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Paradox of choice: The Influence of Assortment Size on Customer Satisfaction

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Abstract

Recently researchers showed that more choice is not always better. Choosing from large assortments can be overwhelming, raising expectations and decreasing overall level of consumer satisfaction. Author contributes to existing overchoice studies by using real assortment of online stores to find influence of assortment size on customer satisfaction. 90 students participated in the main experiment, where they chose a smartphone case for their friend. Results of the study show that large assortment size leads to higher expectations, higher choice difficulty and higher level of satisfaction. This research does not show overchoice presence and author suggests future studies could focus more on assortment variety and more personal characteristics of consumers, like preference uncertainty.

Key Words: Assortment size, satisfaction, expectations, overchoice, choice overload.

Introduction

It is a popular belief that more choice brings more satisfaction. According to rational choice theory every option added to the choice set benefits consumers, as it gives a better chance to find a perfect option. Therefore many retailers promote themselves as ones with the largest selection of particular products trying to attract more customers. However, the paradox between assortment size and satisfaction was found: they are not always positively correlated. Often when people choose from large assortment or even just think that product comes from large assortment, they show lower level of satisfaction. Consumers are overwhelmed by number of options, show less motivation to choose and higher level of choice deferral.

The main purpose of this thesis is to find how the number of option affects satisfaction from the choice. It finds a strong base in literature by Kristin Diehl and Cait Poyner (2010), who tested the effect of small and large assortments on satisfaction and expectations, although in this study three types of assortment are tested to find if there is a U-shape relationship between satisfaction and assortment (Desmeules, 2001). If overchoice exists, medium assortment is expected to be the most satisfying for all types of consumers, as no choice or very little choice is not an option as well. Another important purpose of this study is to analyze the role of personal characteristics on overchoice. This analysis is conducted on the basis of maximization scale (Schwarz, 2004). Maximizers are expected to be less satisfied with too large and too small assortments, while also being overall less satisfied than satisfiers.

Existing studies are based on custom composition of choice sets. Diehl & Poynor (2010) believe that such assortments are representative, but they suggest that future research could be based on real assortments as retailers with smaller assortments tend to focus on the most popular items. Author of this thesis contributes to overchoice topic by using real assortments of online stores selling phone cases. This particular product is chosen for the study as it meets overchoice preconditions.

If this research was to find paradox of choice confirmation, results could be used to change way retailers think about their assortment. It might not always be the best decision to stock large assortment if it does not result in higher customer satisfaction. Contrary, retailers could find an optimal medium assortment size to improve their sales. Results could also help to determine if retailers, particularly online, should promote themselves on the basis of large assortment size in their stores.

This research starts with overchoice literature overview. It is followed up by a theoretical framework, where the author explains overchoice definition and preconditions. Afterwards variables used in the study are explained and hypotheses are drawn up. Subsequent preliminary study helps to choose right stores that represent three assortment types in the main study. Afterwards the method of the study is explained and executed. It is followed by results explanations, study limitations and suggestions for future research.

Literature Review

The question of how assortment size influences consumer choice was raised by numerous researchers. Kahn, Moore and Glazer (1987) showed that consumers sometimes experience additional utility simply from having many items in the choice set as it creates the perception of freedom of choice. Other researchers proved that large assortment increases the overall enjoyment of shopping (Babin, Darden & Griffin, 1994), and strengthens choice satisfaction (Botti & Iyengar, 2004).” It allows retailers to satisfy wide range of tastes, retain customers and build an image of higher quality (Berger, Draganska, and Simonson 2007). For consumer large assortment implies a bigger chance of finding a match for their tastes and helps to avoid satiation from repeated consumption. Chernev (2011) shows that larger assortment reduces risks of missing superior option, as it is less likely that it is not present in large choice set.

