seeking behaviors, Trivedi (1999) separated customers who intensively seek variety within a more limited time period from customers who seek variety less often in a sequence of choices. Kumar and Trivedi (2006) proposed another segmentation approach based on variety seeking patterns. By considering the dissimilarity of two consecutive choices, the

authors distinguished pure variety seekers, who tend to not only switch brands but also choose products with disparate attributes, from brand switchers, who tend to purchase similar products of different brands.

Besides variety seeking intensity and the dissimilarity between consecutive choices, variety seeking pattern may be also reflected by the relative frequency of each brand purchased, which indicates the proportion in the choice sequence allocated to each unique brand (Pessemier and Handelsman, 1984). When buying products within the same category, customers may have consideration sets of different sizes (Ranjbarian and Kia, 2010). Some customers might choose from and switch among a small number of preferred brands, whereas others with larger consideration sets may seek variety by selecting from among many brands without preference to any. In other words, customers with consideration sets of different sizes may exhibit different choice and variety seeking patterns, which can be reflected by the frequency distribution of unique items/brands in a sequence of choices. However, research on variety seeking segmentation has yet to consider the heterogeneity in these patterns by customer groups.

Another understudied variety seeking pattern is variety seeking temporal pattern, which focuses on how variety seeking tendency changes as customers purchase more times. When customers repeatedly purchase products in the same category, their propensity of seeking variety is not static but dynamic (Bawa, 1990). In general, customers are likely to seek more variety when starting to buy an unfamiliar product category (Ratner, Kahn, and Kahneman, 1999), but they seek less variety and become loyal to the preferred brand when gaining more brand familiarity (Horng et al., 2012). However, variety seeking temporal patterns have not been examined at the individual level. It is intuitive that at least some customers may maintain or increase their variety seeking tendency over time. It may be possible, then, to segment customers

by the heterogenous variety seeking temporal patterns they exhibit.

This question can be generalized to a broader, unexamined research topic, “How is variety seeking tendency associated with variety seeking patterns?” Do variety seekers and variety avoiders exhibit different variety seeking patterns? Another important objective of this research is to examine the associations between variety seeking tendency and variety seeking patterns. Before addressing the research objectives, the next section provides a review of customer segmentation in the cruise industry, which is the context of this empirical research.

## ***2.2 Cruise Market Segmentations***

The modern cruise industry is a fast-growing, lucrative sector in tourism (Han and Hyun, 2019). In the past decade, the total number of cruise passengers increased from 17.8 million in 2009 to 30 million in 2019 (CLIA, 2020). Along with the dramatic expansion in market size, the population of cruise passengers has become more diverse (Papathanassis, 2020). To understand the needs as well as behaviors of diverse customers in efficient ways, cruise practitioners have utilized many different variables to segment the market. In CLIA’s 2018 industry report, at least five broad types of grouping methods were used to cluster cruise passengers, including geographics (e.g. nations or regions, home port, port of calls and destinations), demographics (e.g. age, generation, income, ethnicity, gender, marital status, number of children), psychographics (e.g. interests), behaviors (e.g. user status, usage rate), and tripographics (e.g. trip length, travel party or companions, price levels, ship scales). For example, one of the most commonly used segmentation bases in cruise industry is price level, by which the market can be classified into contemporary, premium, luxury, and specialty (Kwortnik, 2006).

These segmentation approaches mentioned above have also been widely applied in cruise

research. Researchers have explored the distinctiveness of cruise segments using many dimensions, such as cruising determinants, cruising motivations, and purchase behaviors (Bhadauria, Bhatnagar, and Ghose, 2014; Jones, 2011; Sun, Kwortnik, and Gauri, 2018). For example, enlightened by a major cruise review website's typology of cruise styles, Bhadauria et al. (2014) segmented cruise passengers by their demographic information into five groups: *Family*, *Singles*, *Seniors*, *Disabled*, and *Romantic & Honeymoon*. The authors found that the importance of cruising determinants varied by different cruiser segments. Specifically, the *Family* segment cares more about onboard dining and service; *Singles* value public rooms the most because they want to encounter other singles; *Seniors* have the highest price sensitivity and can be easily influenced by cost; the *Disabled* segment values service and embarkation the most for mitigating their physical restrictions; the *Romantic & Honeymoon* segment cares more about price and dining options. Jones (2011) compared the cruising motivations of first-time cruisers vs. repeat cruisers, finding that the desire of just wanting to go on a cruise is an important motivation particularly for first-time cruisers. He also compared the cruising motivations of passengers in two different trip length segments (6 days vs. 8 days) but found no significant difference. Sun et al. (2018) also compared first-timers and repeat cruisers, with a focus on their differences in demographics and purchase behaviors. The authors found that, compared with new cruisers, repeat cruisers live closer to departure ports, are less price sensitive, tend to make reservations further out from sailing dates and choose longer itineraries as well as premium cabins.

Besides exploring segment characteristics using existing classification schemes in the cruise industry, research has also proposed new approaches to cluster cruise passengers (Brida et al., 2013; Brida, Scuderi, and Seijas, 2014; Cartwright and Baird, 1999; Josiam et al., 2012;

Krieger, Moskowitz, and Rabino, 2005; Petrick, 2005, 2011; Petrick and Durko, 2015; Petrick and Sirakaya, 2004). One stream of this research focused on advanced clustering methods to produce less subjective data-based segmentation, including conjoint analysis (Krieger et al, 2005) and factor-cluster analysis (Brida et al., 2013; Brida et al., 2014; Josiam et al., 2012). For example, by conducting Internet-based conjoint research with 231 respondents, Krieger et al. (2005) collected information about their interests in certain cruise features. Based on this data, four cruiser segments with distinct cruising interests were identified: “*Sightseers*,” “*Self-Absorbed*,” “*Pamper-Me*,” and “*Novel, Up-to-Date, Informal*.” By conducting a factor-cluster analysis in which multiple demographic variables were combined as the clustering factor, Josiam et al. (2012) segmented 352 Taiwanese cruisers into *Traditionalists* and *Chuppies*. *Traditionalists* were older, less educated, and married cruisers without professional jobs, while *Chuppies* were younger cruisers with greater spending power. Based on survey data collected from 1,361 cruise passengers in port of Cartagena, Brida et al. (2013) conducted a more complicated, three-step multidimensional factor-cluster analysis, identifying six distinct cruiser segments different in nationality, satisfaction, perceived safety, and expenditure. Using the same method, Brida et al. (2014) classified 5,151 cruise passengers visiting Uruguay into three segments with differences in country of residence, occupation, satisfaction, destinations in Uruguay, and whether they had visited Uruguay before.

On the other hand, some scholars developed cruiser classification schemes by using new segmentation bases, most of which were psychological variables such as price sensitivity (Petrick, 2005), cruiser perception (Petrick, 2011), and cruising motivations (Caber, Albayrak, and Ünal, 2016; Petrick and Durko, 2015). For example, to examine whether price-sensitive passengers are a desirable market, Petrick (2005) segmented cruisers by their price sensitivity.

According to the results of K-means cluster analyses, three cruiser segments were found and labeled as *Low Sensitivity*, *Moderate Sensitivity*, and *High Sensitivity*. Passengers with low price sensitivity had higher household income and contributed more revenue by purchasing high-end cabins and spending more money onboard. Passengers with high price sensitivity were also desirable because they were more likely to positively evaluate their cruise experience and had higher repurchase intentions. Based on another psychological factor, perceived reputation of a cruise line, Petrick (2011) segmented cruise passengers into three groups: *Low Reputation*, *Medium Reputation*, and *High Reputation*. Significant differences were found among these segments in past cruise experience, price sensitivity, perceived price, perceived quality, perceived value, satisfaction, word of mouth, and repurchase intentions.

Several other studies segmented cruise passengers by cruising motivations (Caber et al., 2016; Krieger et al., 2005; Petrick and Durko, 2015). For example, Petrick and Durko (2015) identified nine primary motivations for taking luxury cruises: to be with spouse or family, to enjoy nature, to escape, to do something relaxing, to socialize, to experience other cultures, to have a high-status vacation, to have fun, and to do something new. Using these motivations as the clustering variables, the authors segmented cruise passengers into five distinct groups: *Relaxers*, *Socializers*, *Cultured*, *Unmotivated*, and *Highly Motivated*. Among the resultant segments, significant differences were found in customer demographics and tripographics, which refers to travel-related behavioral characteristics such as travel length and travel party. Caber et al. (2016) also used cruising motivations to cluster international cruise passengers visiting a specific port in Turkey. Two distinct segments were identified: *Variety Focused* tourists, who take cruise vacations to escape from normal environment and routine daily life, and *Utilitarian and Ambitious* tourists, who take cruises to gain utilitarian and social benefits.

Some scholars have attempted to segment cruise passengers by loyalty (Cartwright and Baird, 1999; Petrick and Sirakaya, 2004). Based upon Jones and Sasser's work (1995), Cartwright and Baird (1999) theoretically classified cruise passengers into five segments with distinct loyalty types: *Apostles*, *Loyalists*, *Mercenaries*, *Hostages*, and *Guerrillas*. *Apostles* have strong intentions of repurchasing and recommending their preferred cruise lines. *Loyalists* are satisfied passengers who return to preferred cruise lines but do not bring in additional customers. *Mercenaries* are price-driven and loyal to cruise lines maintaining the cheapest prices. *Hostages* are likely to be itinerary-driven and repurchase a cruise line because no viable alternatives are available. *Guerrillas* are former apostles whose complaints were inappropriately responded to by cruise lines. This classification scheme was applied by Miller and Grazer (2003), who found that inadequate responses to cruise passengers' complaints can transform Apostles into Guerrillas, resulting in financial loss to cruise lines. Petrick and Sirakaya (2004) proposed a two-step segmentation approach to classify cruise passengers by loyalty. In the first step, passengers were grouped into first timers and repeaters. In the second step, by conducting K-means cluster analyses, the authors further segmented first timers into *Satisfieds* and *Dissatisfieds*, using customer overall satisfaction as the single clustering variable. Similarly, they further segmented repeaters into *Loyals* and *Disloyals*, using repurchase intention and brand attachment as the clustering variables. *Loyals* were found to have higher perceived value and satisfaction than *Disloyals*. But notably, using two self-reported questions, the authors measured customer loyalty as behavioral intentions, which alone is often a poor predictor of actual choice behavior (Ajzen, 2001; Kraus, 1995). Measuring loyalty based on historical customer choices may predict customer behavioral loyalty more reliably.

### ***2.3 Research Questions***

Practitioners and scholars in the travel and hospitality realm have proposed diverse approaches to segment cruise passengers; none of these approaches, though, are based on customer variety seeking tendency, despite anecdotal evidence that variety seeking is common in the cruise industry. However, to understand what factors drive customer behavioral loyalty for low-frequency experiential products such as cruise vacations, it is important to take into account the differences in variety seeking tendency among customers (Petrick, Li, and Park, 2007; García et al., 2012), i.e., to segment customers by variety seeking tendency. The fundamental research goal of this study, therefore, is to develop a segmentation approach based on customer variety seeking tendency for cruises and other low-frequency experiential product categories. To achieve this overarching goal, the first research question is

***Research Question 1:*** Can cruise passengers be segmented into distinct and meaningful groups by variety seeking tendency?

The segmentation scheme proposed in this research should effectively reflect the behavioral loyalty level of customers in each segment, as variety seeking is an indicator of behavioral loyalty. Customers seeking little variety are behaviorally loyal and mainly or exclusively purchase one specific brand, while those seeking more variety are behaviorally disloyal and often switch among competing brands (Ehrenberg, 1988). In cruise and other hospitality industries, rewards programs are built upon behavioral loyalty segmentation, which classify customers by their frequencies of repurchasing a single brand over a period of time (Banasiewicz, 2005). But given the infrequent nature of cruise-product purchase (Deloitte,

2018), cruise lines may take a long time to collect sufficient data points of customer repurchase behaviors. For example, repeat guests of Carnival on average take 12 to 25 months to repurchase the brand (Applegate et al., 2005). A more efficient method to distinguish behaviorally loyal cruise patrons from other passengers might help cruise lines to identify loyal customers at an earlier stage of their purchase history for cruise vacations. The second research question examines whether the segmentation approach based on variety seeking tendency is an efficient alternative to current rewards programs, with which customer behavioral loyalty can be predicted by fewer customer choices, or specifically, by customers' first several choices.

***Research Question 2:*** Can cruise travelers' behavioral loyalty be predicted by their variety seeking tendency exhibited in the first several choices for cruise lines?

Variety seeking tendency indicates the likelihood of customers seeking variety in a sequence of choices, while variety seeking patterns demonstrate how variety seeking behaviors happen in this choice sequence. The relationship between these two different concepts related to variety seeking is largely unexamined. The following three research questions aim to fill this void by examining whether customers at different variety seeking tendency levels exhibit different variety seeking patterns.

Variety seeking intensity reflects how customer variety seeking behaviors distribute in the entire sequence of choices. High variety seeking intensity indicates that a customer seeks variety intensively during certain time periods, whereas low variety seeking intensity indicates that the variety seeking behaviors of a customer distribute scatteredly (or in disorder) in the choice sequence. Trivedi (1999) proposed to measure variety seeking intensity by the variance of

the positions of variety seeking behaviors in a choice sequence. Large variance indicates that variety seeking behaviors are more scatteredly distributed in the sequence, i.e., low variety seeking intensity. To measure the variety degree of a choice sequence, Pessemier and Handelsman (1984) considered the number of “contiguous changes in the choice sequence,” which they called *variety seeking node*. The number of variety seeking nodes may also be used to approximate variety seeking intensity. A smaller number of variety seeking nodes indicates that variety seeking behaviors are concentrated in fewer clusters, i.e., higher variety seeking intensity. The number of changes in each variety seeking node may also reflect variety seeking intensity—a larger number of changes within a variety seeking node demonstrates that more variety seeking behaviors cluster around the variety seeking node center, which may indicate higher variety seeking intensity. Another potential indicator of variety seeking intensity can be the entropy of variety seeking behaviors. Entropy measures the degree of disorder and uncertainty (Brissaud, 2005) and can be a more reliable indicator than variance (Smaldino, 2013). In the marketing field, scholars have used entropy to measure the disorder level of consumer purchase behaviors (Herniter, 1973; Lesser and Lusch, 1988). Larger entropy of unique items indicates more disorder in repeated purchases; in this study, larger entropy of variety seeking behaviors indicates more disorder in the distribution of variety seeking behaviors through the entire choice sequence, namely lower variety seeking intensity. No research has examined the association between variety seeking intensity and variety seeking tendency. This study aims to fill this void by addressing the following research question:

***Research Question 3:*** Do customers with different levels of variety seeking tendency differ in variety seeking intensity?

Generally speaking, when customers begin to purchase in an unfamiliar product category, they are inclined to seek more variety to gain knowledge of the category (Ratner, Kahn, and Kahneman, 1999). But after becoming familiar with a brand, customers seek less variety and become more loyal to it (Horng et al., 2012), until its perceived attractiveness is increased to the maximum by repeat purchase (Bawa, 1990; Berlyne, 1970). Then, when familiarity with the brand reaches a threshold, its arousal or stimulation potential can be attenuated, leading customers to perceive boredom and thus switch to less-familiar alternatives (Bawa, 1990; Berlyne, 1970). Research has found that, after reaching an optimum stimulation level, customers tend to seek more variety to mitigate the feeling of satiation or boredom (McAlister and Pessemier, 1982; McAlister, 1982; Raju, 1980). In summary, variety seeking tendency tends to be a “U” shape function of brand familiarity or the number of times a brand is repeatedly purchased.

For low-frequency experiential products such as holiday vacations, empirical evidence shows that tourists seek more variety in the first few times of purchasing the same types of tourism products (Ariffin and Maghzi, 2012; Fluker and Turner, 2000; Gitelson and Crompton, 1984). When tourists become more familiar with a destination, they tend to perceive a more positive destination image and have a stronger revisit intention (Baloglu, 2001; Milman and Pizam, 1995), becoming less likely to seek variety. This decrease in variety seeking tendency might cease when brand familiarity reaches a certain level, beyond which brand attractiveness does not continue to increase as a function of brand familiarity (Bawa, 1990). On the other hand, because even the same low-frequency experiential product can be vastly different in consecutive consumption experiences and the interpurchase time is relatively long, tourists may not be as

likely to feel bored with repurchasing the same product and seek variety due to satiation (Ryan, 1995). For infrequently purchased experiential products, therefore, variety seeking tendency might not be a “U” shape but a “L” shape function of the number of repurchases. In other words, variety seeking tendency might decrease to and then maintain a certain level as brand familiarity or the number of repurchase times increases.

***Research Question 4.1:*** Do customers reduce their variety seeking tendency as they make more purchases of low-frequency products such as cruises?

Research as explored general variety seeking temporal patterns (Bawa, 1990; Berlyne, 1970), but has yet to investigate variety seeking temporal patterns at the customer-segment and individual levels. First, compared to variety seekers, customers with lower variety seeking tendency repurchase the same brand more frequently and thus likely gain brand familiarity faster from the start of purchasing in a product category, suggesting that their probability of seeking variety may decline at a higher rate during an earlier time in their purchase history.

***Research Question 4.2:*** Compared to customers with high variety seeking tendency, do customers with low variety seeking tendency reduce their varied choice behaviors at a higher rate during an earlier period in their purchase history?

Second, although evidence has suggested that the overall variety seeking temporal pattern may be an “L” shape function of the number of repurchases for low-frequency products, more distinct variety seeking temporal patterns may exist at the individual level. It is intuitive that at

least some customers maintain or increase their variety seeking tendency over time. This study aims to identify more individual-level variety seeking temporal patterns and examine the association between these patterns and the level of variety seeking tendency.

***Research Question 4.3:*** Do customers exhibit heterogenous variety seeking temporal patterns? Are these individual level variety seeking temporal patterns associated with the level of variety seeking tendency?

When customers decide to seek variety by switching brands, do they switch to brands similar to the previous choice or to dissimilar ones? Kumar and Trivedi (2006) addressed this question by separating pure variety seekers from brand switchers: pure variety seekers switch brands and choose products with different attributes, while brand switchers switch brands but choose products with similar attributes. The authors acknowledged that both pure variety seekers and brand switchers had a high frequency of switching behaviors, but did not report whether a significant difference existed in variety seeking tendency between these two segments. In a sequence of choices, even if the number of switches is constant, the larger dissimilarity between consecutive items offers consumers more variety (Mitchell, Kahn, and Knasko, 1995; Pessemier, 1985). Thus, pure variety seekers may have a higher variety seeking tendency than brand switchers, suggesting that variety seeking tendency may be associated with variety seeking patterns indicated by the degree of dissimilarity between consecutive choices. The last research question addresses this association,

**Research Question 5:** When customers seek variety by switching brands, are those with higher variety seeking tendencies more likely to switch across brands offering dissimilar product attributes?

## **2.4 Method**

To address the five research questions proposed above, this study collected data from Cruise Critic, a leading U.S.-based cruise review website as well as the world's largest cruise community. Since its inception in 1995, Cruise Critic has amassed more than 350,000 cruise reviews of more than 700 cruise ships. Thousands of conversations are posted every day among the Cruise Critic's expert team and active consumer users of the website. Members discuss cruising plans, travel preparation, and excursion tips, and connect with passengers on the same ship before sailing.

Interestingly, many users of Cruise Critic share their cruising history in their profile signatures (see Figure 2.1), providing detailed information about the date and cruise line (sometimes the ship, destination, and cabin as well) of each of their past cruises. This information indicates how cruisers switch cruise ships and lines over time.

### **2.4.1 The Sampling Process**

Cruise Critic has many different sections on its website for users to communicate online, the most popular of which include *Roll Calls* and *Cruise Lines*. In the *Roll Calls* section, users post to make friends and exchange travel information or tips before sailing, while in the *Cruise Lines* section, users post reviews and discuss general questions about cruise lines and cruise ships. This study collected data from the *Cruise Lines* section, where frequent cruisers = share

their experience with cruise newbies. In this section, there are 42 forums for specific cruise lines. People posting under a forum usually have at least some experience with the corresponding cruise line. This research focused on the fifteen popular cruise lines from four price levels that serve the North America region, and thus samples were selected from the forums that included three contemporary cruise lines (Carnival, RCI, and Norwegian), four premium cruise lines (Disney, Princess, HAL, and Celebrity), four deluxe cruise lines (Oceania, Viking, Azamara, and Cunard), and four luxury cruise lines (Seabourn, Regent, Silversea, and Crystal). Given that market shares of deluxe and luxury cruise lines are relatively small, stratified sampling based on market share would result in insufficient data points for these cruise lines. Hence, quota sampling was applied. The target sample size of this study was 1000 users, and quotas set for cruise line forums were listed in Table 2.1.

evandbob  
5,000+ Club

January 3, 2010  
9,179 posts  
FL

Posted January 28

Report post #13

About 10 years ago, I had L3 - L5 spinal fusion with 2 rods and six titanium screws put into my back and I was up walking gingerly 2 days after the surgery and in rehab 4 days later. Technology has certainly improved this procedure since then, and reduced rehab time as well.

The OP is having her back surgery this April/May and not sailing until May 2020, a full year later. I don't understand her concern, unless there are other unmentioned co-morbidities. If her cruise was May 2019 and not 2020, I would, but with a year to recover, she might be a marathon walker by then.

+ Quote

1

Paradise 1/03, Paradise 8/03, Holiday 4/04, Majesty of the Seas 5/04, Fascination 2/05, Legend 3/05, Legend 5/05, Triumph 2/06, Valor 8/06, Valor 12/08, Destiny 1/08, Valor 7/09, Liberty 10/09, Miracle 1/10, Valor 4/10, Liberty 12/10, Valor 1/11, Disney Dream 2/11, Valor 12/11, Crown Princess Mediterranean 9/12, NCL Epic 3/13, Liberty 12/13, Celebrity Summit 1/14, Crown Princess Alaska CruiseTour 8/14, Conquest 10/14 my first B2B, Freedom 12/14, Norwegian Epic, 1/15, Valor 3/15, Carnival Magic 10/15, Carnival Magic 11/15, Celebrity Summit 12/15, Glory 1/16 - 2/16 B2B, Conquest 4/16, NCL Breakaway to Bermuda, 5/16, Conquest (Diamond) 6/16, Vista, 11 days repo Nov 2016. Glory 12/16, NCL Breakaway 14 days, Jan 2017, Conquest 4/17, Glory 6/17, Carnival Dream 10/17, Breeze, 12/17, NCL Dawn, 1/18, Glory, 4/18, Horizon 5/18, Miracle 8/18, MSC Seaside 10/18, Magic ULTRA 11/18, NCL Jade 11/18 eleven day Panama.

Upcoming: , Conquest, 2/19, Magic ULTRA 3/19, NCL Epic 15 day TA to Spain 4/19, Celebrity Equinox 11 day Southern 10/19, RCCL Symphony of the Seas 1/20, Legend, 9 day Norway 6/20.

**Figure 2.1: A Example of Data Source from Cruise Critic**

**Table 2.1: Sample Quotas for Each Cruise Line Forum by Cruise Line Tier**

<b>Cruise Line Forums</b>	<b>Quotas</b>	<b>Total Quotas</b>
<b>Contemporary:</b> Carnival, RCI, NCL	100 users / each	300
<b>Premium:</b> Disney, Princess, HAL, Celebrity	75 users / each	300
<b>Deluxe:</b> Oceania, Viking, Azamara, Cunard	50 users / each	200
<b>Luxury:</b> Seabourn, Regent, Silversea, Crystal	50 users / each	200

Cluster sampling was then applied to select users from each cruise line forum, where each topic under the forum was defined as a cluster. Under the randomly selected topics, the information for all users passing the following two filtering rules was compiled: (1) has cruised at least five times, and (2) disclosed information about the cruise date and the cruise line of all cruise vacations taken. Because the cruise history of some users might appeared more than once if they engaged in multiple forums, username on Cruise Critic, was used as the identification variable to ensure each recorded observation had a unique username. Based on these rules, data was retained for 978 users and 15,166 cruise choices in total. Two datasets were built with this sample. The wide-format dataset consisted of 978 rows, each of which represented a user's complete history of cruise choices, while the long-format dataset had 15,166 rows, each of which contained detailed information about a single cruise choice.