However, large assortments do have many drawbacks. After the paradoxical finding of Reibstein, Youngblood and Fromkin (1975) showed that large variety can be harmful for consumer, many researches contributed to the topic of negative influence of too much choice. “Paradox of Choice” term was introduced in 2004 by American psychologist Barry Schwartz in his book “The Paradox of Choice. Why More is Less”. Author analyzed how assortment size influences consumer decision and satisfaction. Schwarz argued that consumers have higher expectations when they choose from larger assortments. They also experience regret after, due to high expectations. Overall Schwarz shows that consumers are less happy when choosing from larger choice set. Author also explains that consumer satisfaction also depends on consumer personality and shows difference between, what

Herbert Simon in 1950s termed, maximizers and satisfiers: maximizers are perfectionists who are overall less satisfied than satisfiers with any choice they made.

Iyengar & Lepper (2000) were first who experimentally showed paradox of choice occurrence. In their study people were more likely to choose jam and were more satisfied with the purchase when choosing from a set of 6 rather than 24 jams. Diehl and Poynor (2010, p. 313) showed “that as assortment size increases, so do consumers’ expectations about the ability of that assortment to provide a close match to their preferences. Subsequently, when consumers choose a product that falls short of their expectations, they may experience greater negative expectation disconfirmation when the product came from a larger rather than a smaller set.” Authors explain paradox of choice in terms of expectation-disconfirmation mechanism. However, studies conducted in this research were based on assortment samples created by authors.

Chernev (2011) explains managerial implications for paradox of choice, saying that understanding of this phenomenon can give retailer a competitive advantage by optimizing assortments to facilitate choice. That will benefit consumers and create a market success for the company.

Discussion

Overchoice

Either choosing a career path or just deciding what movie to watch, nowadays consumers are overwhelmed by number of options. It was an unshakable truth for many years that more choice cannot harm anyone, but recently researchers documented disadvantages of big assortment to choose from. It results in increased chance of not choosing at all, lower satisfaction with choice and bigger regret afterwards. All these effects can be grouped under term “choice overload” or simply “overchoice”.

Factors of overchoice were also identified and grouped in the following way: those, that relate to the choice and those related to consumer characteristics. Choice related factors are assortment size, how products are organized on the shelf or website, what categories are present and if products can be easily compared, while consumer factors are consumer preferences and their expectation to find ideal option.

Overchoice Preconditions

Choice overload does not necessarily occur when consumer chooses a product from large assortment – there are several preconditions that must be true for this effect to take place. First of all, consumer must not have clear preferences for any options in the choice set, as “Chernev (2003a, 2003b) showed that people with clear prior preferences prefer to choose from larger assortments and that, for those people, choice probability and satisfaction increased with the number of options to choose from, the opposite of choice overload”. Therefore, there is a negative correlation

between assortment size and satisfaction only for those consumers, who are relatively less familiar with particular choice set. This is the first precondition and reason, why not all sets of products can be used to study paradox of choice, as researchers need to prevent strong preferences for any option.

Overchoice can occur only in situations, when choice is difficult for consumer and demands significant cognitive efforts, so there should not be any dominant options in the choice set. For example, Coca-Cola appearance in the choice set of not well-known soda brands will diminish paradox of choice possibility due to noteworthy dominance of Coke option.

Variables

Assortment size

Iyengar and Lepper (2000) showed that having more options can lead to less purchasing. Consumers can be so frustrated with amount of options that leave the store not buying at all. However, as Desmeules (2002) presented that little choice will not make consumer satisfied as well, satisfaction graph must follow an inverted U-shape (graph 1). Determining the right depth and size of assortment is a vital question for every retailer: too much choice can be harmful for consumer, as it becomes overwhelming, but so is a little choice or no choice at all, meaning that exists the optimal assortment size, which can maximize retailers' sales. (*Appendix 1*)

Resulting hypothesis must contain 3 scenarios:

H₁: Different assortment sizes lead to different levels of customer satisfaction with chosen option

H_{1a}: Small assortment leads to lower satisfaction with chosen option.

H_{1b}: Medium assortment leads to higher satisfaction with chosen option.

H_{1c}: Large assortment leads to lower satisfaction with chosen option.

Customer Satisfaction

Satisfaction increases probability of repeat purchase, company profits and market share. As there are many homogeneous products on the market today, it is crucial for brands and retailers to increase customer satisfaction and earn their loyalty.

There are numerous definitions of customer satisfaction. However, almost all researchers define satisfaction in light of 3 components: summary affective response which varies in intensity; satisfaction focus around product choice, purchase and consumption; time of determination which varies by situation, but is generally limited in duration. The most appropriate definition for a given study would be the one made by Oliver in 1997. Author defined it “as a judgment that a product or service feature, or the product or service itself, provided (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or overfulfillment”.

Assessing how assortment size and variety affects satisfaction can help retailers to find the optimal assortment that will drive sales and attract repeat purchases.

Expectations (Anticipated satisfaction)

Consumers arrive to physical and online stores with different goals. Some of them have goals that are choice-oriented (want to choose from a set of alternatives), others are value-oriented and access each choice separately using specific criterias. However, there is another decision goal shoppers might have – anticipated satisfaction. Anticipated satisfaction can be defined as satisfaction customers expect to receive from a particular product/service. Shiv & Huber (2000) posit that “when anticipating satisfaction, the consumer forms mental images related to one or more of the options, and the final decision is likely to be based on the focus of these imagery-related processes”.

When shopping in store with wide assortment consumers raise their expectations on how much satisfaction they will receive from chosen product. Even just a knowledge that product comes from a large assortment raises expectations and decreases overall satisfaction from the usage of product. Following hypothesis will be tested in this research using real assortment of online-retailers:

H₂ : Larger assortments heighten consumers’ anticipated satisfaction compared to smaller assortments.

Choice Difficulty

Numerous researchers proved that complex choice causes several consequences for consumer: they tend to defer decision, start searching new alternatives or even opt not to choose (Iyengar, Lepper, 2000). Usually this results in low satisfaction or regret with purchase made.

H₃ : Larger assortments lead to higher choice difficulty.

Moderators

Maximizers and satisfiers

Barry Schwartz (2004) introduces terms “maximizer” and “satisfier” to group of consumers according to their purchasing manners. Maximizers want to find the best option available and are ready to invest significant time to achieve this goal, while satisfiers do not see the difference between good and excellent option and do not will to spend much time on looking for a better option. Schwarz writes “to satisfice is to settle for something that is good enough and not worry about the possibility that there might be something better.” Not a surprise, that large assortment confuses maximizers as they are to overwhelmed by amount of options in modern online and physical stores and are afraid to miss a better option, while satisfier does not have such concerns. Maximizing behavior leads to dissatisfaction with any purchase and overall misery.

H₄: Maximizers are less satisfied with small and large assortments.

Study

Method

Respondents for this study were mainly students, between 20 and 25 and were attracted to participate in the building of Graduate School of Management. They were told they have a chance to win 20\$ Amazon coupon for their input. Overall 90 students participated in the main study, 30 for each size of assortment.

Each participant was asked to choose a product from one of three online-stores. Their expectations and personality differences are evaluated beforehand and level of satisfaction and choice difficulty are assessed in the end of the experiment.

Assortment type

In order to meet preconditions, chosen assortment for this study should not generate clear preferences and include dominant well-known brands. After testing several product types, online iPhone case stores were chosen to represent assortment for this study. Preliminary study showed that such assortment does not include dominant products that would make choice easy, while consumers usually do not know this market well to have high level of preference for something particular.