#### **2.4.2 Data Cleansing**

Cruise Critic did not require users to have a fixed format for the signature sections of their posts. Consequently, users disclosed different information about their cruise choices in varying formats. For example, some users only released basic information such as the cruise date and cruise lines, while others shared more detailed information, including cruise ships,

destinations, trip lengths, cabins purchased, and travel companions. Some users sorted their cruise choices by date, while others sorted by cruise lines. Before conducting statistical analyses, I cleansed the raw data with the following two rules: (1) only keep the information for cruise date, the cruise line, and the cruise ship for each cruise choice; (2) sort each user's cruise choices by chronological order.

### 2.4.3 Variables

In the wide-format dataset, *ID* represented a user's nickname on Cruise Critic; *Source* indicated the forum where a user's information was collected; *Ct\_cruises* was a user's total number of cruises taken; *Brand<sub>i</sub>* and *Ship<sub>i</sub>* indicated the cruise line and cruise ship that a user chose for his or her *i*<sup>th</sup> cruise, where *i* ranged from 1 to *Ct\_cruises*. For example, user kate61880 (*ID*) was recruited from the Azamara Forum (*Source*) and had cruised 11 times in total (*Ct\_cruises*). Her first cruise choice was RCI's (*Brand<sub>1</sub>*) Empress (*Ship<sub>1</sub>*), her second was Celebrity's (*Brand<sub>2</sub>*) Reflection (*Ship<sub>2</sub>*), ..., and her most recent cruise choice was Azamara's (*Brand<sub>11</sub>*) Quest (*Ship<sub>11</sub>*). Based on the information of *Brand<sub>i</sub>* and *Ship<sub>i</sub>*, the following derivative variables were computed.

- (1) *Tier<sub>i</sub>* represented the price tier of *Brand<sub>i</sub>* (see Table 2.1). *Tier<sub>i</sub>* was defined as missing if *Brand<sub>i</sub>* was "Other." *Tier<sub>i</sub>* was defined as interval variables ranging from 1 to 4, where 1 represented contemporary cruise lines, 2 represented premium cruise lines, 3 represented deluxe cruise lines, and 4 represented luxury cruise lines.
- (2) *Ct\_brands* referred to the number of unique cruise lines that a user had chosen. *Ct\_brands<sub>pref</sub>* was a user's number of *preferred* cruise lines. In this study, a preferred cruise line was defined as one that a user had chosen in 25% or more occasions.

(3)  $Ct\_VS_b$  was the number of a user's brand-level variety seeking behaviors, i.e. brand switches. Similarly,  $Ct\_VS_s$  and  $Ct\_VS_t$  represented the number of a user's cruise ship switches and the number of his or her cruise tier switches, respectively.  $Ct\_VS_j$  was the number of a user's brand switches by the end of the  $j^{\text{th}}$  cruise.

$$Ct\_VS_b = \sum_{i=2}^{Ct\_cruises} f(i) , \text{ where } f(i) = \begin{cases} 0 & Brand_i = Brand_{i-1} \\ 1 & Brand_i \neq Brand_{i-1} \end{cases} \quad (\text{Formula 2.1})$$

$$Ct\_VS_s = \sum_{i=2}^{Ct\_cruises} f(i) , \text{ where } f(i) = \begin{cases} 0 & Ship_i = Ship_{i-1} \\ 1 & Ship_i \neq Ship_{i-1} \end{cases} \quad (\text{Formula 2.2})$$

$$Ct\_VS_t = \sum_{i=2}^{Ct\_cruises} f(i) , \text{ where } f(i) = \begin{cases} 0 & Tier_i = Tier_{i-1} \\ 1 & Tier_i \neq Tier_{i-1} \end{cases} \quad (\text{Formula 2.3})$$

$$Ct\_VS_j = \sum_{i=2}^j f(i) , \text{ where } f(i) = \begin{cases} 0 & Brand_i = Brand_{i-1} \\ 1 & Brand_i \neq Brand_{i-1} \end{cases} \quad (\text{Formula 2.4})$$

(4)  $VST_{brand}$  was a user's brand-level variety seeking tendency, namely the ratio of his or her actual number of brand switches to the maximum possible number of brand switches. Similarly,  $VST_{ship}$  and  $VST_{tier}$  represented a user's ship-level and tier-level variety seeking tendency, respectively.  $VST_j$  was the user's brand-level variety seeking tendency by the end of his or her  $j^{\text{th}}$  cruise. Bawa (1990) found that customers may fluctuate between variety seeking behaviors and inertia behaviors. He proposed the concept of transitional value that indicates the purchase-amount cutoff, after which customer purchase behaviors change from one type to another. The means of this value ranged from 4 to 7 for different product categories (e.g., 4.1 purchases for cereal, 7.1 for facial tissue, and 6.3 for paper towels), namely that customers may change their initial purchase behaviors after 4-7 purchases. No research has investigated the transitional value for buying experiential products, including cruise

vacations. This study arbitrarily chose the fifth cruise as the cutoff point—i.e.  $VST_5$  was calculated as an approximate of the user's *initial* variety seeking tendency.  $VST_{5+}$  was the user's brand-level variety seeking tendency exhibited since the sixth cruise.  $VST_5$  and  $VST_{5+}$  were only calculated for users who had taken ten or more cruises. If a user had taken less than ten cruises, the number of data points to estimate his or her  $VST_{5+}$  might be too small to produce a reliable estimate. Formulas to calculate variables introduced in this paragraph are listed below.

$$VST_{brand} = \frac{Ct\_VS_b}{Ct\_cruises-1} \quad (\text{Formula 2.5})$$

$$VST_{ship} = \frac{Ct\_VS_s}{Ct\_cruises-1} \quad (\text{Formula 2.6})$$

$$VST_{tier} = \frac{Ct\_VS_t}{Ct\_cruises-1} \quad (\text{Formula 2.7})$$

$$VST_j = \frac{Ct\_VS_j}{j-1} \quad (\text{Formula 2.8})$$

$$VST_5 = \frac{Ct\_VS_5}{4} \quad (\text{Formula 2.9})$$

$$VST_{5+} = \frac{Ct\_VS_b - Ct\_VS_5}{Ct\_cruises-5} \quad (\text{Formula 2.10})$$

- (5)  $Pr\_fav_a$  represented the proportion of a user's  $a^{\text{th}}$  favorite or most frequently selected cruise line in his or her cruise history, where  $a = 1, 2, 3$ .  $Pr\_others$  was the proportion of other cruise lines, which was equal to one subtracting the sum of  $Pr\_fav_a$  ( $a = 1, 2, 3$ ).  $Pr\_fav_a$  and  $Pr\_others$  quantified a user's variety seeking patterns reflected by the frequency distribution of the chosen cruise lines. For example, for a user with high variety seeking tendency, if he had large  $Pr\_fav_1$  and  $Pr\_fav_2$  but small  $Pr\_fav_3$  and  $Pr\_others$ , he often switched between two preferred brands; if he had relatively small  $Pr\_fav_1$ ,  $Pr\_fav_2$ , and  $Pr\_fav_3$  but relatively large  $Pr\_others$ , he switched among

many brands without particular preference to any.  $Pr_{fav_{15}}$  represented the proportion of a user's most frequently selected cruise line in his or her first five purchases.

- (6) A variety seeking node was defined as a group of consecutive variety seeking behaviors. Under this definition, a single variety seeking behavior in between two repurchase behaviors was a special case of a variety seeking node.  $Ct\_nodes$  referred to a user's total number of variety seeking nodes, which is a proxy for of variety seeking intensity. For example, imagine a customer, whose name is Tony, made ten purchases in total, among which he switched brands for three times. More specifically, Tony switched brand consecutively in his fourth and fifth purchase, and he also switched brand in his ninth purchase. Then,  $Ct\_nodes$  of Tony was 2. Larger  $Ct\_nodes$  indicate variety seeking behaviors are separated into more groups, which might suggest lower variety seeking intensity.  $Loc\_VS_i$  represented the relative location of a user's  $i^{th}$  variety seeking behavior in his or her entire choice sequence. It was calculated by dividing the ordinal number of a purchase when a user switched brand for the  $i^{th}$  time (labeled as  $Time\_VS_i$ ) by the total number of purchase made (see Formula 3.1). For example,  $Loc\_VS_1$ ,  $Loc\_VS_2$ , and  $Loc\_VS_3$  of Tony was 4/10, 5/10, and 9/10, respectively.  $Loc\_node_i$  referred to the location of the center of a user's  $i^{th}$  variety seeking node in the entire purchase history, which was calculated by dividing the average of ordinal numbers of cruises included in the user's  $i^{th}$  variety seeking node (labeled as  $\overline{Time\_node_i}$ ) by the total cruise number (see Formula 3.2). For example, the locations of Tony's first and second variety seeking node center were 4.5 and 9, respectively. Therefore, his  $Loc\_node_1$ , and  $Loc\_node_2$  were 4.5/10 and 9/10, respectively. Small standard deviation of  $Loc\_VS_i$  or  $Loc\_node_i$  (labeled as

$SD\_Loc\_VS$  and  $SD\_Loc\_node$ , respectively) indicated variety seeking behaviors of customers were more concentratedly distributed in the choice sequence, i.e. high variety seeking intensity.  $Len\_node_i$  represented the length of or the number of variety seeking behaviors in the user's  $i^{th}$  variety seeking node. The average length of the user's variety seeking nodes was labeled as  $Ave\_Len\_node$ . For Tony, his  $Len\_node_1$  was 2, and his  $Len\_node_2$  was 1. Thus, Tony's  $Ave\_Len\_node$  was 1.5. Larger  $Ave\_Len\_node$  indicate that a user's variety seeking behavior were more clustered around the node centers.  $Entropy_{node}$  represented the entropy of variety seeking nodes and was calculated using Formula 3.3 below. It reflected the disorder level of variety seeking nodes and a user's variety seeking intensity. Large entropy indicated high level of disorder in the distribution of variety seeking nodes, i.e. low variety seeking intensity.

$$Loc\_VS_i = \frac{Time\_VS_i}{Ct\_cruises} \quad (\text{Formula 3.1})$$

$$Loc\_node_i = \frac{Time\_node_i}{Ct\_cruises} \quad (\text{Formula 3.2})$$

$$Entropy_{node} = - \sum_i \frac{Len\_node_i}{Ct\_VS} \ln \frac{Len\_node_i}{Ct\_VS} \quad (\text{Formula 3.3})$$

In the long-format dataset,  $Time_t$  represented the ordinal number of a user's current cruise;  $Brand_t$  was the cruise line chosen for the current cruise;  $Brand_{t-1}$  was the cruise line chosen for the previous cruise. Table 2.2 summarizes the frequency distribution of  $Brand_t$  and  $Brand_{t-1}$ .  $Tier_t$  referred to the price tier of the current cruise line, and  $Tier_{t-1}$  indicated the price tier of the previous cruise line.  $Tier_t$  and  $Tier_{t-1}$  were missing if  $Brand_t$  and  $Brand_{t-1}$  were "Other" respectively. The difference between  $Tier_t$  and  $Tier_{t-1}$  (labeled as  $Diff_{tier}$ ) quantified the

dissimilarity level between consecutive choices—the closer to 0 the value was, the more similar the two consecutive choices were. Table 2.3 summarizes the descriptive statistics of numerical variables of interest in the dataset.

**Table 2.2: Frequency Distributions of  $Brand_t$  and  $Brand_{t-1}$**

<i>Brand<sub>t</sub></i>	Count	%	<i>Brand<sub>t-1</sub></i>	Count	%
Azamara	267	1.76	Azamara	238	1.68
Carnival	2384	15.72	Carnival	2269	15.99
Celebrity	2029	13.38	Celebrity	1911	13.47
Crystal	194	1.28	Crystal	165	1.16
Cunard	451	2.97	Cunard	427	3.01
Disney	407	2.68	Disney	375	2.64
HAL	1146	7.56	HAL	1072	7.56
Norwegian	1507	9.94	Norwegian	1383	9.75
Oceania	286	1.89	Oceania	253	1.78
Other	719	4.74	Other	673	4.74
Princess	2100	13.85	Princess	1991	14.03
RCI	2878	18.98	RCI	2723	19.19
Regent	248	1.64	Regent	230	1.62
Seabourn	164	1.08	Seabourn	142	1.00
Silversea	188	1.24	Silversea	165	1.16
Viking	198	1.31	Viking	171	1.21
<b>Total</b>	<b>15166</b>	<b>100.0</b>	<b>Total</b>	<b>14188</b>	<b>100.0</b>

Note:  $Brand_t$  and  $Brand_{t-1}$  represented the brand choice of a customer in the current and the previous purchase, respectively. There were 15,166 purchases included in this study, among which  $Brand_{t-1}$  was indetifiable in 14,188 purchases. Count indicated the number of times that a certain brand was chosen in the current or the previous purchases.

**Table 2.3: Descriptive Statistics of Numerical Variables of Interest**

<b>Variables</b>	<b>Valid N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>	<b>Skewness</b>	<b>Kurtosis</b>
<i>Ct_cruises</i>	978	5	70	15.51	9.736	1.573	3.643
<i>Ct_brands</i>	978	1	11	3.87	2.033	0.737	0.231
<i>Ct_brands<sub>pref</sub></i>	978	0	3	1.31	0.557	0.772	0.465
<i>VST<sub>ship</sub></i>	978	0	1.00	0.890	0.142	-2.147	6.686
<i>VST<sub>brand</sub></i>	978	0	1.00	0.486	0.275	-0.183	-0.867
<i>VST<sub>tier</sub></i>	978	0	1.00	0.270	0.230	0.593	-0.294
<i>VST<sub>5</sub></i>	653	0	1.00	0.521	0.348	-0.186	-1.217
<i>VST<sub>5+</sub></i>	653	0	1.00	0.485	0.285	-0.228	-0.984
<i>Pr_fav<sub>1</sub></i>	978	0.17	1.00	0.618	0.227	0.141	-1.072
<i>Pr_fav<sub>2</sub></i>	978	0	0.50	0.194	0.112	0.159	-0.278
<i>Pr_fav<sub>3</sub></i>	978	0	0.29	0.093	0.075	0.174	-0.996
<i>Pr_others</i>	978	0	0.58	0.095	0.122	1.207	0.650
<i>Ct_nodes</i>	978	0	17	2.540	2.067	1.936	7.237
<i>SD_Loc_VS</i>	880	0	0.45	0.224	0.098	-0.868	-0.138
<i>SD_Loc_node</i>	880	0	0.43	0.183	0.122	-0.540	-1.227
<i>Ave_Len_node</i>	880	1	11.50	2.922	1.705	1.787	4.374
<i>Entropy<sub>node</sub></i>	880	0	2.67	0.747	0.577	0.255	-0.602
<i>Tier<sub>t</sub></i>	14447	1	4	1.725	0.834	1.112	0.771
<i>Tier<sub>t-1</sub></i>	13515	1	4	1.710	0.832	1.133	0.850
<i>Diff<sub>tier</sub></i>	13073	-3	3	0.018	0.726	0.103	3.997

#### 2.4.4 Statistical Analysis Procedures

Before tackling the research questions, I examined relationships among variety seeking tendency at different levels. A mediation model was developed to explore how much variance of the ship-level variety seeking tendency could be explained by the brand- and tier-level variety seeking tendency.

The following analyses focused on cruisers' brand-level variety seeking behaviors. The first and fundamental research question was to develop a new cruiser segmentation approach based on variety seeking tendency. I first examined the distribution of  $VST_{brand}$ . Then, a K-means cluster analysis was conducted, where  $VST_{brand}$  was used as the clustering variable. The optimal cluster number was determined based on both literature and the elbow plot. ANOVA tests were then conducted to explore whether significant differences existed among clusters, i.e. whether the produced clusters were meaningful and distinctive.

The second research question of this study aimed to test the efficiency of the newly developed variety seeking segmentation. First, a  $\chi^2$  association test was conducted to examine whether cruisers' initial variety seeking segments determined by their first five cruise choices were associated with their final variety seeking segments determined by all their cruise choices. A regression model was also developed, in which customers' variety seeking tendency in early consumption stage ( $VST_5$ ) was used to predict their variety seeking tendency shown in later consumptions ( $VST_{5+}$ ).

The third research question addressed the relationship between variety seeking tendency, which indicates customers' likelihood of seeking variety, and variety seeking intensity, which indicates the disorder level of the customers' variety seeking behaviors in the choice sequence. I first reported correlations between the five indicators of variety seeking intensity included in this

study, including Ct\_nodes, SD\_Loc\_VS, SD\_Loc\_node, Ave\_Len\_node, and Entropy<sub>node</sub>.

ANOVA tests were then conducted to examine whether variety seeking intensity was significantly different among segments with different levels of variety seeking tendency.

The fourth research question of this study addressed cruisers' variety seeking temporal patterns. Notably, since the number of data points to estimate the average  $VST_{brand}$  at  $Time_t$  became too small when  $Time_t$  increased to 20ish, this study only focused on the relationship between the average  $VST_{brand}$  and  $Time_t$  in the first 20 cruise choices. Only the data of 252 customers who had taken at least twenty cruises was used in these analyses. A regression analysis was first conducted to examine whether cruisers' variety seeking tendency changed over time in general, namely that whether the average  $VST_{brand}$  of all cruisers was associated with  $Time_t$ . Then, I investigated whether the average  $VST_{brand}$  of each segment was associated with  $Time_t$ . Regressions were conducted to examine the linear relationship between  $VST_{brand}$  and  $Time_t$  by segments. A line graph of  $VST_{brand}$  by  $Time_t$  was provided, from which several non-linear variety seeking tendency temporal change patterns were observed. Lastly, a K-means cluster analysis was conducted to identify four individual-level variety seeking temporary patterns. A  $\chi^2$  test was then conducted to examine the association between these individual level variety seeking temporary patterns and variety seeking segments.

The last research question focused on cruisers' variety seeking patterns of switching to similar vs. dissimilar cruise lines. A crosstab of  $Tier_t$  by  $Tier_{t-1}$  was created, whose diagonal represented switching to similar cruise lines and off-diagonal represented switching to dissimilar cruise lines. To examine whether cruisers with higher variety seeking tendency were more likely to switch to dissimilar cruise lines, ANOVA was conducted, where the mean of the absolute value of  $Diff_{tier}$  was compared among different variety seeking segments.

## 2.5 Results

Customers can seek variety at different levels and this research focused on customer variety seeking behaviors at the brand level. But before addressing the research questions of this study, I first explored the relationships among customer variety seeking tendency at three different levels. When purchasing cruise products, passengers may seek variety by choosing different cruise ships, cabins, itineraries, or destinations at the attribute level, by switching to other cruise lines at the brand level, or by choosing different categories of cruise lines that offer different service levels and different prices at the product category level. Table 2.4 summarizes the descriptive statistics of variety seeking tendencies at different levels. The average ship-level variety seeking tendency of all cruisers included in this study was high—they were 89% likely to choose different cruise ships on a subsequent choice occasion; their average brand-level variety seeking tendency was moderate—they switched to different cruise lines in about half occasions; their average tier-level variety seeking tendency was low—they were only 27% likely to switch to cruise lines in different price tiers.

**Table 2.4: Descriptive Statistics of Variety Seeking Tendency at Different Levels**

<b>Variables</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>SD</b>	<b>Skewness</b>	<b>Kurtosis</b>
<i>VST<sub>ship</sub></i>	0.00	1.00	0.890	0.142	-2.147	6.686
<i>VST<sub>brand</sub></i>	0.00	1.00	0.486	0.275	-0.183	-0.867
<i>VST<sub>tier</sub></i>	0.00	1.00	0.270	0.230	0.593	-0.294

Past research has found that customer variety seeking behaviors at different levels can be associated with each other and mutually influenced (Inman, 2001; Rahinel and Redden, 2013). In the case of cruise choices, if a customer switches the tier of cruise lines, he or she must also switch cruise lines; if a customer switches cruise lines, he or she must choose a different cruise ship. How much variance of variety seeking at the ship-level can be explained by the brand and tier-level variety seeking behaviors? To answer this question, a mediation model was developed by using PROCESS (Hayes, 2013), where the independent variable was the tier-level variety seeking tendency ( $VST_{tier}$ ), the dependent variable was the ship-level variety seeking tendency ( $VST_{ship}$ ), and the mediator was the brand-level variety seeking tendency ( $VST_{brand}$ ).

The results summarized in Table 2.5 confirmed the significance of the mediation model, which explained 13.92% of the variance in the ship-level variety seeking tendency (there are many other motivators of ship-level variety seeking behaviors, such as going to different destinations and trying different ships of the preferred cruise lines). The direct effect of the tier-level variety seeking tendency on the ship-level variety seeking tendency was insignificant ( $b = -0.039$ ,  $p = 0.137$ ), but its indirect effect on the ship-level variety seeking tendency via the brand-level variety seeking tendency was significant ( $b = 0.182$ , 95% CI = 0.146 to 0.222). The tier-level variety seeking tendency is positively associated with and explained 50.38% variance of the brand-level variety seeking tendency ( $b = 0.849$ ,  $p < 0.001$ ), which was then positively associated with the ship-level variety seeking tendency ( $b = 0.215$ ,  $p < 0.001$ ). The following analyses in this research focused on investigating customer variety seeking tendency and patterns exhibited at the brand level.

**Table 2.5: Mediation Regression of the Ship-Level Variety Seeking Tendency**

Predictors	Unstandardized Coefficient	
	$VST_{brand}$ (Mediator)	$VST_{ship}$ (Dependent Variable)
Constant	0.257*	0.796*
$VST_{tier}$ (Independent Variable)	0.849*	-0.039
$VST_{brand}$		0.215*
Direct effect of $VST_{tier}$		-0.039
Indirect effect of $VST_{tier}$		0.182
95% CI		0.146 to 0.222
Total effect of $VST_{tier}$		0.143

Note: Regression was performed by using PROCESS tool, model 4 (Hayes, 2013). Valid N = 978. The indirect effect of  $VST_{tier}$  is significant, as the 95% confidence interval of indirect effect does not include 0.

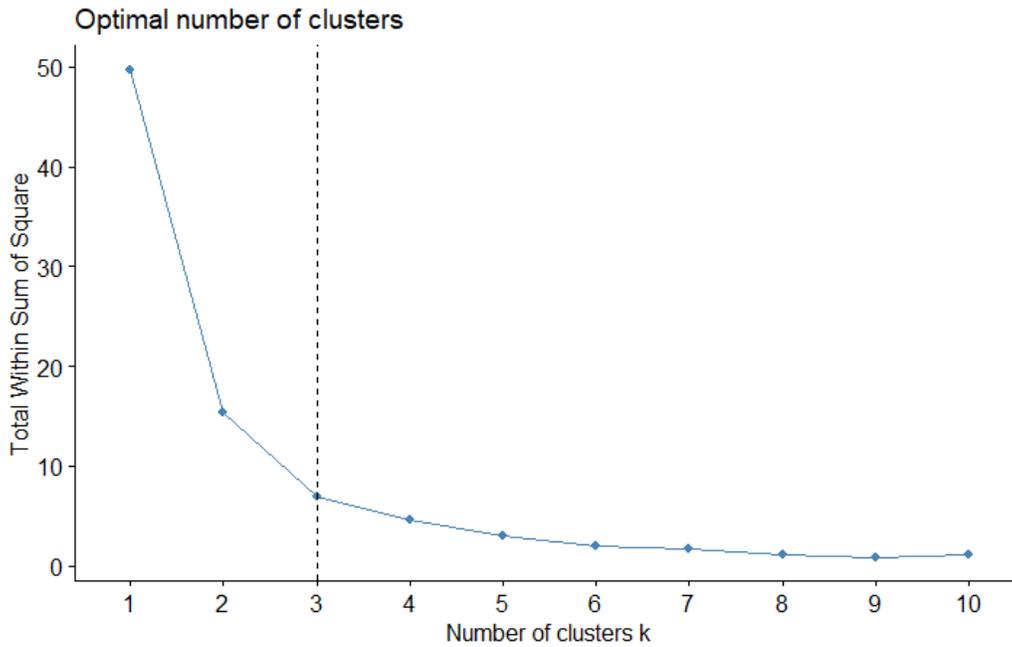
\* p < 0.01

### 2.5.1 Segmenting Cruise Passengers by Variety Seeking Tendency

The fundamental objective of this research was to determine how to segment cruise passengers by their variety seeking tendency. By examining the distribution of  $VST_{brand}$ , which directly indicated cruisers' variety seeking tendency at the brand level, I first identified an invariant segment whose members never switched cruise lines. Among the 978 cruisers involved in this study, 98 only sailed with one cruise line, regardless of the total number of cruises. I called this group of cruisers “*enthusiasts*,” because they were aficionados and the most behaviorally loyal customers of their preferred cruise line. Among the 98 enthusiasts involved in this study, 65 (66.3%) were enthusiasts of contemporary cruise lines, 19 (19.4%) were

enthusiasts of premium cruise lines, 9 (9.2%) were enthusiasts of deluxe cruise lines, and 5 (5.1%) were enthusiasts of luxury cruise lines. There was no significant difference in the total number of cruises ( $Ct\_cruises$ ) among enthusiasts of cruise lines at different price tiers ( $F = 0.778, p = 0.509$ ).