Assortment Size Evaluation

To determine what assortment size in smartphone case market is considered to be small, medium or large, initial study was performed. 30 respondents were asked open-ended question to find out what number of options they would consider to find in small/medium/large case store. Average of all the answers given by respondents allowed to define assortment sizes: 50 items for small store, 300 items in average store and more than 2000 items in large online store. 3 online stores selling smartphone cases with corresponding assortment sizes were found (Table 1).

| Store name | Store web-page | Assortment size (iPhone 5 cases) |
|------------|---|----------------------------------|
| Svyaznoy | http://www.svyaznoy.ru/catalog/accessories/198/tag/dlya-iphone-5 | 50 |
| Re-Store | http://www.re-store.ru/accessories/cases/ | 300 |
| Society6 | http://society6.com/cases | 2000 |

Table 1. Store descriptions.

All chosen websites do sell cases in the similar price range, do not contain luxury products and are quite similar in usability: customer can choose type of their smartphone model and look through certain amount of options depending on the store size. Due to no significant difference in customer experience between this stores, the only difference is assortment size and type.

Scenario

Participants were told that they are going to look for an iPhone case for their friend's birthday.

“Imagine you are looking for an iPhone case for your friend. You are not that close and not sure about their preference, therefore you would like to find something that would be liked by most people”.

This condition is often used by researchers who study paradox of choice, as when

consumers buy product for someone else they tend to use own experience less often.

Manipulation Check

Respondents were presented with online-store homepage and were told how many smartphone cases are available for purchase (this was either 50, 300 or 2000 items depending on respondent's group). Before participants could proceed to look through the store manipulation check was conducted: respondents were asked to evaluate the following statement:

“This store assortment is . . . “ (1 = “very small” ... 7 = “very large”)

Dependent Variables Evaluation

Expectations

Also they were asked to evaluate their expectations to find the most preferable option in this store using 7-point scale.

“This assortment size of 50/300/2000 products gives me high expectations to find a perfect option for my needs.”

Afterwards participants had unlimited time to choose the option they like. They freely browse through the website and present the chosen option to the researcher in the end. Next their satisfaction with the chosen item evaluated using the Likert 7-point scale.

Satisfaction

To assess satisfaction of respondents, they were asked to what degree they agree with following statement:

“I am completely satisfied with this product.”

Choice difficulty

To find if there is a difference in choice difficulty for consumer when choosing from different assortment sizes, participants were asked to answer following question (where 1 is “completely disagree and 7 is “completely agree”):

“Did you find it difficult to make your final choice?”

Moderator

Respondent type

Study continues with assessing consumer type – maximizer or satisfier. Barry Schwartz’ maximization scale is used to determine consumer personality, where respondents are asked to rate each statement using 7-points scale (where 1 is “completely disagree and 7 is “completely agree”) (*Appendix 2*). Respondents were described as maximizers if their average score was more than 4, while those with average answer less than 4 were described as satisfiers.

Results

Manipulation check

Manipulation check showed, that participants, who were choosing from large assortment, described that assortment as significantly larger than those choosing from medium (300) and small (50) assortment ($p < .00001$, $F(2,87)=36$) (*Appendix 3*).

| | Assortment | | |
|----------------------------|------------|--------|-------|
| | Small | Medium | Large |
| Assortment Perception Mean | 3,1 | 4,7 | 6,1 |
| Standard Deviation | (2,8) | (2) | (0,8) |

Table 2. Manipulation check

Expectations

Analysis of variance was used to evaluate impact of assortment size on anticipated satisfaction. Results showed that respondents expectations significantly depend on store assortment size – with increasing assortment participants raised degree of anticipated satisfaction ($p < 0,0001$, $F(2,87) = 15,5$) (*Appendix 4*).

| | Assortment | | |
|-------------------------------|------------|--------|-------|
| | Small | Medium | Large |
| Anticipated Satisfaction Mean | 4,1 | 4,8 | 5,7 |
| Standard Deviation | (1,7) | (1,1) | (1) |

Table 3. Expectations

Satisfaction

ANOVA was used to compare satisfaction of respondents from different groups. Results showed that those who choose from medium and large assortments experience higher degree of satisfaction ($p < 0,01$, $F(2,87) = 5,2$) (*Appendix 5*). There was also a difference in satisfaction between medium and large assortment groups in favor of the least, however in lesser degree than with little assortment.