The remaining 880 cruisers had switched cruise lines at least once. A K-means cluster analysis was conducted to group these cruisers, where  $VST_{brand}$  was used as the clustering variable. Although the K-means approach was introduced over half a century ago and since then thousands of clustering algorithms have been developed, K-means is still extensively used in both academic research and industry data mining (Jain, 2010). It is the simplest and most common clustering method with the ability to efficiently group large amounts of data. A key step of the K-means cluster analysis is determining the optimal number of clusters. Based on Banasiewicz's (2005) trichotomy of buyer loyalty, which classified customers into single-brand loyal customers, multi-brand loyal customers, and brand switchers, I presumed that there were three clusters of customers with different variety seeking tendencies (*enthusiast*, an extreme case of single-brand loyal customer, was separately identified in this research). This presumption was statistically supported with the elbow method. This method calculates the sum of squares within clusters and then graphs them in a scree plot. The elbow point on the plot, where the curve slope changes from steep to flat, determines the optimal number of clusters. For the data of this study, according to the figure of elbow curve reported from R (see Figure 2.2), the optimal number of clusters was 3. Therefore, K was set as 3 in the K-means cluster analysis. The K-means cluster analysis was run with SPSS 26. The iteration history of the analysis showed that the final cluster centers settled down after five iterations, again supporting that  $K=3$  was a strong, stable cluster solution for grouping the data of this study.



**Figure 2.2: The Optimal Number of Segments by Variety Seeking Tendency**

Table 2.6 reports the means of the clustering variable ( $VST_{brand}$ ) at the final cluster centers, which indicated the level of variety seeking tendency of a typical cruiser in each segment. More specifically, cruisers in cluster 1 had relatively low variety seeking tendency (25%), those in cluster 2 exhibited moderate variety seeking tendency (54%), and those in cluster 3 showed high variety seeking tendency (81%). ANOVA results ( $F = 2725.911, p < 0.001$ ) showed that differences in the mean of the clustering variable among these three identified segments were significant, demonstrating that these segments were meaningful and distinct in variety seeking tendency.

**Table 2.6: Means of the Clustering Variable at Final Cluster Centers**

Clustering Variables	<i>Enthusiast</i> * (n <sub>0</sub> =98)	Clusters			F	P
		1 (n <sub>1</sub> =258)	2 (n <sub>2</sub> =344)	3 (n <sub>3</sub> =278)		
$VST_{brand}$	0%	25%	54%	81%	2725.911	0.000

Note: The  $VST_{brand}$  values of enthusiasts was invariant at 0. Enthusiasts was thus excluded from the clustering analysis and ANOVA. The significance of difference in  $VST_{brand}$  among the rest three clusters was tested with ANOVA. F and p values were reported.

Additional ANOVA tests were conducted to compare the differences in  $Pr_{fav_i}$ ,  $Pr_{others}$ ,  $Ct_{cruises}$ ,  $Ct_{brands}$ ,  $Ct_{brands_{pref}}$ , and  $Ct_{VS}$  among the four cruiser segments. The results reported in Table 2.7 further support that the identified four clusters were distinctive. Based on the differences in the means of  $Pr_{fav_i}$  and  $Pr_{others}$ , which reflected cruisers' choice distribution patterns, I assigned each cluster a meaningful name. More specifically, cruisers in cluster 1 cruised with one preferred cruise line for 78% of cruise choices on average. I thus tentatively called this cruiser segment “loyalists” because they exhibited great behavioral loyalty to their preferred cruise line. Among the 258 loyalists included in this study, 125 (48.4%) were loyalists of contemporary cruise lines, 98 (38.0%) were loyalists of premium cruise lines, 16 (6.2%) were loyalists of deluxe cruise lines, and 13 (5.0%) were loyalists of luxury cruise lines. 205 loyalists (79.5%) had one strongly preferred cruise line, which was selected in more than two thirds of cruise choices. Cruisers in cluster 2 chose two preferred cruise lines for 80% of choices. Given this feature, I tentatively labeled this segment “two-branders.” Among the 344 two-branders identified in this study, 86 (25.0%) two-branders often chose and switched between two preferred contemporary cruise lines, and 112 (32.6%) two-branders had one preferred contemporary cruise line and one preferred premium cruise line. The 278 cruisers in the cluster 3

showed a significantly higher probability of choosing non-preferred cruise lines (25%). I called them “*explorers*” because they kept exploring among diverse cruise lines.

**Table 2.7: Differences in Cruise Choice Behaviors among Cruiser Segments**

<b>Variables</b>	<b>M<sub>enthusiast</sub></b>	<b>M<sub>cluster1</sub></b>	<b>M<sub>cluster2</sub></b>	<b>M<sub>cluster3</sub></b>	<b>F</b>	<b>p</b>
<i>Pr_fav<sub>1</sub></i>	100%	78% <sup>a</sup>	57% <sup>b</sup>	40% <sup>c</sup>	586.090	0.000
<i>Pr_fav<sub>2</sub></i>	0%	17% <sup>a</sup>	23% <sup>b</sup>	25% <sup>b</sup>	58.154	0.000
<i>Pr_fav<sub>3</sub></i>	0%	4% <sup>a</sup>	11% <sup>b</sup>	15% <sup>c</sup>	263.373	0.000
<i>Pr_others</i>	0%	1% <sup>a</sup>	9% <sup>b</sup>	21% <sup>c</sup>	263.186	0.000
<i>Ct_cruises</i>	10.87 <sup>a</sup>	15.66 <sup>b</sup>	16.35 <sup>b</sup>	15.96 <sup>b</sup>	8.700	0.000
<i>Ct_brands</i>	1	2.76 <sup>a</sup>	4.22 <sup>b</sup>	5.46 <sup>c</sup>	196.900	0.000
<i>Ct_brands<sub>pref</sub></i>	1	1.20 <sup>a</sup>	1.40 <sup>b</sup>	1.42 <sup>b</sup>	12.972	0.000
<i>Ct_VS</i>	0	3.62 <sup>a</sup>	8.31 <sup>b</sup>	11.85 <sup>c</sup>	131.880	0.000

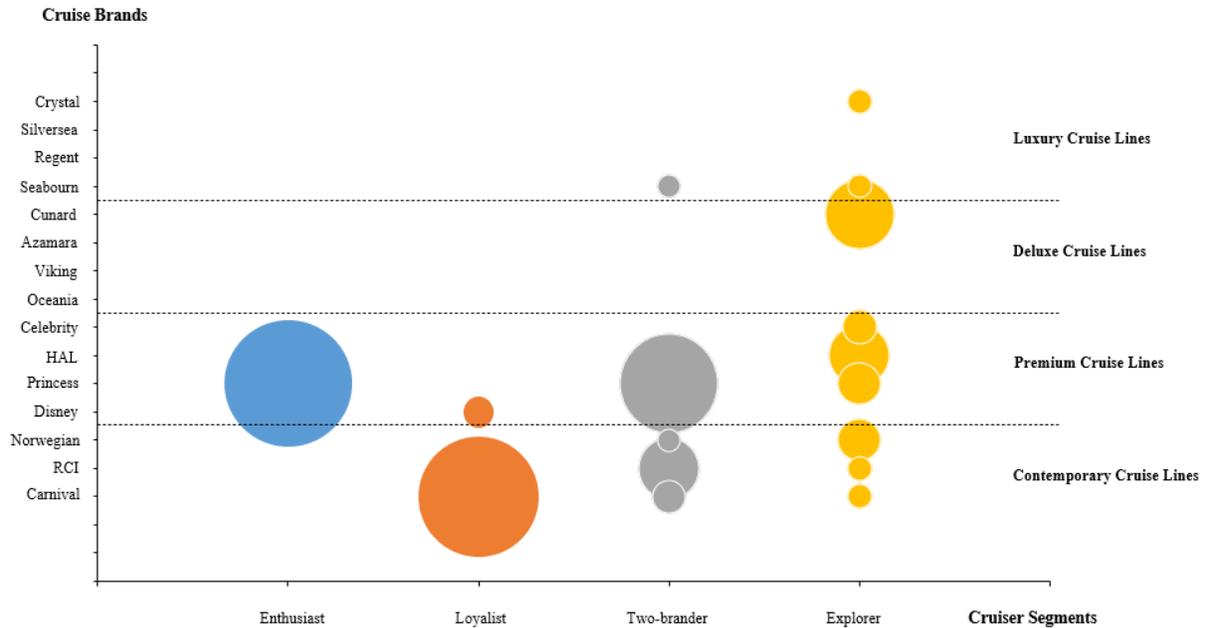
Note: Enthusiasts were excluded from ANOVA when their data was invariant. Tukey HSD tests were conducted to test the significance of differences between two groups. In each row, if the means have different superscripts, they are significantly different with each other; otherwise, the differences are insignificant.

Also shown in Table 2.7, enthusiasts’ average number of cruises (10.87) was significantly smaller than those of all other segments. Second, the average number of cruise lines that explorers had chosen (5.46) was the largest, followed by that two-branders (4.22) and then loyalists (2.76). Enthusiasts by definition only cruised with one cruise line. These differences in the number of cruise brands patronized suggests that cruisers with larger variety seeking tendencies might have a larger-sized consideration set. Third, explorers (1.42) and two-branders (1.40) had more preferred cruise lines than loyalists (1.20). Enthusiasts by definition had only one preferred cruise line. Lastly, the average number of brand switches was the largest for

explorers (11.85), followed by that of two-branders (8.31) and that of loyalists (3.62).

Enthusiasts by definition never switched cruise line.

Next, I attempted to visualize how a typical cruiser in each segment made his or her cruise choices using the bubble chart below. In Figure 2.3, the X axis included four variety seeking segments, while the Y axis included fifteen cruise lines, which could be classified into four groups of cruise lines at different price levels (from top to bottom, they were luxury, deluxe, premium, and contemporary cruise lines, respectively). Each column of bubbles represented the choice frequency distribution of typical cruiser in a variety seeking segment. The number of bubbles indicated how many cruise lines that cruiser had chosen, and the size of each bubble indicated the proportion of the corresponding cruise line in the cruiser's choices—the larger the bubble was, the more frequently the corresponding cruise line was chosen. As we can see from the chart, a typical enthusiast, who only cruised with one cruise line, had one maximum sized bubble; a typical loyalist, who had one strongly preferred cruise line with a small chance of switching to other lines, had one large bubble with few small bubbles; a typical two-brander, who chose and switched between two preferred cruise lines for most occasions, had two medium-sized bubbles with several small bubbles; a typical explorers, who tried a lot of different cruise lines, had many small-sized bubbles. Moreover, compared to loyalists, two-branders and explorers seemed to be more likely to switch across cruise lines of different price tiers.



**Figure 2.3: A Typical Cruiser's Choice Set of by Segments**

### 2.5.2 Efficiency of Segmentation Based on Variety Seeking Tendency

To address the second research question, I examined whether users' first five cruise choices could predict their membership in variety seeking segments based on subsequent choices. For the 653 users who had taken more than ten cruises in this research, their *initial variety seeking segments* (labeled as *Segments*<sub>5</sub>) were determined by their initial variety seeking tendency exhibited in the first five cruise choices: cruisers who did not switch cruise lines in the first five choices ( $VST_5 = 0$ ) were called *initial enthusiasts*, those who switched cruise line once ( $VST_5 = 0.25$ ) were called *initial loyalists*, those who switched cruise lines twice ( $VST_5 = 0.5$ ) were labeled *initial two-branders*, and those who switched cruise lines more than three times ( $VST_5 \geq 0.75$ ) were called *initial explorers*. The centers of initial variety seeking segments were comparable to variety seeking segments centers reported in Table 2.6.

Then, a Fisher's exact test was conducted to examine the relationship between cruisers'

initial variety seeking segments and their membership in later variety seeking segments. The results ( $p < 0.001$ ) revealed a significant association between them. As shown in Table 2.8, an *initial enthusiast* was most likely to stay as an enthusiast (37.88%) or become a loyalist (41.67%); an *initial loyalist* was most likely to continue being a loyalist (50%) or turn into a two-brander (41.11%); an *initial two-brander* was most likely to stay as a two-brander (49.31%) and only showed moderate probability of turning into a loyalist (28.47%); *initial explorers* were not very likely to become a loyalist (12.2%).

**Table 2.8: The Association between Initial and Current Variety Seeking Segments**

<i>Segment<sub>5</sub></i>	Later Segments				Total
	Enthusiast	Loyalist	2-Brander	Explorer	
Enthusiast	50 (37.88%)	55 (41.67%)	26 (19.70%)	1 (0.76%)	132 (100%)
Loyalist	0 (0%)	45 (50.00%)	37 (41.11%)	8 (8.89%)	90 (100%)
2-Brander	0 (0%)	41 (28.47%)	71 (49.31%)	32 (22.22%)	144 (100%)
Explorer	0 (0%)	35 (12.20%)	106 (36.93%)	146 (50.87%)	287 (100%)
<b>Total</b>	50	176	240	187	653

Note: *Segment<sub>5</sub>* refers to customers' segments based on their variety seeking tendency in the first five choices; later segments are the variety seeking segments based on all choices made by customers. Fisher's exact test results ( $p < 0.001$ ) indicated that *Segment<sub>5</sub>* and later segments were significantly associated.

The significant association between the initial and the later variety seeking segments confirmed that the variety-seeking-based segmentation could provide an efficient way to predict cruisers' *overall* loyalty levels, with the limited information from a cruiser's first five choices.

However, this association test included a confounding effect, because  $VST_5$ , which determined

the initial variety seeking segment, was a part of  $VST_{brand}$  ( $VST_{brand} = \frac{4VST_5 + (Ct\_cruises - 5)VST_{5+}}{Ct\_cruises - 1}$ ),

which in turn determined the later variety seeking segment. To exclude this confounding effect, I next examined the relationship between cruisers' initial variety seeking tendency and their variety seeking tendency exhibited after the first five cruise choices. A regression model was developed, where  $VST_5$  was the predictor and  $VST_{5+}$  was the outcome variable.  $VST_5$  explained 16.4% variance of  $VST_{5+}$ , and its influence on  $VST_{5+}$  was positive and significant ( $\beta = 0.332$ ,  $t = 11.297$ ,  $p < 0.001$ ).

Next, brand preference was added as a mediator into the regression model. Cruisers' initial variety seeking tendency might reflect or influence their brand preference, which in turn might affect their subsequent choice decisions. In this study,  $Pr\_fav_{15}$  was used as a proxy for initial brand preference that a customer formed through the first five purchases, because psychological variables of cruisers were not available in the data of this research. Model 4 in Process (Hayes, 2013) was used. The mediation model explained 19.71% variance of  $VST_{5+}$ . The indirect effect of  $VST_5$  on  $VST_{5+}$  via  $Pr\_fav_{15}$  was positive and significant ( $b = 0.291$ , 95% CI = 0.188 to 0.396). The initial variety seeking tendency was negatively associated with and explained 79.14% variance of initial brand preference ( $b = -0.589$ ,  $p < 0.001$ ), which then negatively influenced the variety seeking tendency after the first five cruise choices ( $b = -0.493$ ,  $p < 0.001$ ). The direct effect of  $VST_5$  on  $VST_{5+}$  was positive but nonsignificant ( $b = 0.041$ ,  $p = 0.517$ ). Therefore, the effect of  $VST_5$  on  $VST_{5+}$  was fully mediated by  $Pr\_fav_{15}$ . Its total effect was positive ( $b = 0.332$ ), which was the same as the result of the simple regression model.

### **2.5.3 Variety Seeking Intensity by Variety Seeking Tendency Segments**

This study examined five indicators of variety seeking intensity, including the number of variety seeking nodes ( $Ct\_nodes$ ), the standard deviation of locations of individual variety

seeking behaviors (*SD\_Loc\_VS*), the standard deviation of locations of variety seeking nodes (*SD\_Loc\_node*), the average length of variety seeking nodes (*Ave\_Len\_node*), and the entropy of variety seeking nodes (*Entropy\_node*). According to the results shown in Table 2.9, *SD\_Loc\_VS* and *Entropy\_node* were significantly correlated with all other indicators. Notably, the negative correlation between *Entropy\_node* and *Ave\_Len\_node* was reasonable. Higher *Ave\_Len\_node* was associated with lower *Entropy\_node*, indicating higher variety seeking intensity. To the contrary, the positive correlation between *SD\_Loc\_VS* and *Ave\_Len\_node* was counterintuitive. Larger *Ave\_Len\_node* indicated higher intensity around variety seeking node centers, whereas larger *SD\_Loc\_VS* suggested higher degrees of dispersion in the distribution of variety seeking behaviors, namely lower variety seeking intensity. Therefore, this study used *Entropy\_node* as the main indicator of variety seeking intensity.

**Table 2.9: Bivariate Correlations between Indicators of Variety Seeking Intensity**

<b>Indicators</b>	<i>Ct_nodes</i>	<i>SD_Loc_VS</i>	<i>SD_Loc_node</i>	<i>Ave_Len_node</i>	<i>Entropy_node</i>
<i>Ct_nodes</i>	1				
<i>SD_Loc_VS</i>	0.445*	1			
<i>SD_Loc_node</i>	0.595*	0.814*	1		
<i>Ave_Len_node</i>	-0.056	0.267*	-0.029	1	
<i>Entropy_node</i>	0.910*	0.587*	0.781*	-0.115*	1

\* Correlation is significant at the 0.01 level (2-tailed).

ANOVA tests were conducted to examine whether variety seeking intensity varied among cruiser segments with different levels of variety seeking tendency. First, the brand level variety seeking intensity was not applicable to enthusiasts since they never switched cruise line.

For other cruise passengers, according to the results shown in Table 2.10, loyalists had the highest variety seeking intensity, as their entropy of variety seeking nodes was the smallest (0.509); they also had the smallest variety seeking node number (2.027), the smallest standard deviation of locations of variety seeking behaviors (0.136), and the smallest standard deviation of locations of variety seeking nodes (0.116). Two-branders had the lowest variety seeking intensity, because their entropy of variety seeking nodes (0.910) were the largest among all cruiser segments. They also had the largest count of variety seeking nodes (3.308).

**Table 2.10: Comparisons of Variety Seeking Intensity by Cruiser Segments**

Variety Seeking Intensity Indicators	Cruiser Segments				F
	<i>Enthusiast</i>	<i>Loyalist</i>	<i>2-Brander</i>	<i>Explorer</i>	
<i>Ct_nodes</i>	0	2.027 <sup>a</sup>	3.308 <sup>b</sup>	2.927 <sup>c</sup>	33.920*
<i>SD_Loc_VS</i>	-	0.136 <sup>a</sup>	0.249 <sup>b</sup>	0.277 <sup>c</sup>	238.734*
<i>SD_Loc_node</i>	-	0.116 <sup>a</sup>	0.213 <sup>b</sup>	0.208 <sup>b</sup>	63.539*
<i>Ave_Len_node</i>	-	1.806 <sup>a</sup>	2.617 <sup>b</sup>	4.336 <sup>c</sup>	242.503*
<i>Entropy_node</i>	-	0.509 <sup>a</sup>	0.910 <sup>b</sup>	0.767 <sup>c</sup>	38.961*

Note: Enthusiasts were excluded from ANOVA because their data was invariant or missing. Tukey HSD tests were conducted to test the significance of differences between two groups. In each row, if the means have different superscripts, they are significantly different with each other. \* p < 0.01

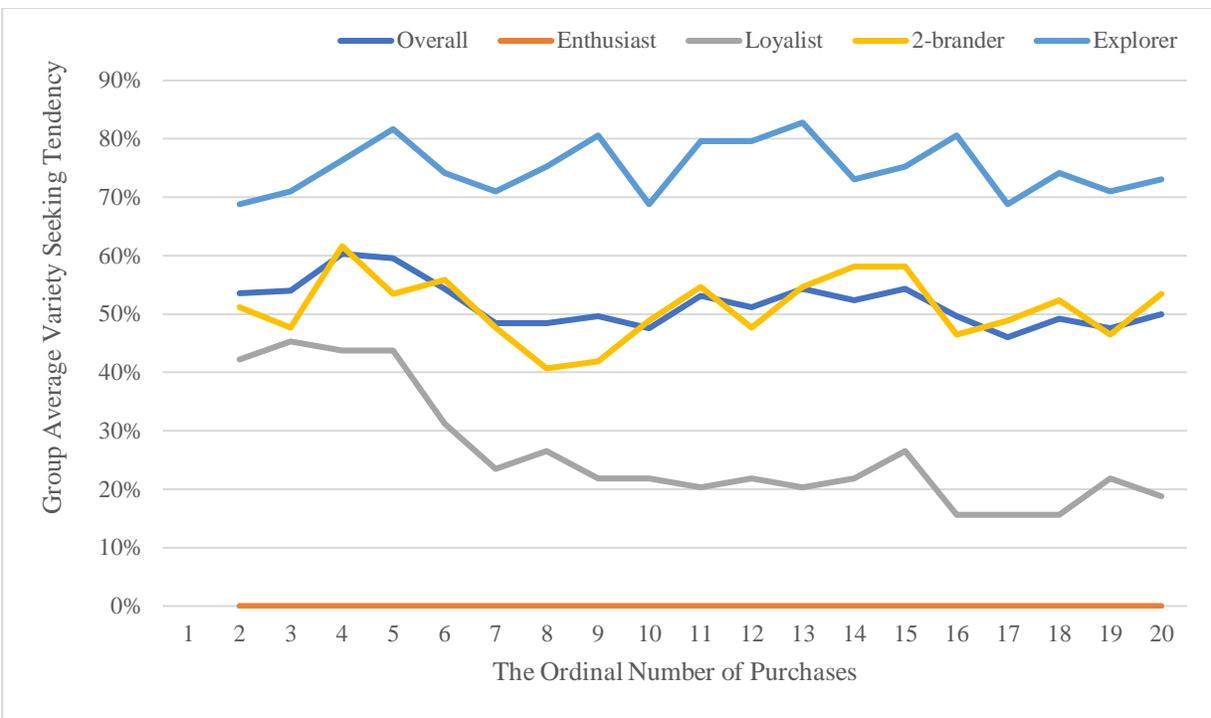
Compared to two-branders, explorers had significantly larger standard deviation of locations of variety seeking behaviors (0.277 vs. 0.249), suggesting that their individual variety seeking behaviors were more scattered throughout the whole choice sequence. But their variety seeking node number was significantly smaller than that of two-branders (2.927 vs. 3.308), and the average length of their variety seeking nodes was significantly larger than that of two-

branders (4.336 vs. 2.617), indicating that their individual variety seeking behaviors clustered around fewer number of variety seeking node centers. Consequently, their entropy of variety seeking nodes was significantly smaller than that of two-branders (0.767 vs. 0.910).

#### **2.5.4 Variety Seeking Temporal Patterns by Variety Seeking Segments**

The fourth research question examined how cruisers' variety seeking tendency changed over time, namely the variety seeking temporal pattern. Again, this research focused on the variety seeking temporal pattern that customers exhibited in the first twenty purchases ( $Time_t \leq 20$ ), and only the data of customers who had made at least twenty purchases was used in the following analyses. First, a regression analysis was conducted, where variety seeking tendency ( $VST_{brand}$ ) was the outcome variable and the ordinal number of cruises ( $Time_t$ ) was the predictor. The regression results found a significant negative overall relationship between  $VST_{brand}$  and  $Time_t$  ( $\beta = -0.004$ ,  $t = -2.707$ ,  $p = 0.015$ ), suggesting that variety seeking tendency reduced as customers made more times of purchases. Next, the segment-level variety seeking temporal pattern was investigated, except for enthusiasts whose variety seeking tendency is 0 by definition. Linear regression results suggested that variety seeking tendency significantly decreased over time for loyalists ( $\beta = -0.015$ ,  $t = -6.148$ ,  $p < 0.001$ ), but there was no significant linear change in variety seeking tendency for two-branders ( $\beta = 0.000$ ,  $t = -0.068$ ,  $p = 0.947$ ) and explorers ( $\beta = 0.000$ ,  $t = 0.038$ ,  $p = 0.970$ ). Figure 2.4 below visualizes the changes of variety seeking tendency over time by segments. From this figure, several non-linear variety seeking temporal patterns were observed. First, the average variety seeking tendency of two-branders and explorers both seemed to change periodically. Compared to explorers, two-branders seemed to have a longer change period (approximately 9 vs. 4 purchases) and a larger change

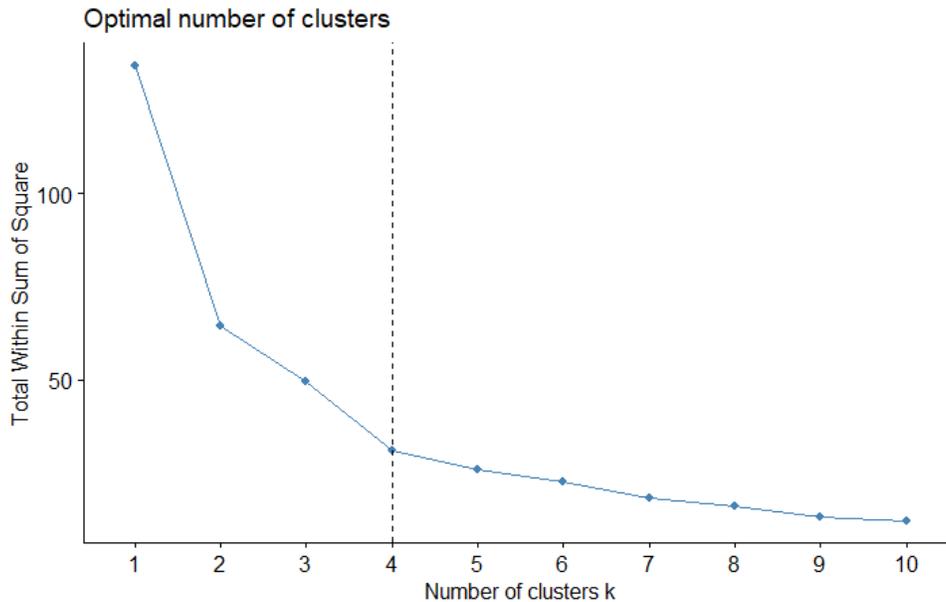
amplitude (approximately 10% vs. 5%). Second, the average variety seeking tendency of loyalists seemed to drop rapidly from 40% to about 20% during the first ten purchases but maintain around 20% during the second ten purchases. Regression results verified that the average variety seeking tendency of loyalists significantly decreased during the first ten purchase ( $\beta = -0.034$ ,  $p = 0.001$ ), but the change during the second ten purchase was insignificant ( $\beta = -0.004$ ,  $p = 0.324$ ).



**Figure 2.4: Change of Variety Seeking Tendency over Time by Segments**

Next, I continued to explore the individual-level variety seeking temporal patterns by examining how individual cruisers' variety seeking tendency changed before vs. after the fifth cruise (during vs. after the initial consumption stage). A K-means cluster analysis was conducted to segment the 653 cruisers who had taken at least ten cruises, where  $VST_5$  and  $VST_{5+}$  were used

as the clustering variables. The elbow method was applied to determine the optimal number of clusters. The elbow curve reported from R (see Figure 2.5) suggested that the optimal number of clusters was 4, i.e. K should be set as 4 in the cluster analysis.



**Figure 2.5: The Optimal Number of Variety Seeking Temporal Patterns**

Table 2.11 reports the means of clustering variables at the final cluster centers, indicating four meaningful variety seeking temporal patterns. More specifically, cruisers in cluster 1 sought variety at a low level in both before (6.6%) and after (12.0%) the fifth cruise. I labeled this cluster the “*Low-Low*” variety seeking temporal pattern. Cruisers in cluster 2 sought variety at a low level in the first five cruises (11.4%) but increased their variety seeking tendency to a high level after the fifth cruise (61.0%). I called this cluster the “*Low-High*” variety seeking temporal pattern. Cluster 3 was named as the “*High-Low*” variety seeking temporal pattern, as cruisers in this cluster sought more variety in the first five cruises (68.2%) but less after the fifth cruise (30.8%). Cruisers in cluster 4 sought variety at a high level in both before (77.6%) and after

(73.7%) the fifth cruise. I labeled this cluster the “*High-High*” variety seeking temporal pattern. Among the 653 cruises who had taken ten or more cruises, there were 121 cruisers followed the “*Low-Low*” variety seeking temporal pattern, 101 followed the “*Low-High*” pattern, 180 followed the “*High-Low*” pattern, and 251 followed the “*High-High*” pattern.

**Table 2.11: Means of the Clustering Variable at Final Cluster Centers**

Clustering Variables	Clusters				F	P
	1 (n <sub>1</sub> =121)	2 (n <sub>2</sub> =101)	3 (n <sub>3</sub> =180)	4 (n <sub>4</sub> =251)		
VST <sub>5</sub>	0.066	0.114	0.682	0.776	703.227	0.000
VST <sub>5+</sub>	0.120	0.610	0.308	0.737	634.947	0.000

The crosstab below (see Table 2.12) exhibits the frequency distribution of variety seeking temporal patterns by cruiser segments. The Fisher’s exact test result ( $p < 0.001$ ) suggested that individual-level variety seeking temporal patterns were significantly associated with cruiser segments. As shown in the table, all *enthusiasts* followed the *Low-Low* variety seeking temporal pattern and kept their variety seeking tendency at 0, whereas a vast majority of *explorers* (95.2%) followed the *High-High* variety seeking temporal pattern and maintained their variety seeking tendency at a high level both during and after the initial consumption stage. For *loyalists*, 40.3% sustained their variety seeking tendency at a low level both before and after the fifth cruise, 43.2% reduced their variety seeking tendency from a high level to a low level, and 16.5% increased it from a low level to a high level. For *two-branders*, 30.4% retained their variety seeking tendency at a high level both before and after the fifth cruise, 43.3% reduced their variety seeking tendency from a high level to a low level, and 26.3% increased it from a low level to a high level.

**Table 2.12: Association between VS Temporal Patterns and Cruiser Segments**

Variety Seeking Temporal Patterns	Cruiser Segments				Total
	Enthusiast	Loyalist	2-Brander	Explorer	
<i>Low-Low</i>	50	71	0	0	121
<i>Low-High</i>	0	29	63	9	101
<i>High-Low</i>	0	76	104	0	180
<i>High-High</i>	0	0	73	178	251
Total	50	176	240	187	653

### 2.5.5 Dissimilarity of Contiguous Choices by Variety Seeking Segments

Among the 13,073 cruise choices where *Diff<sub>tier</sub>* were identifiable in this study, there were 6,163 choices in which users sought variety by switching cruise lines. Among them, 2,190 were switches between similar cruise lines in terms of tiers, 2,068 were switches to a higher-tier cruise line, and 1,905 were switches to a lower-tier cruise line. Table 2.13 is a crosstab of the tier of the last cruise choice (*tier<sub>t-1</sub>*) by that of the current cruise choice (*tier<sub>t</sub>*). Results of McNemar-Bowker test ( $\chi^2 = 10.596$ ,  $df = 6$ ,  $p > 0.05$ ) indicated that this crosstab is symmetric, meaning that the likelihood of switching to a superior cruise line and that of switching to an inferior cruise line was not significantly different.

**Table 2.13: Crosstab of  $tier_{t-1}$  by  $tier_t$  (N = 6163)**

$tier_{t-1}$	$tier_t$				Total
	1	2	3	4	
1. Contemporary	1282 (45.1%)	1335 (47.0%)	127 (4.5%)	96 (3.4%)	2840
2. Premium	1248 (50.8%)	777 (31.6%)	289 (11.8%)	145 (5.9%)	2459
3. Deluxe	126 (24.1%)	254 (48.6%)	67 (12.8%)	76 (14.5%)	523
4. Luxury	76 (22.3%)	118 (34.6%)	83 (24.3%)	64 (18.8%)	341

Next, I examined whether users with higher variety seeking tendency levels were more likely to switch to more dissimilar brands in terms of tiers. ANOVA was conducted to compare the mean of the absolute value of  $Diff_{tier}$  across different variety seeking tendency segments. The mean of the absolute value of  $Diff_{tier}$  for loyalists, two-branders, and explorers were 0.676, 0.746, and 0.849, respectively. The overall mean difference was significant ( $F = 25.346$ ,  $df_1 = 2$ ,  $df_2 = 6160$ ,  $p < 0.001$ ). Tukey HSD post hoc test results further indicated that loyalists were the most likely to switch to similarly priced brands, while explorers were the most likely to switch to dissimilarly priced brands. To conclude, cruisers with higher variety seeking tendency were more likely to switch to dissimilar cruise lines in terms of price and quality levels.

## 2.6 Conclusions and Discussion

Collecting cruise history data from 978 users of Cruise Critic, this research attempted to segment cruise passengers by their variety seeking tendency. The conclusions of this study are as follows: First, using variety seeking tendency the segmentation basis, this study identified four different cruiser segments, which were significantly associated with the variety seeking patterns

reflected by the relative frequency of each chosen brand. *Enthusiasts* were the purest loyal customers who only cruised with one preferred cruise line; *loyalists* had a preferred cruise line, but switched to other lines occasionally; *two-branders* had relatively high variety seeking tendencies, but they often switched between two preferred cruise lines; *explorers* had the highest variety seeking tendencies and kept switching among diverse cruise lines. Second, cruisers' initial variety seeking segment determined by their first five cruise choices was significantly associated with their eventual variety seeking segment as well as their subsequent variety seeking tendency. Third, among customers who had switched brand at least once, loyalists had the highest variety seeking intensity, whereas two-branders had the lowest variety seeking intensity. Fourth, the average variety seeking tendency of loyalists reduced rapidly during the first ten purchases and maintained stable during the second ten purchases; the average variety seeking tendency of two-branders and explorers changed periodically. Fifth, cruisers with higher variety seeking tendency were more likely to switch to dissimilar cruise lines in terms of price levels. Theoretical and practical implications, as well as limitations and future research, are discussed below.

### **2.6.1 Theoretical Implications**

There are studies suggesting that, for infrequently purchased experiential products such as holiday vacations, the impact of customer satisfaction on customer choice behaviors is moderated by customer variety seeking tendency (García et al., 2012). In the tourism field, Decrop (1999) emphasized the difference in decision-making between variety seekers and brand loyalists, but the boundary between these two customer groups was ambiguous. This study contributes to the tourism literature by developing a segmentation scheme that classifies travelers

into four distinct groups based on their variety seeking tendency. Under this scheme, brand loyalists in Decrop's dichotomy are further divided into *enthusiasts* who never seek variety and *loyalists* who choose the preferred brand in most situations but switch brands occasionally; variety seekers are further divided into *two-branders* who prefer two or more brands and *explorers* who keep trying different brands.

Research on variety seeking has yet to examine the relationships between variety seeking tendency and variety seeking patterns. This study contributes to the variety seeking literature by exploring and revealing significant associations between variety seeking tendency and patterns. First, this study finds that variety seeking tendency is linked with variety seeking patterns reflected by the relative frequency of each chosen brand. Specifically, lower variety seeking tendency is paired with a smaller-sized consideration sets as well as stronger preferences for a favorite brand. This association is aligned with Simonson's (1990) finding that customers seek more variety when a larger number of items are included in the choice set. Second, this study reveals that customers' variety seeking intensity is associated with their variety seeking tendency levels. Specifically, loyalists who have low variety seeking tendency seek variety the most intensively, while two-branders who have moderate likelihood of switching brands show the lowest variety seeking intensity. Third, this study verifies that for many customers, their variety seeking tendency is not stable but variable over time. Bawa (1990) found that, when customers buy frequently purchased products (e.g., facial tissue, paper towels, cereal), their variety seeking tendency first decreases as customers become more familiar with a brand and then increases as they start to feel satiated by repeatedly purchasing the same brand. Using leisure cruising as the context, this study finds that when purchasing low-frequency experiential products, the most loyal patrons never switch brands and thus their variety seeking tendency is consistent at zero.

The average variety seeking tendency of loyalists declines rapidly during the first ten purchases. Two-branders and explorers periodically change their probabilities of seeking variety. This study also identified four individual-level variety seeking temporal patterns, which are also significantly associated with the variety seeking tendency levels. Lastly, this study finds that customers with higher variety seeking tendency are more likely to switch to brands that are dissimilar in product attributes such as price and quality levels. This might be because that the larger dissimilarity between consecutive items can offer consumers more variety (Pessemier, 1985).

The significant associations between variety seeking tendency and variety seeking patterns suggest that it might be necessary to control for factors indicating variety seeking patterns when predicting customer variety seeking tendency. Such factors include but are not limited to the relative frequency of chosen brands or brand preference, variety seeking intensity or the variance of variety seeking behaviors, the total number of purchases or brand familiarity, and the degree of dissimilarity between available choice options.

### **2.6.2 Managerial Implications**

This study also provides managerial insights to practitioners in the cruise industry. To identify loyal patrons, most cruise lines have developed their own rewards programs, which were largely based on cruiser repurchase frequency during a certain period of time. But given the infrequent nature of cruising consumption (Deloitte, 2018), cruise lines may need years to collect sufficient data points to identify loyal customers. For example, under the VIFP Club program of Carnival Cruise Line, passengers earn 1 point for each night on a Carnival cruise, but need 75 points to become a platinum member. Given that repeat guests of Carnival return to the brand

between 12 and 25 months (Applegate et al., 2005) and the average cruise length is about 7.3 days (FCCA, 2016), Carnival may need more than a decade to assign loyal patrons to platinum membership. This example suggests that current rewards programs may not be efficient in identifying behaviorally loyal customers.

The newly developed variety seeking segmentation in this study offers cruise lines a more efficient alternative. The initial variety seeking segment of a customer, which was determined by the information obtained from his or her first five cruise choices (the initial consumption stage), can reliably predict his or her final variety seeking segment, an indicator of behavioral loyalty. More specifically, initial enthusiasts had 80% likelihood of continuing to be loyal to a preferred cruise line. Thus, little promotional effort would be needed to retain this group of cruisers, but offering differential benefits to these prequalified loyal customers might enhance their cruising experience and reinforce their loyalty. Fifty percent of the initial loyalists segment stayed as loyalists, and 41% turned into two-branders. To prevent this group of cruisers from gaining preference for competing brands and thus switching away, intensive promotional efforts might be delivered to them as early as possible. Initial two-branders or explorers had relatively low chances of becoming loyalists (28% and 12% respectively), suggesting that it might not be worthwhile for cruise lines to invest in retaining these customers.

This study also found that loyalists reduced their variety seeking tendency from about 40% to about 20% during the first ten cruises, but their variety seeking tendency maintained around 20% in the second ten cruises. A possible explanation for this temporal pattern might be that loyalists gradually gain brand familiarity during the first ten purchases and thus become more loyal to their preferred brand. It is notable that the initial variety seeking tendency of loyalists was not low (about 40%). Therefore, cruise lines might want to deliver loyalists high

quality services and attractive marketing promotions to strengthen their brand preference as early as possible. On the other hand, their intentions of repurchasing the preferred cruise line would increase over time, suggesting that only little marketing effort might be needed to retain loyalists during their mature consumption periods.

This research also found that cruisers with different levels of variety seeking tendency exhibited different variety seeking patterns of switching to similar vs. dissimilar alternative brands. In the cruise industry, cruise lines are commonly categorized by price levels (Kwortnik 2006). For example, Carnival, Royal Caribbean, and Norwegian are mass-market lines that offer customers basic cruising experiences at low prices, while SilverSea, Seabourn, and Crystal are luxury cruise lines that provide pampered cruising experiences but charge high rates. When switching cruise lines, customers with lower variety seeking tendency such as loyalists were more likely to switch to similar brands at the same price level, while customers with higher variety seeking tendency such as explorers were more likely to switch to dissimilar brands across price levels. Thus, for travel agents selling cruise products of various price levels, it might be reasonable to promote disparate alternative cruise products to explorers, but the same products or similar alternatives to loyalists.

### **2.6.3 Limitations and Future Research**

A limitation of this study was the data. First, although Cruise Critic is a leading cruise review website, it is unknown whether users represent the cruiser population. In addition, this study only focused on the fifteen popular cruise lines in the North American market. It remains unknown whether cruisers of other cruise lines or in other regions exhibit different variety seeking tendencies or patterns. Collecting data from other sources or regions might make

empirical tests in this study more robust. Moreover, users included in this study only provided their cruise choice histories. Thus, it was not possible to relate variety seeking segments to certain demographic or psychological features. If this information were known, more detailed managerial implications would be provided. This limitation suggested a potential direction for future research.

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## CHAPTER 3

### BRAND PRICE TIER AND BRAND SWITCHING: THE ROLE OF INTERPURCHASE TIME

#### ***3.1 Introduction***

Understanding customer brand switching behavior is important for predicting customer choice decisions and effectively allocating limited marketing resources to the most profitable market segments. Marketing scholars have uncovered many factors that can drive customers to seek variety and switch brands (Kahn, 1995; McAlister and Pessemier, 1982), such as dissatisfaction (Inman and Zeelenberg, 2002), change in marketing mix (Kahn and Louie, 1990; Zhu and Ratner, 2015), environmental cues (Levav and Zhu, 2009; Mitchell, Kahn, and Knasko, 1995), sense of control (Huang and Dong, 2019; Yoon and Kim, 2018), feeling of satiation (Raju, 1980; Sevilla, Lu, and Kahn, 2019), and uncertainty for future preferences (Read and Loewenstein, 1995; Simonson, 1990). However, research has not examined whether the price tier of a brand chosen in the previous purchase is associated with the current brand-switching decision.

The relationship between brand price tier and the brand switching decision is complicated. On the one hand, higher-priced brands offer customers superior quality and greater value (Quelch, 1987; Vigneron and Johnson, 2004; Wiedmann, Hennigs, and Siebels, 2009), which in turn may enhance customer satisfaction and then reduce customer brand switching tendency. This process indicates a potential negative effect of brand price tier on brand

switching, mediated by quality and satisfaction. On the other hand, customers choosing higher priced brands may have stronger buying power and can afford and consider more alternatives. Because customers with larger consideration sets tend to seek more variety (Roberts and Lattin, 1997; Sivakumaran and Kannan, 2002; Wirtz and Mattila, 2003), customers choosing higher- vs. lower-priced brands might be more likely to switch. This process suggests a potential positive effect of brand price tier on brand switching, mediated by consideration set size. It is unknown through which psychological processes brand price tier exerts a stronger influence on brand switching decision. The first objective of this research, therefore, is to examine the total effect of brand price tier on brand switching decisions.

Another factor that has received little research attention is the direct effect of interpurchase time on brand switching. Only two studies investigated this issue, which arrived at conflicting conclusions (Kuehn, 1958; Morrison, 1966). On the other hand, research has also yet investigated the potential moderation effect of interpurchase time on the influence of brand price tier on brand switching decisions. For example, research has reported that interpurchase time is negatively associated with customer variety seeking tendency (Chintagunta, 1999; McAlister and Pessemier, 1982), which in turn moderates the effect of satisfaction on brand switching (Jung and Yoon, 2012) and is positively related to consideration set size (Tuu and Olsen, 2013). The second objective of this research is to verify this potential moderation effect of interpurchase time.

## ***3.2 Literature Review***

### **3.2.1 Brand Price Tier, Quality/Satisfaction, and Brand Switching**

The price tier of a brand, as the name implies, is determined by the price range of

products that the brand offers. In the marketing literature, there is abundant research discussing the relationship between product price and product quality (Monroe and Krishnan, 1985; Zeithaml, 1988). Some scholars claimed that price is a powerful factor of determining how customers perceive brand quality, especially in the absence of other cues (McConnell, 1968; Rao and Monroe, 1989; Tull, Boring, and Gonsior, 1964). They concluded that, in general, higher priced products and brands are often perceived as having higher quality (Monroe and Krishnan, 1985; Olson, 1977; Scitovszky, 1944). Other scholars, however, challenged the existence of such a generalized price-quality relationship (Gerstner, 1985; Lichtenstein and Burton, 1989; Zeithaml, 1988). For example, Gardner (1971) found that when other information cues such as brand names were introduced, the overall association between price and perceived quality became weak. Swan (1974) found that the positive price-quality association was significant for manufacturer brands but not for retailer brands. Peterson (1970) showed a non-linear price-perceived quality relationship. Peterson and Jolibert (1976) found the price-perceived quality relationship was variable across different nations.

More importantly, a handful of studies have consistently demonstrated that the price-quality relationship varies across product categories (Gerstner, 1985; Lichtenstein and Burton, 1989; Sproles, 1977). For example, Sproles (1977) assessed the price-quality relationship for 135 product categories, finding it to be positive in 51% of categories, negative in 14%, and non-significant in 35%. Similarly, Gerstner (1985) examined the association between price and quality for 145 products and found it to be generally weak and product-specific. Lichtenstein and Burton (1989) found the price-perceived quality relationship was stronger for nondurable products than for durable products, and Völckner and Hofmann (2007) further found this relationship was weaker for services than for tangible products. This empirical evidence

highlights that, when discussing the price-quality association, scholars must consider their research contexts.

This research uses leisure cruising as the research context. In the cruise industry, price is purported to be positively correlated with service quality. Cruise lines can be categorized into three tiers based on price levels: standard, premium, and luxury (Sun, Xu, and Kwortnik, 2021). Among them, standard cruise lines are the least-expensive brands, providing basic services to customers; premium cruise lines charge higher prices and offer higher-quality services; luxury cruise lines are the most expensive but deliver services of the highest quality (Niavis and Tsiotas, 2018). Scholars and industry experts have also developed other classification schemes with more price tiers (Gross and Lueck, 2011). For examples, Kwortnik (2006) categorized cruise lines into contemporary, premium, luxury, and specialty; DBV Bank (2006) classified cruise lines into five price tiers, including budget, contemporary, premium, luxury, and ultra luxury. Based on expert recommendations, this research classified cruise lines into contemporary, premium, deluxe, and luxury (see Table 3.1).

Besides better-quality, higher-priced brands may provide customers other add-on value. For example, Wiedmann et al. (2009) proposed that luxury brands offer customers not only quality but also uniqueness, self-identity, hedonism, materialism, conspicuousness, and prestige value. Enhanced perceived value can lead to higher customer satisfaction (Eggert and Ulaga, 2002; Pandža Bajš, 2015; Shukla, 2010). Therefore, customers choosing higher-priced brands should have higher satisfaction. Research in the cruise industry has provided empirical evidence to support this proposition. According to the cruise satisfaction report published by J.D. Power and Associates (2013), cruise passengers showed higher average satisfactions with higher-priced premium brands (840) than with lower-priced contemporary brands (822). The specific

satisfaction score of each cruise line is listed in Table 3.1.

Furthermore, research has long shown that quality and satisfaction are negatively related to customer brand switching intentions and behaviors (Athanassopoulos, Gounaris, and Stathakopoulos, 2001; Zeithaml, Berry, and Parasuraman, 1996). This study, therefore, proposes that brand price tier should have a negative effect on brand switching, which is mediated by product quality and customer satisfaction.

### **3.2.2 Brand Price Tier, Consideration Set Size, and Brand Switching**

Some marketing research has observed that customers often follow a consider-then-choose process when making choice decisions, i.e. first forming a consideration set and then choosing from among considered products (Gensch, 1987; Hauser, 2014; Payne, 1976). The consideration set, also called the evoked set, refers to the set of brands that a customer brings to mind on a particular choice occasion (Nedungadi, 1990). It evolves from the awareness set—the set of brands of which the customer is aware—and consists of accessible, goal-satisfying alternatives (Narayana and Markin, 1975; Shocker et al., 1991). During the process of consideration set formation, customers may start with a group of possible solutions based on their past brand experience (Lapersonne, Laurent, and Goff, 1995). Notably, recently encountered brands are more likely to be included in the initial consideration set, because they are more accessible from memory (Kardes et al., 1993). Then, customers tend to use key product attributes as heuristic decision rules to adjust their consideration sets (Hauser, 2014). For example, they may use product price as a heuristic criterion to efficiently exclude unaffordable brands from their consideration sets. By comparing the marginal expected benefits of including an additional brand and the associated costs of consideration, customers finally determine the

optimal size of their consideration sets, i.e., how many brands to keep in the consideration set for further evaluation (Hauser, 2014; Hauser and Wernerfelt, 1990; Roberts and Lattin, 1991).

Empirical studies have identified many factors influencing the consideration set size, such as product knowledge (Rortveit and Olsen, 2007; Wirtz and Mattila, 2003), customer involvement (Divine, 1995), perceived risks (Gronhaug, 1973), perceived inconvenience (Rortveit and Olsen, 2009), time pressure (Gronhaug, 1973), usage contexts (Aurier, Jean, and Zaichkowsky, 2000), and latitudes of acceptance for product attributes and price (Divine, 1995). Among them, the latitude of acceptance for price is positively related with the consideration set size (Divine, 1995). Compared to customers choosing lower-priced brands, those choosing higher-priced brands are likely to have stronger buying power. Their latitudes of acceptance for price should be wider, and thus the size of their consideration sets may be larger. That is to say, brand price tier should be positively associated with consideration set size.

Moreover, the number of within-brand alternatives may also affect the consideration set size. Customers can seek variety at both the product attribute level and the brand level. But when a single brand offers only a limited number of alternatives, customers may not be able to fulfill their needs for variety by choosing different products of this brand (Inman, 2001). As a consequence, they are likely to include more brands in their consideration sets. For example, in the U.S. cruise market, higher priced cruise lines have smaller sized-fleets and departures from fewer domestic ports (see Table 3.1), providing a limited number of within-brand alternatives to American customers. Imagine that a customer is selecting five different cruise ships to evaluate for his summer cruise vacation. If he prefers contemporary cruises, it is possible that he only considers Carnival, because this line has as many as twenty-five vessels. However, if he prefers luxury cruises, it is impossible that he only considers Crystal, given the fact that Crystal only

operates four cruise ships. Therefore, customers choosing higher-priced cruise lines may include more brands in their consideration sets.

**Table 3.1: Some Basic Information of Price Tiers of Cruise Lines**

<b>Cruise Lines <sup>a</sup></b>	<b>Cruise Price <sup>b</sup></b>	<b>Fleet Size <sup>c</sup></b>	<b>U.S. Departure Ports # <sup>c</sup></b>	<b>Satisfaction Scores <sup>d</sup></b>
<i>Contemporary</i>				
Carnival	71.8	25	15	810
RCI	100.0	26	15	838
Norwegian	124.8	18	12	817
<i>Premium</i>				
HAL	136.6	11	6	871
Princess	140.8	15	6	826
Disney	195.9	5	7	835
Celebrity	198.0	15	10	828
<i>Deluxe</i>				
Cunard	216.1	3	4	
Azamara	248.0	4	1	
Oceania	255.7	6	5	
Viking	405.0	8	4	
<i>Luxury</i>				
Seabourn	334.6	6	5	
Crystal	377.7	4	5	
SilverSea	406.7	10	6	
Regent	437.4	5	5	

<sup>a</sup> Members in each price tier of cruise lines were determined by industry experts via interviews.

<sup>b</sup> Cruise prices are in USD and indicate the average prices per person per day of cruise lines. They were estimated and reported by Espinet, Gassiot-Melian, and Rigall-I-Torrent (2020). Multiple product attributes were controlled for in this estimation, including cruise company, trip length, cabin, travel month, departure port, passenger/crew ratio, space/passenger ratio, laundry service, library, swimming pools, and ship antiquity.

<sup>c</sup> Data of the fleet size and the number of U.S. departure ports of cruise lines were collected from the official website of cruise lines.

<sup>d</sup> Satisfaction scores were reported by J.D. Power and Associates (2013), based on survey data collected from 3003 cruise passengers. The scores were measured using a 1000-point scale, where 1000 represented the highest satisfaction. No score was reported for luxury lines.

Research has shown that customers with larger consideration sets tend to seek more variety. For example, when choosing food products, customers are more likely to seek variety if a relatively large number of well-liked alternatives are available (Van Trijp, 1994). Scholars

explained that larger consideration set size can decrease customer-perceived cost for switching brands and thus impair customer loyalty (Wirtz and Mattila, 2003). Moreover, larger consideration sets may be associated with higher objective product knowledge, which can induce brand switching behaviors and reduce loyalty to a particular service provider (Wirtz and Mattila, 2003). In summary, this research proposes that brand price tier also has a positive effect on brand switching, which is mediated by consideration set size.

### **3.2.3 The Role of Interpurchase Time**

A few empirical studies have examined how interpurchase time directly influences customer choice behaviors (Kuehn, 1958; Morrison, 1966), but conflicting conclusions were provided. Specifically, Kuehn (1958) observed over a broad range of product categories that customers became less likely to repurchase the same brand as the interpurchase time increased. But using consumer panel data in the coffee market, Morrison (1966) found that interpurchase time did not have a significant impact on repurchase behaviors. The direct effect of interpurchase time on brand switching behaviors, therefore, remains unclear.

Besides directly affecting brand switching behaviors, interpurchase time may also moderate how other factors influence brand switching, including satisfaction and consideration set size. In general, interpurchase time is negatively related to customer variety seeking tendency (Chintagunta, 1999; McAlister and Pessemier, 1982). As interpurchase time increases, customers' feeling of satiation may dwindle, which in turn diminishes their variety seeking tendency. A handful of research has shown that variety seeking tendency can weaken the effect of satisfaction on customer choice behaviors (Bigné, Sánchez, and Andreu, 2009; García et al., 2012; Jung and Yoon, 2012). For example, Jung and Yoon (2012) found that the total effect of

satisfaction on switch intention was significant and negative for customers with low variety seeking tendency, but it was insignificant for customers with high variety seeking tendency. On the other hand, research has found that high variety seeking tendency can lead to enlarged consideration sets (Tuu and Olsen, 2013), which in turn may drive more brand switching behaviors.

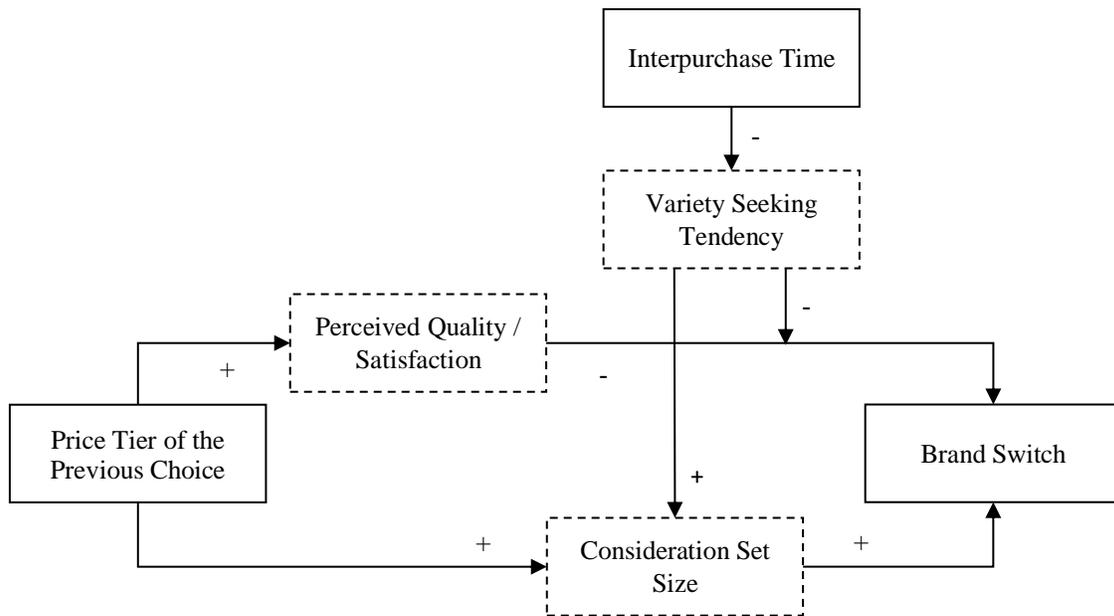
According to the aforementioned literature related to the impact of variety seeking tendency on satisfaction and consideration set size, the following arguments can be made. When customers possess higher variety seeking tendency induced by a relatively short interpurchase time, the negative effect of brand price tier on brand switching via satisfaction would diminish; in turn, the positive effect of brand price tier on brand switching via consideration set size may grow, as consideration sets may expand due to the high variety seeking tendency. Thus, the combined effect of brand price tier on brand switching may be positive when the interpurchase time is relatively short.

On the contrary, when customers exhibit a lower variety seeking tendency caused by a relatively long interpurchase time, the negative effect of brand price tier on brand switching via satisfaction should remain unchanged; however, the positive effect of brand price tier on brand switching via consideration set size may weaken, as consideration sets may shrink due to the low variety seeking tendency. The reason why the consideration sets shrink is that customers with a low variety seeking tendency may minimize their consideration set size to simplify their choice processes (Rortveit and Olsen, 2007). Hence, the total effect of brand price tier on brand switching is likely to be negative when the interpurchase time is relatively long. Based on the above arguments, two hypotheses are proposed as follows.

H<sub>1</sub>: When interpurchase time is relatively short, customers choosing brands with higher price tier in the previous purchase are more likely to switch brands.

H<sub>2</sub>: When interpurchase time is relatively long, customers choosing brands with higher price tier in the previous purchase are less likely to switch brands.

The framework of this research is summarized in Figure 3.1, where solid line boxes represent behavioral variables that can be measured with the choice data in this research, while the dotted line boxes represent psychological variables missing from the choice dataset. The +/- signs next to arrows indicate the theoretical directionalities of the corresponding casual relationships or moderation effects. In the next section, the dataset and method used for testing the hypotheses of this research are introduced.



**Figure 3.1: Research Framework of Chapter 3**

### 3.3 Method

#### 3.3.1 Dataset and Variables

To examine the proposed hypotheses, this research used the same nested data in the Chapter 2 that contained the information of 15,166 purchases made by 978 cruise customers. The number of purchases made by an individual customer ranged from 5 to 70, and its average was 15.51. In this sample, customers mainly chose from among fifteen “popular” cruise lines in the U.S. cruise market, which were categorized into four price tiers. Among them, Carnival, RCI, and Norwegian were contemporary cruise lines, HAL, Princess, Disney, and Celebrity were premium cruise lines, and Cunard, Azamara, Oceania, and Viking were deluxe cruise lines, and Seabourn, Crystal, SilverSea, and Regent were luxury cruise lines. On only 754 (4.97%) purchase occasions did customers choose less popular brands, whose price tiers were unidentifiable.

In the raw data of this research, there were four key variables.  $ID_i$  represented the ID of customer  $i$ . Brand switching decision (denoted as  $BS_{it}$ ) was the dependent variable. It was a binary variable indicating whether customer  $i$  switched brands in the current purchase or not.  $BS_{it}$  was set to 1 if customer  $i$ 's brand choice in the current purchase was different from that in the previous purchase and 0 otherwise. The price tier of the brand that customer  $i$  chose in the previous purchase (denoted as  $Tier_{i(t-1)}$ ) was the predicting variable. It was defined as a four-point interval variable, where 1 represented contemporary cruise lines, 2 represented premium cruise lines, 3 represented deluxe cruise lines, and 4 represented luxury cruise lines. This coding should be reasonable, as the average daily prices of contemporary, premium, deluxe, and luxury cruise lines were 99, 168, 281, and 389 dollars per night, respectively (see Table 3.1), whose ratio was

about 1:2:3:4.  $Tier_{i(t-1)}$  was defined as missing if customer  $i$  chose a brand other than the fifteen “popular” cruise lines in the previous purchase.

Interpurchase time (denoted as  $Interval_{it}$ ) was the other predicting variable in this research. It indicated the time interval in years between customer  $i$ 's current purchase and previous purchase. Notably, customers in this research only reported the year of their cruise purchases, but many of them took multiple cruises in a single year. To calculate the distance between consecutive purchases in the same year, it is necessary to make assumptions on how these purchases distribute within the year. This research presumed that (1) the distance from the year start to the first purchase of the year was equal to the distance from the last purchase of the year to the year end, and (2) if two or more purchases were made in the same year, the distance between any two consecutive purchases was the same as the distance from the year start to the first purchase. Let the total number of purchases that a customer made in a given year to be  $n$  ( $n \geq 1$ ). Then, under the above two assumptions, the  $m^{\text{th}}$  ( $m \leq n$ ) purchase of the year was made when  $\frac{m}{n+1}$  of this year had passed. For example, imagine that customer  $i$  had made three cruise purchases, among which one was made in 2018 and two were made in 2019. Based on the above formula, the time of his first, second, and third purchase being made should be 2018.50, 2019.33, and 2019.66, respectively. Thus, the time interval between his first and second purchase was 0.83 years, and that between his second and third purchase was 0.33 years.

### 3.2.2 Data Preparation

This section introduces how the data was cleansed and transformed before statistical analyses. The first objective of this research is to use the price tier of the previously chosen brand to predict the current brand switching decision. However, there were two situations in which this

key predictor's information was missing: (1) when customers were making their first purchase and (2) when the previously chosen brand was not one of the fifteen "popular" cruise lines, and thus its price tier was unidentifiable. This study contained 1,651 such purchase occasions, which were excluded from the following data analyses. Two customers who chose less-popular cruise lines throughout their purchase history were also excluded. Next, 452 extreme outliers were identified and then removed, where interpurchase time exceeded 3 years (three times the interquartile range above the third quartile) .

An important step in the data preparation process was centering the continuous predicting variables. Centering was necessary in this research, because the same value of a predicting variable might have different connotations in eyes of different customers. For example, passengers often taking contemporary cruises may perceive premium cruise lines to be quality but expensive, while those often taking luxury cruises might perceive the same premium lines as budget offerings with inferior services. Similarly, passengers taking multiple cruises every year might perceive one year as a long interpurchase gap, while those taking one cruise trip every other year might perceive the one-year interpurchase time to be quite short. To address this problem, the group-mean centering method was used, and  $Tier_{i(t-1)}$  and  $Interval_{it}$  were transformed with formula (1) and (2) below, respectively.

$$c.Tier_{i(t-1)} = Tier_{i(t-1)} - \bar{x}_{Tier_i} \quad (1)$$

$$c.Interval_{it} = Interval_{it} - \bar{x}_{Interval_i} \quad (2)$$

where  $c.Tier_{i(t-1)}$  and  $c.Interval_{it}$  were the centered predictors,  $\bar{x}_{Tier_i}$  represented the average price tier of brands chosen by customer  $i$  before making the last purchase in the entire

purchase history, and  $\bar{x}_{Interval_i}$  represented customer  $i$ 's average interpurchase time before the last purchase.

By considering the variable means of each customer, group-mean centering established more interpretable and meaningful zero points for predictors (Enders and Tofighi, 2007). For example,  $c.Tier_{i(t-1)} = 0$  indicated that, in the previous purchase, customer  $i$  chose a brand whose price tier was aligned with the average price level of all his choices before the last purchase.  $c.Tier_{i(t-1)} > 0$  indicated that customer  $i$  chose a brand with a relatively higher price tier in the previous purchase, while  $c.Tier_{i(t-1)} < 0$  indicated that his previous choice was a brand with a relatively lower price tier. Similarly,  $c.Interval_{it} = 0$  indicated that the time between customer  $i$ 's previous and current purchase was equal to his average interpurchase time. In addition,  $c.Interval_{it} > 0$  indicated that the time between the previous and the current purchase was relatively longer for customer  $i$ , while  $c.Interval_{it} < 0$  indicated that this interpurchase time was relatively shorter. This research only focused on examining how longer vs. shorter interpurchase time moderated the effect of brand price tier on brand switching decision. Thus, the continuous  $c.Interval_{it}$  was transformed into a binary variable (denoted as  $b.Interval_{it}$ ) based on its sign. More specifically,  $b.Interval_{it}$  was set to 1 if  $c.Interval_{it}$  was positive and 0 if  $c.Interval_{it}$  was negative. When  $c.Interval_{it}$  equaled to zero,  $b.Interval_{it}$  was defined as missing, because under this situation, whether the interpurchase time was relative long or relatively short for customer  $i$  could not be determined.

### 3.3.3 Analytic Methods

This research used nested data, in which multiple purchases were made by individual customers. Multilevel modeling provides a straightforward mechanism for analyzing such nested

data (Enders and Tofighi, 2007). Given that the dependent variable ( $BS_{it}$ ) was a binary variable, multilevel logistic regression modeling was thus applied to test the proposed hypotheses. Adapted from Sommet and Morselli (2017), a two-step procedure was developed. In the first step, the necessity of running a multilevel model was examined. A null model without any predicting variables was developed, based on which the proportion of variation in the dependent variable explained by between-group differences was calculated. If this proportion was not negligibly small, using multilevel modeling was reasonable and required. Then, the second step inspected whether the impact of the level-1 continuous variable ( $c.Tier_{i(t-1)}$ ) on brand switching decisions varied among individual customers. Two intermediate models were established: the first model excluded all random slope variation parameters, while the second allowed a random slope term for  $c.Tier_{i(t-1)}$ . Likelihood ratio tests were then conducted to compare these two models. The better-fit intermediate model was identified as the final model of this research, which was then used to test the proposed hypotheses.

### **3.4 Results**

#### **3.4.1 Descriptive Statistics**

Table 3.2 below reports the descriptive statistics of variables included in this research. First, the mean of  $Tier_{i(t-1)}$  was 1.72. The previous choices of customers were a contemporary cruise line on 46.77% of the total 13,063 valid purchase occasions, a premium cruise line on 39.77% purchase occasions, a deluxe cruise line on 8.22% purchase occasions, and a luxury cruise line on the rest 5.24%. At the customer level, the mean of  $\bar{x}_{Tier_i}$  was 1.77. This estimated mean might be slightly exaggerated, as quota sampling was used in this research to recruit more passengers who had purchased luxury cruises. Even so, for a vast majority (76.13%) of valid

participants, the average price tier of their chosen brands still resided between contemporary and premium. This finding was reasonable, because in the cruise industry, contemporary and premium cruise lines take dominating market shares.

**Table 3.2: Descriptive Statistics of Variables of Interests**

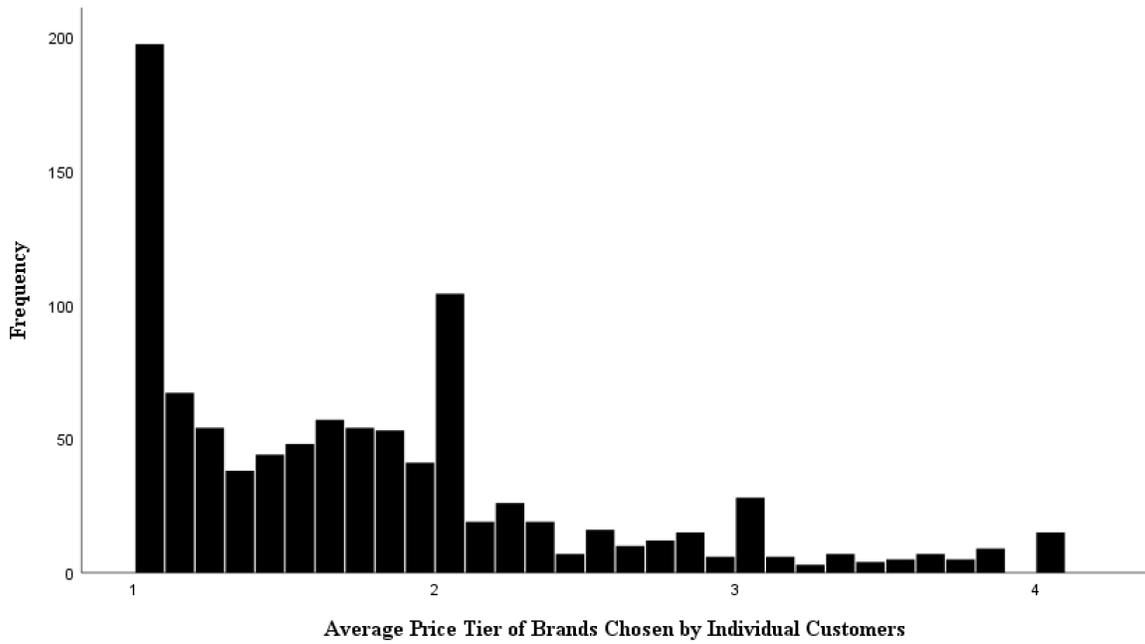
Variables Names	Variable Types	Valid N	Means	SD	Min.	Max.
Customer Level						
$\bar{x}_{Tier_i}$	Numerical	976	1.77	0.723	1.00	4.00
$\bar{x}_{Interval_i}$	Numerical	976	0.89	0.405	0.16	3.00
Purchase Level						
$Tier_{i(t-1)}$	Numerical	13063	1.72	0.825	1	4
$c.Tier_{i(t-1)}$	Numerical	13063	0.00	0.534	-2.62	2.80
$Interval_{i(t-1)}$	Numerical	13063	0.76	0.604	0.08	3.00
$c.Interval_{i(t-1)}$	Numerical	13063	0.00	0.502	-1.70	2.58
$b.Interval_{i(t-1)}$	Binary	12680	0.41	0.491	0	1
$BS_{it}$	Binary	13063	0.48	0.500	0	1

The standard deviation of  $\bar{x}_{Tier_i}$  (0.723) was relatively large, given that the width of its range was only 3. As shown in Figure 3.2, the distribution of  $\bar{x}_{Tier_i}$  was quite scattered, demonstrating that the average price tier of brands chosen by individual customers largely varied. This evidence supported the necessity of centering  $Tier_{i(t-1)}$ . Notably, there were two spikes in the distribution histogram, where  $\bar{x}_{Tier_i}$  was equal to 1 and 2. This was because 160 (16.39%) customers in this research only purchased contemporary cruise lines and 69 (7.07%) only purchased premium lines. The group-mean centered variable  $c.Tier_{i(t-1)}$  ranged between -2.62 and 2.80. For 2,558 purchase occasions,  $c.Tier_{i(t-1)}$  equaled to 0, i.e., the price tier of the

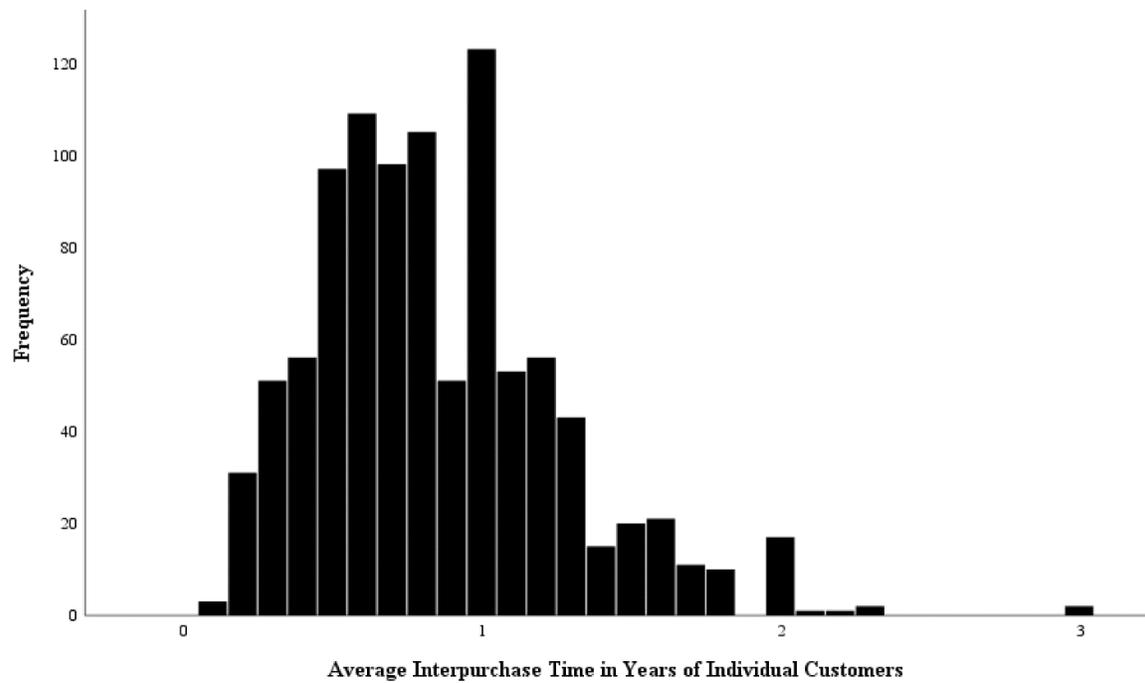
brand that customers chose in the previous purchase was consistent with the average price tier of brands that they chose in the entire purchase history. For 5,673 purchase occasions,  $c.Tier_{i(t-1)}$  was negative, i.e., customers chose a brand in a relatively lower price tier in the previous purchase. For the remaining 4,832 purchase occasions,  $c.Tier_{i(t-1)}$  was positive, i.e., customers chose a brand in a relatively higher price tier in the previous purchase.

The mean of  $Interval_{it}$  was 0.76, indicating that customers in this research on average took a cruise trip every 0.76 years. Its minimum was 0.083—there was a customer who took 12 cruises in a single year. Its maximum was 3, as interpurchase time larger than three years were identified as outliers and removed from the data. At the customer level, as shown in Figure 3.4, the average interpurchase time ( $\bar{x}_{Interval_i}$ ) varied by individual passengers. For a majority of customers (68.95%), their average interpurchase time was no greater than one year; but for a small portion of customers (2.36%), their average interpurchase time was two or more years. This scattered distribution supported the necessity of centering  $Interval_{it}$ .

The group-mean centered variable  $c.Interval_{it}$  ranged between -1.70 and 2.58. For 383 purchase occasions,  $c.Interval_{it}$  equal to 0. Whether the interpurchase time was relative longer or shorter for customer  $i$  could not be determined for these occasion, and  $b.Interval_{it}$  was thus defined as missing.  $c.Interval_{it}$  was greater than 0 for 5,162 purchase occasions, in which the interpurchase time was relatively longer for customers ( $b.Interval_{it} = 1$ );  $c.Interval_{it}$  was smaller than 0 on 7,518 purchase occasions, for which the interpurchase time was relatively shorterfor customers ( $b.Interval_{it} = 0$ ).



**Figure 3.2: The Average Brand Price Tier of Individual Customers**



**Figure 3.3: The Average Interpurchase Time of Individual Customers**

### 3.4.2 Assumption Check

This section examines the assumptions for running the multilevel logistic regression model. Compared to single-level regression, multilevel logistic regression makes fewer assumptions. Two issues to be considered are sample size sufficiency and multicollinearity. First, insufficient sample sizes tend to produce large standard errors and jeopardize statistical power. Hence, enough observations are required to ensure the accuracy of statistical results. In two-level models, the number of level-2 units is more important than the number of level-1 observations in each unit (Sommet and Morselli, 2017). A minimum of fifty level-2 units are required to reliably estimate a two-level model (Maas and Hox, 2005). This research included enough number of level-2 units (976), each of which was an individual customer making a sequence of purchases. The average number of level-1 observations in each unit was 13.4, indicating that each customer made 13.4 purchases on average. Multicollinearity can lead to unstable estimates of regression coefficients, making it difficult to validate or interpret the regression results (Imdadullah, Aslam, and Altaf, 2016). This research had no multicollinearity issue because it contained only one continuous predictor.

### 3.4.3 Empty Model

After data preparation, whether multilevel modeling was needed for the nested data of this research was first determined. An empty random intercept model containing no predictors was inspected, and its intraclass correlation coefficient (ICC) was calculated. ICC is commonly used as a measure of the proportion of the level-2 variation in the total variation for multilevel models. In multilevel logistic regression,  $ICC = \frac{\text{Var}_{\text{intercept}}}{\text{Var}_{\text{intercept}} + (\pi^2/3)}$ , where  $\text{Var}_{\text{intercept}}$  is the level-2 random intercept variance and  $\pi^2/3$  is the assumed level-1 variance component (Sommet and

Morselli, 2017). As shown in Table 3.3, the ICC of the empty model was 0.3282, indicating that 32.82% of the variability in whether or not to switch brands in a purchase was between individual customers, while 66.18% was within individual customers. Researchers have suggested that ICC values as small as 0.05 may provide evidence of a small to medium group effect (LeBreton and Senter, 2008), and values larger than 0.25 indicate a strong group effect (Murphy and Myers, 1998). Therefore, multilevel modeling was needed in this research, namely that the random effect of individual customers must be taken into consideration when predicting the brand switching decision in a purchase.

**Table 3.3: Mixed-Effects Logistic Regression Results of the Empty Model**

Predictors	Coefficient	S.E.	Z	p	95% C.I.	
Fixed Effect						
Constant	-0.150	0.048	-3.15	0.002	-0.244	-0.057
Random Effect						
Var. (Constant)	1.607	0.119			1.390	1.857

Note: Dependent variable =  $BS_{it}$ ; cluster variable =  $ID$ ; # of observations = 13,063; # of clusters = 976; average cluster size = 13.4; Log-likelihood = -8137.29; df = 2; AIC = 16278.58; BIC = 16293.54; ICC = 0.3282.

### 3.4.4 Model Comparison and Hypothesis Testing

Next, whether effects of purchase level factors on brand switching vary from one individual customer to another was examined. To answer this question, two intermediate models were built. The basic intermediate model (Model 1) included all predictors of brand switching, without allowing any random slope variation parameters. Based upon this basic model, an augmented intermediate model was created (Model 2), which contained the random slope term for  $c.Tier_{i(t-1)}$ . The model fit indices were report in Table 3.4 below. Two models were compared using the likelihood ratio test. Results suggested that Model 2 better fit the data in this research

( $\chi^2 = 129.45$ ,  $df = 1$ ,  $p < 0.001$ ). The AIC and BIC values of Model 2 were much smaller than those of Model 1, again supporting that Model 2 was better fit. Therefore, the effect of brand price tier on brand switching significantly varied between individual customers. The ICC value of Model 2 was increased by 0.022, compared to that of Model 1. This indicated that the varying effects of brand price tier on brand switching among individual customers explained 2.2% of the total variance in brand switching.

Count  $R^2$  measures the proportion of correctly predicted observations. Model 2 had a count  $R^2$  of 0.7652, indicating a high prediction accuracy—this model correctly predicted 76.52% brand switching decisions. The coefficient estimates of Model 2 were also presented in Table 3.4, illustrating how brand price tier was related to the brand switching decision and how this relationship was moderated by interpurchase time. First, the main effect of brand price tier on brand switching was insignificant. This might indicate that the negative effect of brand price tier on brand switching via quality and satisfaction was comparable to its positive effect via consideration set size. Second, the main effect of interpurchase time on brand switching was also insignificant. This result was aligned with Morrison's empirical finding in coffee consumption (1966) that the time between purchases did not have a significant impact on brand loyalty.

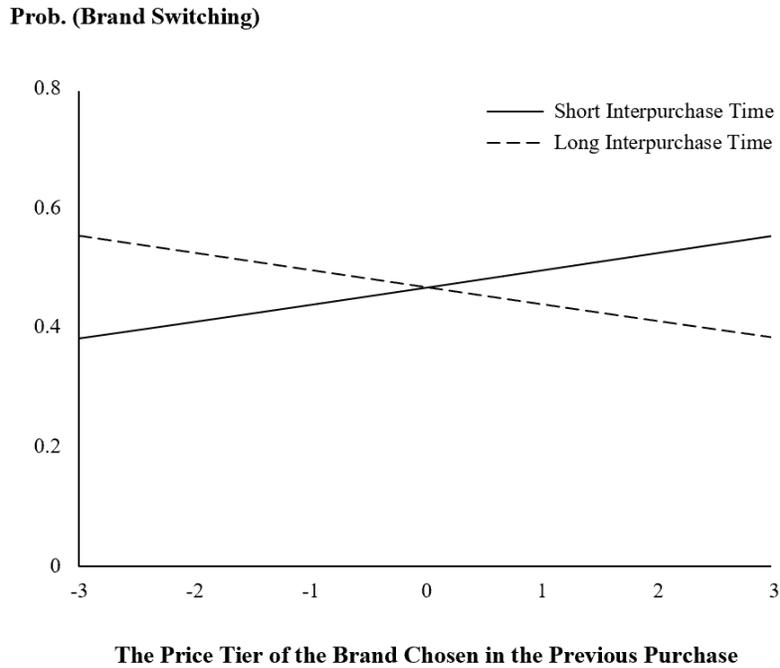
The interaction term ( $c.Tier_{i(t-1)} \times b.Interval_{it}$ ), however, had a significant impact on  $BS_{it}$ . In other words, short vs. long interpurchase time significantly moderated the effect of brand price tier on brand switching. As shown in Figure 3.4, when the interpurchase time was relatively short for customers, the total effect of brand price tier on brand switching was positive (0.117). On such purchase occasions, customers choosing a relatively higher priced brand in the previous purchase had greater probabilities of switching brands, supporting  $H_1$ . On the contrary, when the interpurchase time was relatively long for customers, the total effect of brand price tier on brand

switching became negative (-0.111). Customers choosing a relatively higher priced brand in the previous purchase were less likely to switch brands in such situations, supporting H<sub>2</sub>.

**Table 3.4: Coefficient Estimates and Model Comparison**

Predictors	Model 1	Model 2
<b>Model Fit Indices</b>		
Log-likelihood	-7893.501	-7828.775
df	5	6
AIC	15797.00	15669.55
BIC	15834.24	15714.24
ICC	0.327	0.349
<b>Fixed Effects</b>		
<i>c.Tier<sub>i(t-1)</sub></i>	0.087*	0.117
<i>b.Interval<sub>it</sub></i>	0.028	0.004
<i>c.Tier<sub>i(t-1)</sub> × b.Interval<sub>it</sub></i>	-0.185**	-0.232**
Constant	-0.162**	-0.136**
<b>Random Effects</b>		
Var. (Constant)	1.602	1.766
Var. ( <i>c.Tier<sub>i(t-1)</sub></i> )		1.217

Note: Dependent variable =  $BS_{it}$ ; cluster variable =  $ID_i$ ; # of valid observations = 12,680; # of clusters = 940; average cluster size = 13.5. \*\*  $p < 0.05$ ; \*  $p < 0.1$ .



**Figure 3.4: The Effect of  $c.Tier_{i(t-1)}$  on  $BS_{it}$  Moderated by  $b.Interval_{it}$**

### 3.5 Discussion

Based on the purchase history data of 978 cruise passengers, this research for the first time examined how the price tier of the brand that customers chose in the previous purchase was related to their current brand switching decision. The multilevel logistic regression results suggested a significant interaction effect of brand price tier by interpurchase time on brand switching. In other words, short vs. long interpurchase time significantly moderated the impact of the price tier of the previously chosen brand on customer brand switching decision. Specific findings are illustrated below, and managerial implications are given accordingly.

First, when the interpurchase time was relatively shorter, customers choosing a relatively higher priced brand in the previous purchase were more likely to switch from the previously chosen brand. A probable reason for this phenomenon could be that customers buying higher priced brands might have larger sized consideration sets (Divine, 1995). Thus, in order to prevent

patrons from switching away, high priced brands may want to shrink the size of customer consideration sets. Offering more within-brand alternatives can be one potential strategy. For example, luxury cruise lines can provide passengers added options by developing new itineraries, establishing new departure ports, expanding their fleets, and introducing new onboard entertainments and services. Enhancing brand uniqueness and distinctiveness can be other strategies to expel opponents from the consideration sets of patrons. On the other hand, knowing that customers have higher possibilities of switching brands when the interpurchase time is short, high priced brands can offer promotions valid for short-term repurchases to retain their patrons. For example, luxury cruise lines can offer return promotions (such as discounted price, free cabin upgrades, vouchers for onboard expenses) that are valid for a limited period of time (such as six months) to passengers at the end their trips.

In contrast, when the interpurchase time was relatively longer, customers choosing a relatively lower priced brand in the previous purchase showed greater probabilities of switching brands. This might be because, under the longer interpurchase time condition, brand price tier influenced brand switching more via satisfaction, and lower- vs. higher priced brands provided inferior quality and had reduced customer satisfaction (J.D. Power and Associates, 2013). Therefore, lower-priced brands should consistently improve service quality to enhance customer satisfaction. In addition, lower -priced brands can also offer targeted return promotions to patrons who have suspended cruising for a relatively long time, influencing them from switching to higher-priced brands when they decide to restart cruising.

The contribution of this research to the variety seeking literature is twofold. First, it identified a new predictor of customer brand-switching behaviors—the price tier of the brand chosen in the previous purchase—and found that the relationship between this predictor and

brand switching was moderated by whether the interpurchase time was relatively short or long. Second, how interpurchase time influences variety seeking (or brand switching) is a controversial research topic. Conflicting conclusions were made by different scholars (Kuehn, 1958; Morrison, 1966). This research sheds light on this issue by providing empirical evidence supporting that the direct effect of interpurchase time on variety seeking is insignificant.

Despite the implications and contributions, this research has some limitations. First, this research only collected choice data, which did not contain any demographic and psychological information of customers. The key mediating variables such as perceived quality, satisfaction, and consideration set size were not measured. Thus, the proposed psychological processes between brand price tier and brand switching could not be examined directly. Second, when reporting the time of past cruise trips, participants in this research only disclosed the year of their cruises. As a result, the measurement of interpurchase time was not precise, especially when customers made multiple purchases in the same year. Although this research made reasonable assumptions about how purchases were distributed within a year, more reliable measurements of interpurchase time can be used in future research. Third, this research defined the members of each cruise line price tier based on judgement and available pricing information. Although this classification was aligned with Espinet et al.'s findings (2020), the categorization of certain cruise brands varies in the cruise industry. For example, some cruise OTAs (such as [cruisecheap.com](http://cruisecheap.com) and [icruise.com](http://icruise.com)) define Disney and Princess as contemporary cruise lines and Cunard and Oceania as premium cruise lines. Further, price differences between brands in the same tier can be large, especially among the luxury cruise lines. Future research may use other schemes to classify cruise lines and reexamine the relationship between brand price tier and brand switching decisions.

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## CHAPTER 4

### THE EFFECT OF THE FIRST-EXPERIENCED BRAND ON CUSTOMER CHOICE BEHAVIORS IN SEQUENTIAL PURCHASES FOR EXPERIENTIAL PRODUCTS

#### *4.1 Introduction*

How brand-exposure order influences customer choice behaviors in sequential purchases is an important research question in the marketing literature (Niedrich and Swain, 2008). Understanding this question may assist companies in deciding when to enter a new market and determining whether it is worth launching expensive marketing campaigns to attract new customers. Abundant research has probed the relationship between market entry-order and company performance from the economic perspective. Some studies found a general competitive advantage for the market pioneers (Robinson and Fornell, 1985; Schmalensee, 1982), whereas many others argued that this advantage only existed under certain conditions (Boulding and Christen, 2003; Min, Kalwani, and Robinson, 2006; Srinivasan, Lilien, and Rangaswamy, 2004). For example, Min et al. (2006) found that only in markets started by an incremental innovation does the first entrant have a lower survival risk. In markets started by a completely new product, on the contrary, the first entrant is often the first to fail.

From the behavioral perspective, however, researchers have consistently observed that the market pioneering brand is generally preferred by customers (Alpert and Kamins, 1994, 1995; Carpenter and Nakamoto, 1989; Karnins, Alpert, and Elliott, 2000; Kardes and Kalyanaram, 1992; Kardes et al., 1993; Kerin, Varadarajan, and Peterson, 1992; Niedrich and Swain, 2003, 2008; Zhang and Markman, 1998). Multiple theories based on brand-exposure

order have been proposed to explain this pioneering advantage, including differential learning (Kardes and Kalyanaram, 1992), prototypicality (Carpenter and Nakamoto, 1989), and memory accessibility (Kardes et al., 1993). These theories deemed that the market pioneer initially is the only available brand to customers and thus tends to have a disproportionately large effect on customer preference.

For many mature industries with a long development history, however, the pioneering brand may have lost its original popularity or even disappeared in the market. For example, Western Airline, the first commercial airline in the U.S. founded in 1925, was merged with Delta in 1987 and became unavailable to flight passengers. Therefore, in such markets, customers are likely to choose a later-entrant brand other than the pioneering brand in their first purchase. An intriguing research question could then be, given that many explanations for the pioneering advantage are order-based, does the first-experienced brand share a similar competitive advantage with the pioneering brand?

A few studies have uncovered that customers in general prefer their first-experienced brand (Niedrich and Swain, 2003, 2008). But notably, the authors used largely duplicate, simple experimental designs in these studies, under which participants were sequentially exposed to information from two brands in the same product category and then asked to complete a survey regarding their brand preference. This design helped detect the first-experienced advantage in a single choice occasion. But brand preference may vary through time as additional purchases are made (Tversky and Kahneman, 1974). No research has investigated how long the first-experienced advantage can persist. Next, to examine the existence of the first-experienced advantage, past studies compared the group-mean customer preference for the first-experienced brand with that for the second-experienced brand. No individual-level first-experienced

advantage indicator was used. Do individual customers prefer their first-experienced brand? Lastly, past studies confined their experimental contexts to buying utilitarian goods (e.g. bicycle tires) and simple hedonic products (e.g. microwave popcorn). It is noteworthy to examine whether the first-experienced advantage also exists when choosing more complex experiential products, such as leisure cruises.

Moreover, the extant literature provide little empirical evidence on how the first-experienced advantage influences customers choice behaviors (Kardes et al., 1993) and what factors may affect its magnitude. It is unclear whether the magnitude of the first-experienced advantage is associated with the first-experienced brand. It also remains unknown how the first-experienced advantage changes with additional later purchases. Based on empirical data of purchase history of real cruise passengers, this study contributes to the previous literature in the following two ways: (1) verifying the existence of the first-experienced advantage using both group-level and individual-level measurements, and (2) examining whether the size of the first-experienced advantage is influenced by the brand chosen in the first purchase and the total number of purchases.

#### ***4.2 Literature Review and Research Questions***

In the marketing literature, scholars have proposed several order-based theories to explain the pioneering advantage enjoyed by the first-entrant brand in the market (Carpenter and Nakamoto, 1989; Kardes and Kalyanaram, 1992; Kardes et al., 1993). These explanations all deem that the first-exposed brand—which in a new market is the pioneering brand—owns some competitive advantage over later-entrants in a sequential choice process, suggesting that the first-experienced advantage should exist (Niedrich and Swain, 2003).

First, Carpenter and Nakamoto (1989) focused on the customer learning and preference formation process and proposed the prototypicality theory of pioneering advantage. The authors claimed that, when customers initially purchase in a novel product category, their knowledge about the product is minimal. At that time, they are often uncertain about how important each product attribute is or what attribute combination makes an ideal product. To identify their ideal product, customers continuously learn about the product category and update their preferences through repetitive trials (Tversky and Kahneman, 1974). During this learning and preference formation process, the first-experienced brand provides a prototypical example of the product category, exerting a disproportionate influence (Carpenter and Nakamoto, 1989; Niedrich and Swain, 2003). When evaluating a newly encountered brand, customers tend to use their first-experienced brand as a cognitive reference (Medin and Schaffer, 1978; Sujon, 1985). If the new brand positions closely to the first-experienced brand, it can be easily shadowed by the first-experienced brand and thus perceived as an inferior copycat; even if the new brand is distinct, as long as the ideal product remains ambiguous after encountering it, it may still be perceived as inferior to the first-experienced brand (Carpenter and Nakamoto, 1989).

Second, Kardes and Kalyanaram (1992) proposed a differential learning theory to explain pioneering advantage, suggesting that sequential exposure to product information creates a unique learning advantage beneficial to the first-experienced brand. According to the authors, information about the first-experienced brand is likely to be perceived as novel, while that about later-experienced brands may be perceived as redundant. Novel information is more interesting and attention-drawing (Kahneman, 1973). Thus, customers are motivated to learn more information about the first-experienced brand, much of which is then encoded into their long-term memory (Anderson, 1983). Consequently, consumers can recall more information for the

first-experienced brand than for later-experienced brands, which is aligned with the primacy effect (Glanzer and Cunitz, 1966; Murdock, 1962). Because the overall evaluation of an object is positively related to the amount of information known about the object which is called set-size effect (Anderson, 1967)—customers are more likely to prefer the first-experienced brand to later-experienced brands.

Built upon Kardes and Kalyanaram's (1992) differential learning explanation, Kardes et al. (1993) proposed the memory accessibility theory. The authors claimed that brand recall may directly influence brand choice without altering brand evaluation. Because the first-experienced brand is more accessible in memory, customers are more likely to include it in their retrieval and consideration sets, which results in a higher probability of choosing the first-experienced brand than later-experienced brands. Enlightened by these order-based explanations of pioneering advantage, we expect that the first-experienced brand has a competitive advantage over later-experienced brands in a sequential choice process, even in mature markets. This advantage may present either as stronger preference towards the first-experienced brand or as higher likelihood of choosing the first-experienced brand later. Based on actual customer choice data, this research aims to verify the existence of the first-experienced advantage by examining:

**Research Question 1:** Are customers more likely to return to their first-experienced brand than to their later-experienced brands? Are customers choosing (vs. not choosing) a given brand in the first purchase more likely to choose this brand again in subsequent purchases?

A seemingly contradictory theory is recency effect theory, which claims that the

information about a recently encountered brand is more likely to be retrieved when making choice decisions (Haugtvedt and Wegener, 1994). This theory suggests that if customers recently purchase a new brand other than the first-experienced brand, the first-experienced advantage may decrease. However, the recency effect gradually diminishes as interpurchase time increases (Miller and Campbell, 1959). For buying low-frequency products such as leisure cruising, therefore, customer choice decisions should be more influenced by the primacy effect than the recency effect. In other words, we expect that for low-frequency products, the first-experienced advantage should remain stable, even if a new brand is recently encountered.

**Research Question 2:** After customers chose a second brand for the first time, are they more likely to repurchase their first-experienced brand than their second-experienced brand?

Based on prototypicality theory (Carpenter and Nakamoto, 1989), in the customer learning and preference formation process, the first-experienced brand is regarded as a prototypical example of the product category, as long as an ideal product with the highest value remains ambiguous. When a new brand that is distinct and more valuable than the first-experienced brand emerges, customers gain a clearer understanding of an ideal product, leading to a decline in the first-experienced advantage (Carpenter and Nakamoto, 1989). Accordingly, if the first-experienced brand is perceived to have a low value and far away from the actual ideal product, its advantage may easily diminish when a distinct new brand with higher value is encountered. Based on this, we expect that the magnitude of the first-experienced advantage is related to the perceived value of the first-experienced brand. First-experienced brands with lower

perceived value may have weaker first-experienced advantage. The perceived value of a brand is influenced by numerous factors (Zeithaml, 1988) and thus may vary from brand to brand. Therefore, we expect that the first-experienced advantage magnitude varies by first-experienced brands.

**Research Question 3:** Does the magnitude of the first-experienced advantage vary by brands that customers chose and experience in the first purchase?

### 4.3 Data Structure and Definitions

To address the above research questions, this study used the same dataset as used in Chapter 2. Figure 4.1 below presents the data structure of this study, where cruise passengers selected brands in a sequential choices. The following behavioral information of customers was gathered.

Individual $i$	Purchase $j$					
	1	2	3	4	5	...
1	F <sub>1</sub>	C <sub>12</sub>	C <sub>13</sub>	C <sub>14</sub>	C <sub>15</sub>	...
2	F <sub>2</sub>	C <sub>22</sub>	C <sub>23</sub>	C <sub>24</sub>	C <sub>25</sub>	...
3	F <sub>3</sub>	C <sub>32</sub>	C <sub>33</sub>	C <sub>34</sub>	C <sub>35</sub>	...
...	...	...	...	...	...	...
N-1	F <sub>N-1</sub>	C <sub>(N-1)2</sub>	C <sub>(N-1)3</sub>	C <sub>(N-1)4</sub>	C <sub>(N-1)5</sub>	...
N	F <sub>N</sub>	C <sub>N2</sub>	C <sub>N3</sub>	C <sub>N4</sub>	C <sub>N5</sub>	...

**Figure 4.1: Research Data Structure of Chapter 4**

- A. The total number of purchases made by individual  $i$  was denoted as  $P_i$ .
- B. The total number of unique brands chosen by individual  $i$  was denoted as  $B_i$ .

C.  $C_{ij}$ ,  $F_i$ ,  $S_i$ , and  $T_i$  were categorical variables indicating customer  $i$ 's brand choices.

Specifically,  $C_{ij}$  represented individual  $i$ 's brand choice in their  $j$ th purchase.  $F_i$  was a special case of  $C_{ij}$  when  $j$  was equal to 1, which indicated the first-experienced brand of individual  $i$ . If individual  $i$  had purchased multiple brands, their second and third-experienced brand were denoted as  $S_i$  and  $T_i$ , respectively.

D. The possible values of the above four categorical variables were denoted as brand  $k$ .

This research included fifteen “popular” cruise lines in the North America region as well as a few “less-popular” cruise lines. The fifteen popular cruise lines were three contemporary cruise lines (Carnival, RCI, Norwegian), four premium cruise lines (Disney, Princess, HAL, Celebrity), four deluxe cruise lines (Oceania, Azamara, Cunard, Viking), four luxury cruise lines (Regent, SilverSea, Seabourn, Crystal). Notably, the number of customers choosing each specific deluxe, luxury, or less-popular brand in this research was small, and thus their purchase behaviors might not reflect the true characteristics of the corresponding population. For example, this research only included 6 customers who chose Oceania in the first purchase. Because of the small sample size, their probability of returning to Oceania in subsequent purchases had a large standard error and was thus not a reliable estimate.

Accordingly, customers choosing any deluxe brands were treated as a group before we analyzed their brand choice behaviors, as were customers choosing luxury or less-popular brands. For example, in this research, there were 64 customers choosing a deluxe brand in the first purchase. Thanks to this larger sample size, their probability of returning to the *specific* first-experience deluxe brand in subsequent purchases could be estimated reliably.

- E. The event of interest—whether or not individual  $i$  chose brand  $k$  in the  $j$ th purchase—was denoted as  $C_{ijk}$ . It was set to 1 if customer  $i$  chose brand  $k$  in the  $j$ th purchase and to 0 otherwise ( $j \leq P_i$ ).
- F. The place in the sequence of the purchase where customer  $i$  chose brand  $k$  for the first time was denoted as  $J_{ki}$ .  $J_{Sii}$  and  $J_{Tii}$  were two special cases of  $J_{ki}$ , which indicated when customer  $i$  purchased their second and third-experienced brand for the first time, respectively.
- G. The total number of customers included in this study was denoted as  $N$  ( $N = 978$ ). Customers who chose brand  $k$  in their first purchase belonged to set  $K$ , and the size of set  $K$  was denoted as  $N_k$ . There were  $N - N_k$  customers who did not choose brand  $k$  in their first purchase. Among them, customers who chose brand  $k$  in their second purchase were defined to belong to set  $K'$ , and the size of set  $K'$  was denoted as  $N_{k'}$ .
- H. The total number of customers who had made at least  $j$  purchases was denoted as  $N_j$ .  $N_{kj}$  represented the total number of customers who chose brand  $k$  in the first purchase and made at least  $j$  purchases;  $(N - N_k)_j$  represented the total number of customers who did not choose brand  $k$  in the first purchase and made at least  $j$  purchases;  $N_{k'j}$  represented the total number of customers who made at least  $j$  purchases and did not choose brand  $k$  in the first purchase but chose it in the second purchase.

Given the above information, several key variables for detecting the first-experienced advantage were defined and calculated as follows.

- A. After individual  $i$  had purchased brand  $k$  for the first time, their probability of returning to brand  $k$  was denoted as  $P(C_i = k)$ , which was equal to  $\frac{\sum_{j=J_{ki}+1}^{P_i} C_{ijk}}{P_i - J_{ki}}$ . Based on this formula, individual  $i$ 's probability of returning to the first-experienced brand in subsequent purchases  $P(C_i = F_i) = \frac{\sum_{j=2}^{P_i} C_{ijF_i}}{P_i - 1}$ . If individual  $i$  had purchased a second brand, their probability of returning to the second-experienced brand in subsequent purchases  $P(C_i = S_i) = \frac{\sum_{j=J_{Sii}+1}^{P_i} C_{ijS_i}}{P_i - J_{Sii}}$ . Likewise, if individual  $i$  had purchased a third brand, their probability of returning to the third-experienced brand in subsequent purchases  $P(C_i = T_i) = \frac{\sum_{j=J_{Tii}+1}^{P_i} C_{ijT_i}}{P_i - J_{Tii}}$ .
- B. Based on the value of  $P(C_i = F_i)$ , two specific situations were defined as follows. In the first situation, individual  $i$  returned to the first-experienced brand in at least one fourth of their subsequent purchases, i.e.  $P(C_i = F_i) \geq 1/4$ . If this was the case, the first-experienced brand was defined as a frequently purchased brand of individual  $i$ . In the second situation, individual  $i$  returned to the first-experienced brand in no less than two thirds of their subsequent purchases, i.e.  $P(C_i = F_i) \geq 2/3$ . In this situation, the first-experienced brand was regarded as a loyal brand of individual  $i$ . For example, if customer  $X$ 's choice sequence was "A-A-B-B-A-C," his probability of returning to the first-experienced brand  $P(C_X = F_X)$  was equal to  $2/5$ . Thus, the first-experienced brand was a frequently purchased but not a loyal brand for customer  $X$ .
- C. To examine whether the first-experienced advantage exists, the mean probability of returning to the first-experienced brand was compared to that of returning to the second and third-experienced brand. Define  $Diff_{12i} = P(C_i = F_i) - P(C_i = S_i)$ ,  $Diff_{13i}$

$= P(C_i = F_i) - P(C_i = T_i)$ , and  $Diff_{23i} = P(C_i = S_i) - P(C_i = T_i)$ . If the mean of  $Diff_{12i}$  and that of  $Diff_{13i}$  were significantly greater than 0, the first-experienced advantage was likely to exist.

D. This study also aims to examine whether the first-experienced advantage survives after customers have experienced a second brand. If customer  $i$  had purchased multiple brands, their probability of returning to the first-experienced brand after purchasing the second-experienced brand was denoted as  $P(C_i = F_i / j > J_{Sii})$ , which

was equal to  $\frac{\sum_{j=J_{Sii}+1}^{P_i} C_{ijF_i}}{P_i - J_{Sii}}$ . Define  $Diff_{1'2i} = P(C_i = F_i / j > J_{Sii}) - P(C_i = S_i)$ . If the

mean of  $Diff_{1'2i}$  was significantly greater than 0, the first-experienced advantage might survive after customers had experienced a second brand.

E. For customers who chose brand  $k$  in the first purchase, their probability of returning to brand  $k$  in the  $j$ th purchase was denoted as  $P(C_j = k / i \in K)$ , which was estimated

with the formula  $\frac{\sum_{i=1}^{N_{kj}} C_{ijk}}{N_{kj}}$  ( $j \geq 2$ ). For customers who did not choose brand  $k$  in the

first purchase, their probability of choosing brand  $k$  in the  $j$ th purchase was denoted as

$P(C_j = k / i \notin K)$ , which was estimated with the formula  $\frac{\sum_{i=1}^{(N-N_k)_j} C_{ijk}}{(N-N_k)_j}$  ( $j \geq 2$ ). For

customers who did not choose brand  $k$  in the first purchase but did choose it in the second purchase, their probability of choosing brand  $k$  in the  $j$ th purchase was

denoted as  $P(C_j = k / i \in K')$ , which was estimated with the formula  $\frac{\sum_{i=1}^{N_{kj}} C_{ijk}}{N_{kj}}$  ( $j \geq 3$ ).

For any  $j$ , if the mean of  $P(C_j = k / i \in K)$  was significantly larger than the means of  $P(C_j = k / i \notin K)$  and  $P(C_j = k / i \in K')$ , the first-experienced advantage existed at

the population level. Notably, in the data of this research, when  $j$  exceeded 5,  $N_{kj}$  and  $N_{k'j}$  might become too small to produce reliable estimates for certain brands. Thus, this research focused on comparing the mean of  $P(C_j = k / i \in K)$  and the means of  $P(C_j = k / i \notin K)$  and  $P(C_j = k / i \in K')$  when  $j \leq 5$ .

The next section presents the statistical analyses conducted to reveal the characteristics of and the relationships among the key aggregated variables defined above.

#### 4.4 Results

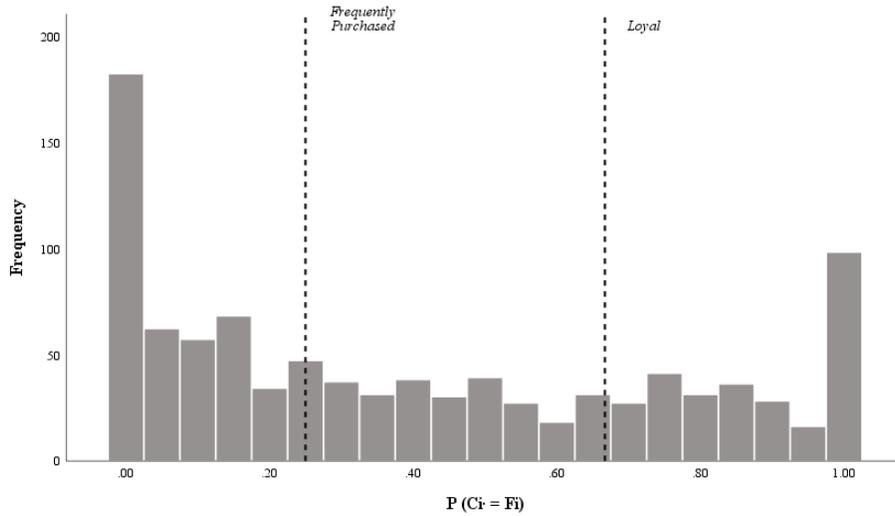
##### 4.4.1 Descriptive Statistics of the Key Individual-Level Variables

Table 4.1 below reports the descriptive statistics of several key individual-level variables of interest in this study. As shown in the table, for the 978 customers involved in this study, their average number of total purchases made was 15.51, and their average number of unique brands chosen was 3.85. The mean of  $P(C_i = F_i)$  was 0.405, suggesting that on average customers returned to their first experience brand in 40.5% of their subsequent purchases.

**Table 4.1: Descriptive Statistics of Key Individual-Level Variables (N = 978)**

<b>Variables</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>	<b>Skewness</b>	<b>Kurtosis</b>
$P_i$	15.51	13	9.736	5	70	1.573	3.643
$B_i$	3.85	4	2.023	1	11	0.728	0.197
$P(C_i = F_i)$	0.405	0.33	0.350	0.00	1.00	0.391	-1.282

$P(C_i = F_i)$  was not normally distributed (Shapiro-Wilk Statistic = 0.888,  $df = 978$ ,  $p < 0.001$ ), and Figure 4.2 shows its distribution histogram. In this study, there were 18.4% (180) customers who never repurchased their first-experienced brand, i.e.  $P(C_i = F_i) = 0$ , and 10.0% (98) customers who kept buying their first-experienced brand in all subsequent purchases, i.e.  $P(C_i = F_i) = 1$ . There were 58.38% (571) customers who repurchased their first-experienced brand in no less than one fourth subsequent purchases, i.e.  $P(C_i = F_i) \geq 1/4$ . This proportion was significantly greater than 0.5 ( $Z = 5.241$ ,  $p < 0.001$ ), indicating that the first-experienced brand had a greater than 50% probability to become a frequently purchased brand. Moreover, 30.27% (296) customers became loyal to their first-experienced brand, i.e.  $P(C_i = F_i) \geq 2/3$ . Notably, there were only 350 (35.79%) customers in this study who chose the same brand in at least two thirds of purchases after their first purchase. For these customers with high brand loyalty, there was a very high chance (84.57%) that they would become loyal to their first-experienced brand. This chance was significantly greater than 0.5 ( $Z = 17.905$ ,  $p < 0.001$ ), indicating that compared to other brands, the first-experienced brand was more likely to become the preferred brand for customers with high brand loyalty.



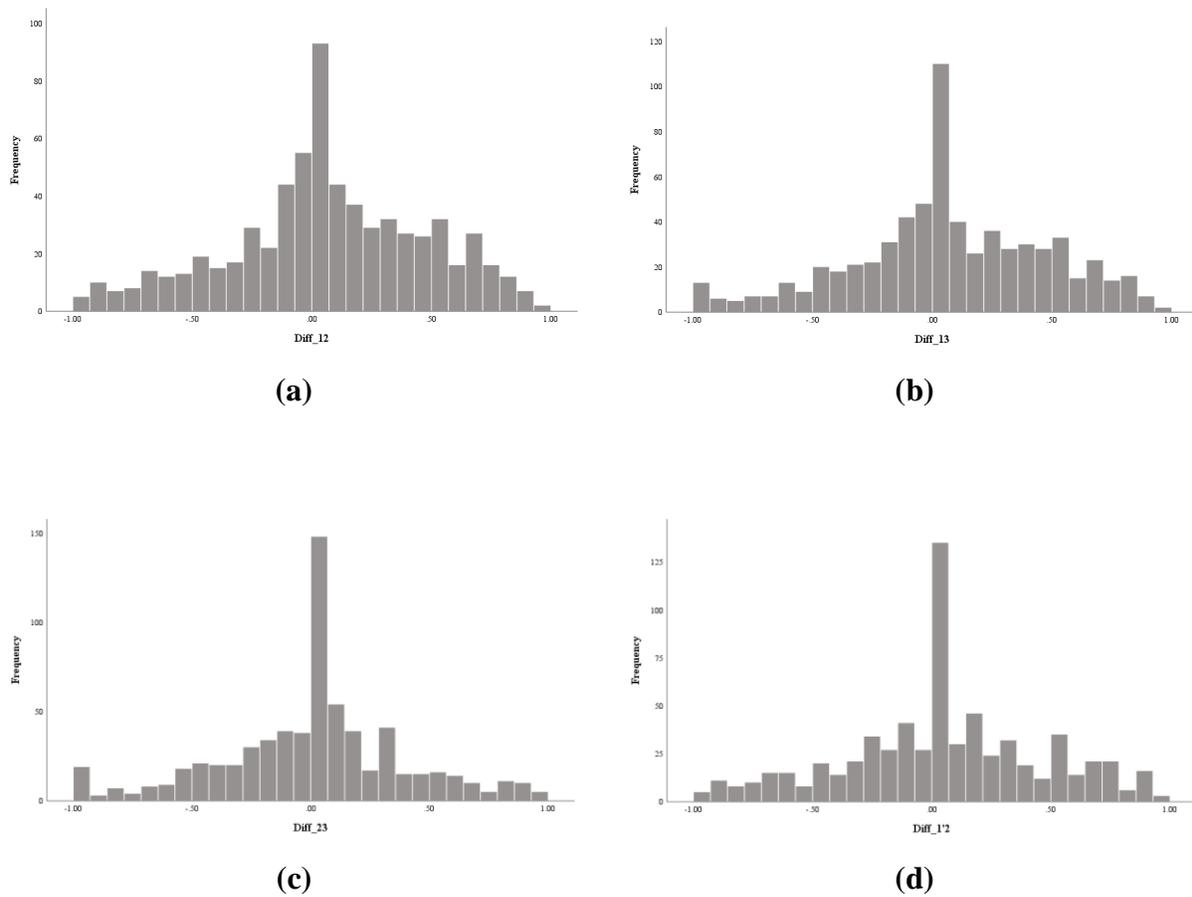
**Figure 4.2: Individual Customers' Probabilities of Returning to their First Brand**

#### 4.4.2 Individual-Level Measurements for the First-Experienced Advantage

To examine the existence of the first-experienced advantage, this study first compared individual customers' probabilities of returning to their first-experienced brand and the probabilities of returning to their second and third-experienced brands. We focused on the 670 customers who had purchased at least three brands and continued making purchases after buying the third-experienced brand for the first time ( $J_{Tii} < P_i$ ). With this subsample, Table 4.2 reports the descriptive statistics of key variables, and Figure 4.3 shows the distribution histograms of four indicators measuring the first-experienced advantage.

**Table 4.2: Descriptive Statistics of Individual-Level EFA Related Variables (N = 670)**

<b>Variables</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>	<b>Skewness</b>	<b>Kurtosis</b>
$P(C_i = F_i)$	0.263	0.18	0.256	0.00	0.94	0.774	-0.546
$P(C_i = S_i)$	0.203	0.11	0.244	0.00	0.97	1.288	0.743
$P(C_i = T_i)$	0.202	0.09	0.265	0.00	1.00	1.474	1.414
$P(C_i = F_i / j > J_{Sii})$	0.245	0.15	0.263	0.00	0.97	0.941	-0.230
$Diff_{12i}$	0.060	0.04	0.410	-0.96	0.94	-0.202	-0.261
$Diff_{13i}$	0.061	0.03	0.412	-1.00	0.94	-0.265	-0.045
$Diff_{23i}$	0.002	0.00	0.392	-1.00	0.97	-0.167	-0.482
$Diff_{1'2i}$	0.042	0.00	0.419	-0.97	0.97	-0.089	-0.253



**Figure 4.3: Distributions of Individual-Level EFA Indicators (N = 670)**

As shown in Table 4.2, for customers who had purchased at least three brands in this study, their mean probability of returning to the first-experienced brand in subsequent purchases from the second purchase was 26.29%. Their mean probability of returning to the first-experienced brand after purchasing the second brand for the first time was 24.47%. Their mean probabilities of returning to the second and third-experienced brand after purchasing the second and third-experienced brand for the first time were 20.32% and 20.15%, respectively. To compare these probabilities, the distributions of the differences between them— $Diff_{12i}$ ,  $Diff_{13i}$ ,  $Diff_{23i}$ , and  $Diff_{1'2i}$ —were first examined (see Figure 4.3). According to the results of Shapiro-

Wilk tests,  $Diff_{12i}$ ,  $Diff_{13i}$ ,  $Diff_{23i}$ , and  $Diff_{1'2i}$  were all not normally distributed, which violated an important assumption of t-test. But the skewness of these variables was close to 0, indicating their distributions were fairly symmetric. Thus, Wilcoxon signed rank test—a robust test against the normality assumption—was used, where the medians of  $Diff_{12i}$ ,  $Diff_{13i}$ ,  $Diff_{23i}$ , and  $Diff_{1'2i}$  were regarded as the distribution centers and compared to 0. The test results shown in Table 4.3 found that the medians of  $Diff_{12i}$ ,  $Diff_{13i}$ , and  $Diff_{1'2i}$  were significantly larger than 0, but the median of  $Diff_{23i}$  was not significantly different from 0.

**Table 4.3: Wilcoxon Signed Ranks Test Results (N = 670)**

Differences	Ranks	N	Mean Rank	Sum of Ranks
$Diff_{12}$	Negative Ranks	270	283.59	76570.00
	Positive Ranks	344	326.26	112235.00
	Ties	56		
	Z (p)	Z = 4.055 (p < 0.001)		
$Diff_{13}$	Negative Ranks	262	284.66	74581.50
	Positive Ranks	347	320.36	111163.50
	Ties	61		
	Z (p)	Z = 4.211 (p < 0.001)		
$Diff_{1'2}$	Negative Ranks	256	271.04	69385.00
	Positive Ranks	308	292.03	89945.00
	Ties	106		
	Z (p)	Z = 2.655 (p = 0.008)		
$Diff_{23}$	Negative Ranks	270	289.34	78120.50
	Positive Ranks	295	277.20	81774.50
	Ties	105		
	Z (p)	Z = 0.471 (p = 0.638)		

Note: Negative ranks indicated the differences were negative; positive ranks indicated the differences were positive; ties indicated the differences were 0. The Wilcoxon signed rank test statistics (Z) were calculated based on positive ranks.

Based on these results, we concluded that (1) customers were more likely to repurchase their first-experienced brand than the second and third-experienced brand, indicating that there was a first-experienced advantage; (2) customers were more likely to return to their first-experienced brand even after they have experienced a second brand, indicating that the first-experienced advantage survives after encountering a second unique brand; (3) customers were not more likely to repurchase their second experienced brand than their third-experienced brand, indicating that there was not a second-experienced advantage.

Next, we used  $Diff_{12i}$  to measure the first-experienced advantage and examined whether it was independent of the first brand experienced by customers. The data was grouped by the first-experienced brands ( $F_i$ ). The means, medians, and standard deviations of  $Diff_{12i}$  for each  $F_i$  group were shown in Table 4.4. According to the results of Z tests or Wilcoxon signed ranks tests, when customers' first-experienced brand was Carnival, RCI, Princess, Celebrity, or a luxury brand, the center of  $Diff_{12i}$  was significantly greater than 0. In other words, only Carnival, RCI, Princess, Celebrity, and luxury cruise lines had significant first-experienced advantages over later-experienced brands. But notably, the sample size of certain  $F_i$  groups was relatively small in this research, resulting in relatively large standard errors in estimating the centers of  $Diff_{12i}$ . For example, there were only 38 customers choosing a deluxe brand in the first purchase. This might lead to failures in detecting the first-experienced advantage for certain groups.

**Table 4.4: Comparison between the Center of  $Diff_{12i}$  and Zero by  $F_i$**

Groups by $F_i$	N	Descriptive Statistics of $Diff_{12i}$			$H_0$ : Center $\leq 0$	
		Mean	Median	SD	Z	p
Carnival	140	0.086**	0.040	0.401	2.531 <sup>a</sup>	0.006
RCI	113	0.063	0.100**	0.418	2.115 <sup>b</sup>	0.017
Norwegian	69	0.000	0.000	0.396	0.072 <sup>b</sup>	0.471
Disney	41	-0.076	0.000	0.422	-1.159 <sup>a</sup>	0.877
Princess	68	0.113**	0.600	0.410	2.261 <sup>a</sup>	0.012
HAL	45	0.069	0.000	0.452	1.022 <sup>a</sup>	0.153
Celebrity	63	0.191**	0.290	0.432	3.133 <sup>b</sup>	0.001
Deluxe	38	0.054	0.000	0.414	0.572 <sup>a</sup>	0.210
Luxury	28	0.101*	0.005	0.394	1.339 <sup>a</sup>	0.088
Less-Popular	65	-0.056	-0.010	0.338	-0.958 <sup>b</sup>	0.831

Note: N indicated the number of customers who chose brand  $k$  in the first purchase. Deluxe brands included Oceania, Viking, Azamara, and Cunard; luxury brands included Seabourn, Regent, Silversea, and Crystal; Other included brands other than the fifteen popular cruise lines in the North America market.

<sup>a</sup> The normality assumption was not violated, and Z-test was conducted to compare the means of  $Diff_{12i}$  and 0.

<sup>b</sup> The normality assumption was violated, and Wilcoxon signed ranks test was conducted to compare the medians of  $Diff_{12i}$  and 0. The test statistics were based on positive ranks.

\*\* Significantly greater than 0 at the 95% confidence level.

\* Significantly greater than 0 at the 90% confidence level.

The means of  $Diff_{12i}$  for different  $F_i$  groups were also compared using ANOVA.

Although the distribution of  $Diff_{12i}$  was non-normal, ANOVA (or F-test) is considered a robust test that tolerates violations to the normality assumption (Blanca et al., 2017). Levene's tests for homogeneity of variance indicated that groups by  $F_i$  had equal variance in  $Diff_{12i}$ , and thus the equal variance assumption for conducting ANOVA was met. The F test result indicated

significant differences in  $Diff_{12i}$  among groups by the first-experienced brand ( $F = 2.216$ ,  $df_1 = 9$ ,  $df_2 = 660$ ,  $p = 0.020$ ). Therefore, the first-experienced advantage significantly varied by the brands that customers chose and experienced in the first purchase.

#### **4.4.3 Population-Level Measurements for the First-Experienced Advantage**

So far, we have found the first-experienced advantage using individual-level measures and showed that it varied by the first-experienced brands. In this section, we examine the first-experienced advantage using a population-level measure: compared to customers who did not choose brand  $k$  in the first purchase; i.e., do customers choosing brand  $k$  in the first purchase have higher probability of choosing brand  $k$  again in subsequent purchases? Table 4.5 reports the probabilities of choosing brand  $k$  in the  $j$ th purchase for customers choosing  $k$  in the first purchase, customers who did not choose  $k$  in the first purchase, and those who did choose  $k$  in the second but not the first purchase.

**Table 4.5: Probabilities of Choosing Brand  $k$  in the  $j$ th Purchase ( $j \leq 5$ )**

Brand $k$	$N_k$	$P(C_j = k   i \in K)$				$N - N_k$	$P(C_j = k   i \notin K)$				$N_{k'}$	$P(C_j = k   i \in K')$		
		$j = 2$	$j = 3$	$j = 4$	$j = 5$		$j = 2$	$j = 3$	$j = 4$	$j = 5$		$j = 3$	$j = 4$	$j = 5$
Carnival	214	55.61%	49.07%	50.47%	50.93%	764	9.03%	11.26%	10.47%	9.29%	69	44.93%	43.48%	34.78%
RCI	175	51.43%	54.29%	50.29%	48.57%	803	12.33%	12.08%	11.96%	12.83%	99	33.33%	32.32%	38.38%
Norwegian	92	40.22%	31.52%	33.70%	31.52%	886	5.53%	6.21%	7.56%	7.45%	49	26.53%	26.53%	28.57%
Disney	54	51.85%	38.89%	29.63%	20.37%	924	2.60%	2.49%	1.73%	2.06%	24	33.33%	20.83%	16.67%
Princess	95	43.16%	47.37%	40.00%	45.26%	883	6.57%	7.93%	8.83%	8.95%	58	41.38%	34.48%	37.93%
HAL	79	53.16%	51.90%	46.84%	51.90%	899	4.45%	4.89%	4.56%	3.67%	40	32.50%	22.50%	25.00%
Celebrity	75	40.00%	40.00%	37.33%	41.33%	903	6.98%	6.09%	7.42%	7.86%	63	30.16%	20.63%	31.75%
Deluxe*	64	53.13%	54.69%	46.88%	43.75%	914	4.81%	3.50%	5.47%	4.81%	44	34.09%	47.73%	40.91%
Luxury*	49	46.94%	55.10%	42.86%	51.02%	929	2.05%	4.20%	3.34%	4.74%	19	31.58%	21.05%	36.84%
Non-Popular*	81	34.57%	29.63%	19.75%	20.99%	897	4.57%	2.79%	4.35%	3.23%	41	26.83%	24.39%	14.63%
Total	978	48.26%	46.22%	42.23%	42.84%	8802	5.75%	5.98%	6.42%	6.35%	502	34.19%	31.03%	32.21%

Note:  $N_k$  is the number of customers who chose brand  $k$  in the first purchase;  $P(C_j = k | i \in K)$  is their probability of choosing brand  $k$  at the  $j$ th purchase.  $N - N_k$  represents the number of customers who did not choose brand  $k$  in the first purchase;  $P(C_j = k | i \notin K)$  is their probability of choosing brand  $k$  at the  $j$ th purchase.  $N_{k'}$  is the number of customers who did not choose brand  $k$  in the first purchase but did choose it in the second purchase;  $P(C_j = k | i \in K')$  is their probability of choosing brand  $k$  at the  $j$ th purchase.

\*The average probabilities of choosing/returning to a *specific* deluxe, luxury, non-popular brand, not the probabilities of choosing a brand category.

**Table 4.6: Probabilities of Choosing Brand  $k$  at the  $j$ th Purchase by Brands**

Brand $k$	$N_k$	$N-N_k$	$\frac{P(C_j = k   i \in K) - P(C_j = k   i \notin K)}{j = 2 \quad j = 3 \quad j = 4 \quad j = 5}$				$N_k'$	$\frac{P(C_j = k   i \in K) - P(C_j = k   i \in K')}{j = 3 \quad j = 4 \quad j = 5}$		
			Carnival	214	764	0.466*		0.378*	0.400*	0.416*
RCI	175	803	0.391*	0.422*	0.383*	0.357*	99	0.210*	0.180*	0.102*
Norwegian	92	886	0.347*	0.253*	0.261*	0.241*	49	0.050	0.072	0.030
Disney	54	924	0.493*	0.364*	0.279*	0.183*	24	0.056	0.088	0.037
Princess	95	883	0.366*	0.394*	0.312*	0.363*	58	0.060	0.055	0.073
HAL	79	899	0.487*	0.470*	0.423*	0.482*	40	0.194*	0.243*	0.269*
Celebrity	75	903	0.330*	0.339*	0.299*	0.335*	63	0.098	0.167*	0.096
Deluxe	64	914	0.483*	0.512*	0.414*	0.389*	44	0.206	-0.009	0.028
Luxury	49	929	0.449*	0.509*	0.395*	0.463*	19	0.235*	0.218*	0.142
Non-Popular	81	897	0.300*	0.268*	0.154*	0.178*	41	0.028	-0.046	0.064
<b>Total</b>	978	8802	0.425*	0.402*	0.358*	0.365*	506	0.120*	0.112*	0.106*

Note:  $P(C_j = k | i \in K) - P(C_j = k | i \notin K)$  was the difference in probabilities of choosing brand  $k$  in the  $j$ th purchase between customers who chose brand  $k$  in the first purchase and those who did not chose brand  $k$  in the first purchase.  $P(C_j = k | i \in K) - P(C_j = k | i \in K')$  was the difference in probabilities of choosing brand  $k$  in the  $j$ th purchase between customers who chose brand  $k$  in the first purchase and those who did not chose brand  $k$  in the first purchase but did choose it in the second purchase.

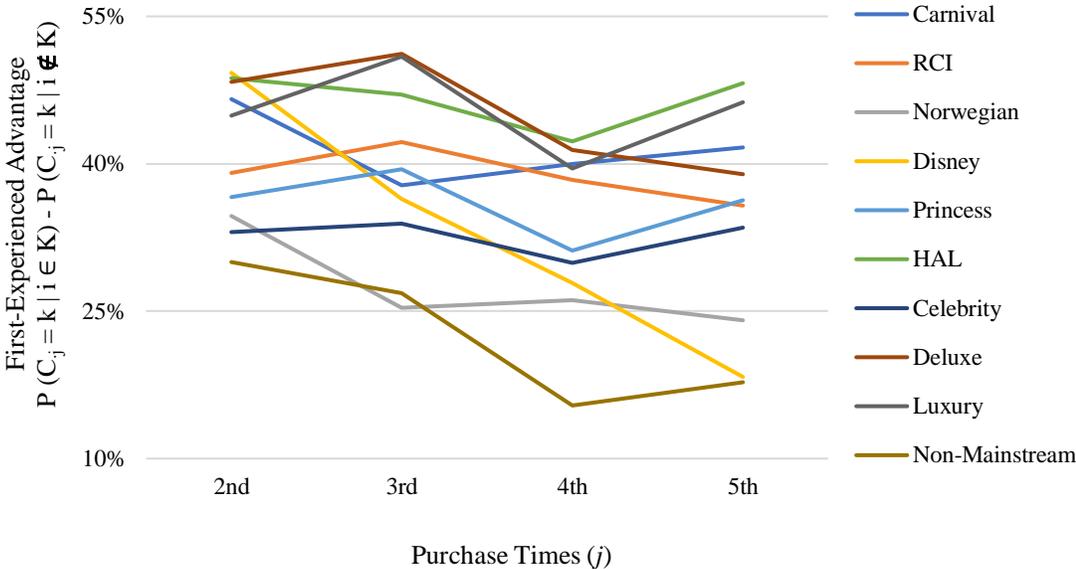
\*The difference was significantly greater than 0 at the 95% confidence level.

Table 4.6 compares the probabilities of choosing brand  $k$  in the  $j$ th purchase for different customer groups. Z test results suggested that, compared to customers who did not choose brand  $k$  in the first purchase, customers selecting  $k$  in the first purchase were 42.5% more likely in the second purchase ( $Z = 26.289, p < 0.001$ ), 40.2% more likely in the third purchase ( $Z = 24.929, p < 0.001$ ), 35.8% more likely in the fourth purchase ( $Z = 22.369, p < 0.001$ ), and 36.5% more likely in the fifth purchase ( $Z = 22.756, p < 0.001$ ) to choose brand  $k$ . We also found that, compared to customers who did choose brand  $k$  in the second but not the first purchase, customers choosing  $k$  in the first purchase were 12.0% more likely to return to  $k$  in the third purchase ( $Z = 4.551, p < 0.001$ ), 11.2% more likely in the fourth purchase ( $Z = 4.321, p < 0.001$ ), and 10.6% more likely in the fifth purchase ( $Z = 4.070, p < 0.001$ ). These results, again, verified the existence of the first-experienced advantage.

Next, we used  $P(C_j = k / i \in K) - P(C_j = k / i \notin K)$  as the population-level measure of the first-experienced advantage and examined whether it varied by first-experienced brands. As shown in Table 4.6,  $P(C_j = k / i \in K) - P(C_j = k / i \notin K)$  was significantly larger than 0 for any  $k$  when  $j$  was between 2 and 5. In other words, for any specific brand  $k$ , customers choosing it in the first purchase had significantly greater probabilities of choosing it again in the second through the fifth purchases, compared to customers who did not choose it in the first purchase. This indicated that the first-experienced advantage commonly existed regardless of the first-experienced brand.

However, the first-experienced advantage magnitude, as well as its temporal change pattern, varied by the first-experienced brand. Figure 4.4 summarizes how the

first-experienced advantage changed from the second to the fifth purchases by first-experienced brands. As shown in this figure, the magnitude of the first-experienced advantage seemed to be dependent on the first-experienced brand. For example, in the second purchase, the first-experienced advantage for Carnival was 0.466, namely that customers choosing Carnival in the first purchase were 46.6% more likely to choose Carnival again in the second purchase, compared to customers who did not choose Carnival in the first purchase. But the first-experienced advantage for a less-popular brand was only 0.300 in the second purchase.



**Figure 4.4: The Size of the First-Experienced Advantage by  $j$**

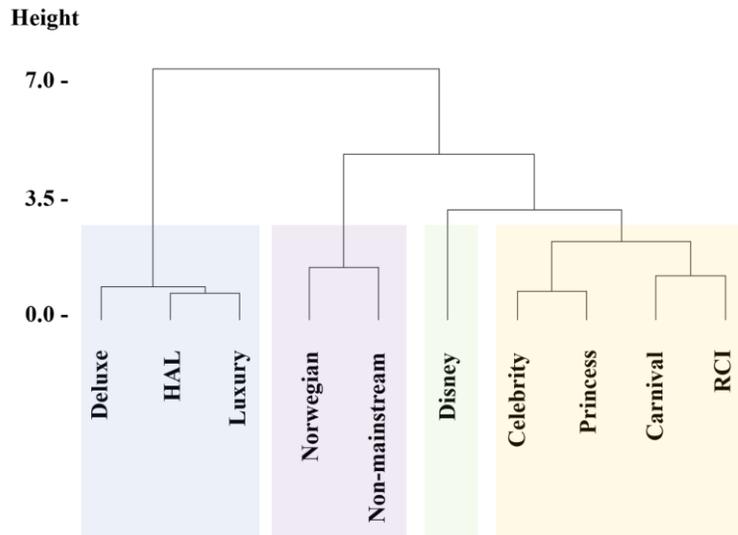
Moreover, the change in magnitude of the first-experienced advantage by purchase time also varied by first-experienced brands. For example, the first-experienced advantage for Celebrity remained stable in the second through the fifth

purchases, but that for Disney decayed significantly ( $\beta = -0.996$ ,  $t = -15.725$ ,  $p < 0.001$ ,  $R^2=0.992$ ) from 0.493 in the second purchase to 0.183 in the fifth purchase.

Based on these differences in the magnitude of the first-experienced advantage and its temporal change pattern, we categorized the first-experienced brands included in this research. Hierarchical clustering method was used instead of K-means clustering method, because the clustering structure was unclear prior to this research.  $P(C_j = k | i \in K) - P(C_j = k | i \notin K)$  were used as the clustering variables, where  $2 \leq j \leq 5$ . Standardized scores of these four variables were used to calculate point-point and cluster-cluster distances. The point-point dissimilarities were measured using Euclidean distance. To measure cluster-cluster dissimilarities, researchers have developed many different algorithms, among which the most popular five include single linkage, complete linkage, average linkage, centroid method, and Ward's method (Hair et al., 2010, pp 508-510). Specifically, single linkage takes the shortest distance between one object in a cluster and another object in the other cluster as the dissimilarity measure of different clusters. Complete linkage, on the other hand, is more conservative, treating the longest distance between clusters as the dissimilarity measure in the clustering process. Average linkage takes the average distance of all the objects in one cluster with all the objects in another cluster as the dissimilarity measure. Centroid method first determines the cluster centroids, which are the mean values within a cluster, and then calculates the distance between different centroids to come up with the dissimilarity measure. Ward's method uses the sum of squares within the clusters to measure the dissimilarity between clusters. Each method has different systematic tendencies and biases in the way it groups observations (see Hair

et al., 2010 for a review). Since the underlying data structure is often unclear in advance, selecting the most appropriate algorithm is usually difficult. Kaufman and Rousseeuw (1990) proposed using the *agglomerative coefficient* to compare the quality of clustering structures produced by different algorithms. Generally speaking, agglomerative coefficient describes the strength of the clustering structure: values closer to 1 suggest a more balanced clustering structure, whereas values closer to 0 suggest less well-formed clusters. This study used the *agnes* function in R to calculate agglomerative coefficients under different clustering algorithms. Results indicated that Ward's method was the best algorithm producing the largest agglomerative coefficient (0.806).

After determining the methods to measure point-point and cluster-cluster dissimilarities, this study used the *hclust* function in R to draw a dendrogram showing the hierarchical clustering structure (see Figure 4.5). Next, to determine the most appropriate number of clusters, this study used the *NbClust* package in R. This package proposes the best clustering scheme based on 30 validation indices, including Calinski-Harabasz index, Davies-Bould index, Silhouette index, Dunn index, etc. (Charrad et al., 2012). For the data of interest in this study, *NbClust* results suggested that, among two through five, four was the optimal cluster number with the greatest number of validation indices suggested it produced the best clustering quality.



**Figure 4.5: Dendrogram of the Hierarchical Clustering Structure**

Accordingly, the first-chosen cruise lines included in this study were clustered into four categories. The first category included HAL, deluxe cruise lines, and luxury cruise lines, whose first-experienced advantage maintained at the highest level around 45% in the first five purchases. We tentatively labeled this category “*stable high*.” The second category included Carnival, RCI, Princess, and Celebrity, whose first-experienced advantage maintained at a moderate level around 40% in the first five purchases. We called this category “*stable moderate*.” The third category included Norwegian and less-popular cruise lines, whose first-experienced advantages gradually decayed from moderate level to a low level through the first five purchases. We labeled this category “*declining low*.” Disney alone formed the last brand category, which we call “*declining high*.” The first-experienced advantage for Disney was as high as 49% in the second purchase, but it dropped to a very low level in subsequent purchases.

#### ***4.5 Conclusion and Discussions***

Based on the purchase history data of 978 real cruise passengers, this study empirically verified the existence of the first-experienced advantage by showing that individual customers had significant higher probabilities of choosing their first-experienced brand than other brands in subsequent purchases. For customers who had purchased at least three brands, their probability of repurchasing the first-experienced brand was significantly greater than that of repurchasing the second and third-experienced brands. Moreover, after buying the second-experienced brand for the first time, customers remained significantly more likely to return to their first-experienced brand than to their second-experienced brand. This finding indicated that the first-experienced advantage not only existed but also survived after customers had experienced a second brand. However, using individual-level measurements, this research found that only certain brands showed a first-experienced advantage. More specifically, in the cruise industry, only passengers choosing Carnival, RCI, Princess, or Celebrity in the first purchase had significantly higher probability of returning to their first-experienced brand than to their second-experienced brand. In contrast, passengers choosing Disney or a less-popular brand in the first purchase were less likely to repurchase their first-experienced brand than their second-experienced brand.

This study also examined the first-experienced advantage at the population-level by comparing the probabilities of choosing a given brand (say brand  $k$ ) in a given purchase between different customers groups. Results showed that customers choosing brand  $k$  in the first purchase had a significantly greater probability of choosing  $k$  in the second through the fifth purchase than customers who did not choose  $k$  in the first

purchase. They also had a significantly larger probability of repurchasing  $k$  in the third through the fifth purchase than customers who did choose  $k$  in the second but not the first purchase. These findings again verified the existence of the first-experienced advantage. But notably, this first-experienced advantage declined as customers made more purchases in the product category. For example, the difference in probability of choosing brand  $k$  between customers choosing vs. not choosing  $k$  in the first purchase was 42.51% in the second purchase. This difference decreased to 40.24% in the third purchase, and then to 35.81% and 36.49% in the fourth and the fifth purchase, respectively. However, different brands exhibited different temporal patterns in the change of the first-experienced advantage. Four brand categories were identified: brands in the “*stable high*” category had stable and high first-experienced advantage, while those in the “*stable moderate*” category had stable but moderate first-experienced advantage. For brands in the “*declining low*” category, their first-experienced advantage gradually decreased from a moderate level to a low level. Disney alone formed the “*declining high*” category, and its first-experienced advantage dropped quickly from a high level to a low level.

#### **4.5.1 Theoretical Contribution**

A handful of research has proposed the concept of the first-experienced advantage, suggesting that customers have stronger preferences for their first-experienced brand (Niedrich and Swain, 2003, 2008). Using actual customer choice data collected in leisure cruise industry, the current research empirically verifies the existence of the first-experienced advantage and contributes to this literature in three

ways. First, we for the first time measured the first-experienced advantage using individual-level indicators. Second, we found that the size of the first-experienced advantage was dependent on the brand that customers chose in their first purchase. Third, this study showed that the size of the first-experience advantage might change based on the total number of subsequent purchases made, and the change pattern varied based on what the first-chosen brand was.

#### **4.5.2 Managerial Implication**

Besides the above theoretical contributions, this research also offers practical implications to industry practitioners. Some researchers alleged that repeat customers are more desirable for cruise lines than first-time passengers because less persuasion is needed to retain repeaters in future purchases (Chua, Lee, and Han, 2017; Petrick, 2004). However, the current study found that the first-experienced advantage might commonly exist in the cruise industry. Passengers choosing a given brand in the first purchase showed a significantly higher probability of buying it again in subsequent purchases, when compared to customers who did not choose this brand in the first purchase. Attracting first-time passengers, therefore, can be valuable in the long term, especially for cruise lines with a strong and stable first-experienced advantage. On the other hand, investing marketing expenses to attract repeat customers who have already experienced other brands might be ineffective and unworthy. This research found that, even if passengers were successfully snatched by a new brand from their first-experienced cruise line, they were more likely to return to their first-experienced brand than to continue buying the new brand.

The current study also found that the first-experienced advantage varied by the first-chosen brands in its magnitude and temporal change pattern. This implied that different brands may want to adopt different strategies in dealing with their attracted first-time customers. For brands with relatively strong and stable first-experienced advantage (i.e. brands in the “*stable high*” and the “*stable moderate*” category), their attracted first-timers would maintain relatively high probabilities of returning to them in subsequent purchases. Therefore, they should provide customers with service consistent in quality and values.

On the other hand, brands in the “*declining low*” and the “*declining-high*” category first need to understand why their first-experienced advantages are low or decline rapidly, and then propose appropriate strategies to improve it. If the decline of their first-experienced advantage is inevitable, or if the cost for maintaining or improving their first-experienced advantage is prohibitive, these brands should focus on maximizing revenue from their attracted first-time customers before their first-experienced advantage shrinks. Take Disney as an example. In this study, for customers choosing Disney in the first purchase, their probability of returning to Disney was as high as 51.85% in the second purchase, but it plummeted to as low as 20.37% in the fifth purchase. This rapid decline in the return probability might be systematic and inevitable. Because of Disney’s unique brand position as a family cruise line with a unique branded experience, customers may stop sailing with Disney and switch to other cruise lines when their children grow up or when there’s less novelty perceived in a Disney- (entertainment) focused cruise . Given that its newly attracted first-time customers only maintain relatively strong repeat probabilities in the

second and third purchases, Disney should not bother with a loyalty program but encourage customers to choose more expensive cruise products and spend more on board.

#### **4.5.3 Limitation and Future Research**

Like many other studies, this study is also subject to limitations. First, the magnitude of the first-experienced advantage varied when different measurements were used. This might be because that customers who had chosen less than three brands were excluded when we calculated the individual-level indicator of the first-experienced advantage. Excluding these loyal customers might lead to an underestimate in the magnitude of the first-experienced advantage.

Second, the data points for estimating certain probabilities might be too small to be reliable. For instance, this study included 54 customers choosing Disney in their first purchase and 24 customers who chose Disney in their second but not their first purchase. Although the former customer group consistently had a greater probability of returning to Disney than the latter group, the difference was not significantly different from zero. This result might be due to the large standard error resulting from insufficient data points. Also due to the limited sample size, as well as the low-frequency feature of cruise products, this research only focused on the first five purchases when investigating how the first-experienced advantage changed by purchase times. Future studies may use high-frequency products—such as restaurants—as the research context to gain a more meaningful and comprehensive understanding on how purchase times influence the first-experienced advantage.

Lastly, no demographic (e.g. age, income, residence area) or psychological (e.g. satisfaction, self-brand congruence) information of individual customers was included in the data of this study. Thus, we were not able to explain the variance of the first-experienced advantage among different brands. Future studies can look into this issue, which may assist brands to find appropriate ways to maintain or improve their first-experienced advantage.

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