| | Assortment | | |
|--------------------|------------|--------|-------|
| | Small | Medium | Large |
| Satisfaction Mean | 3,5 | 4,5 | 4,8 |
| Standard Deviation | (2,5) | (2) | (3,1) |

Table 4. Satisfaction

Personal characteristics

Another goal of this research was to find how consumer personality affects perceived satisfaction from the purchase. Negative influence of large and small assortment was expected to be more significant on maximizers, as they should be more overwhelmed by number of options in large assortment conditions and very disappointed with amount of choice in small assortment conditions. Results partly confirmed this expectations: maximizers turned out to be more satisfied in conditions of medium and large assortment, while satisfiers were happier with small assortment.

| | | Respondent Type (Mean) | |
|-----------------|--------|------------------------|-----------|
| | | Satisfier | Maximizer |
| Assortment Size | Small | 3,8 | 3,6 |
| | Medium | 4,2 | 4,8 |
| | Large | 4,6 | 5,1 |

Table 5. Personal characteristics

Choice difficulty

ANOVA was used to evaluate impact of assortment size on choice difficulty for consumer. Results showed straight dependence of choice difficulty from assortment size ($p=0,006$).

| | Assortment | | |
|------------------------|------------|--------|-------|
| | Small | Medium | Large |
| Choice Difficulty Mean | 3,4 | 3,9 | 4,7 |
| Standard Deviation | (2,4) | (2,6) | (2) |

Table 5. Choice Difficulty

Conclusion

In line with several other experiments (Scheibehenne, Greifeneder and Todd, 2010, p.421) this study did not prove paradox of choice. This does not mean overchoice does not exist, but it was not found in this study either due to limitations or type of the products used. Consumers were more satisfied when making the choice from large assortment and this goes along with classical economic theories that state that more choice brings more satisfaction, as it increases chance to find a better option for each consumer.

Although this research confirmed that “more choice is better”, it also showed several downsides for this theory. First of all, similar to many studies (Chernev 2011, Schwarz 2006) results show that consumer expectations raise along with assortment. Diehl and Poynor (2010, p. 321) demonstrate that high expectations often lead to negative disconfirmation and overall regret. Hence retailers should think carefully before highlighting relationship between large assortment they stock and consumers expectations to find a perfect option (“In our store with large assortment you will find a perfect match”).

An important part of this study was to assess the impact of assortment size on choice difficulty. There is a significant result that larger assortments lead to higher choice difficulty, and although there was no overchoice effect found, previous studies (Iyengar & Lepper, 2000, p.999) indicate that choice difficulty can be a predictor of dissatisfaction and frustration with the choice-making process.

Expected strong positive influence of assortment size on maximizers was not confirmed. Although maximizers compared to satisfiers were indeed less satisfied with small assortment, there was a positive correlation of assortment size and maximizers satisfaction: despite experiencing choice difficulty with large assortment, maximizers still enjoy choosing from bigger choice set, as it gives a better chance to find a perfect option and less chance that good options are not present.

Limitations and Future Research

The only independent variable analyzed in this study is assortment size. However, another assortment parameter – assortment variety - was not integrated as it is difficult to manipulate with assortment type used. Future detailed analysis could also be based on real assortment and comprise assortment variety to evaluate what role it plays in assortment perception.

One of the shortcomings of this research was the absence of real experience with physical product. Although design is one of the most important features in smartphone case, consumer would usually assess their satisfaction with the product after they could use it for a while and form a full opinion about the product. Future research could be based on a scenario when customer satisfaction is evaluated in a certain amount of time after purchase so that consumer got familiar with a product and more accurate results could be achieved.

Considering other dependent variables that could be used in future research, amount of time spend to choose a product could be measured for each assortment type to gain more accurate results on choice difficulty.

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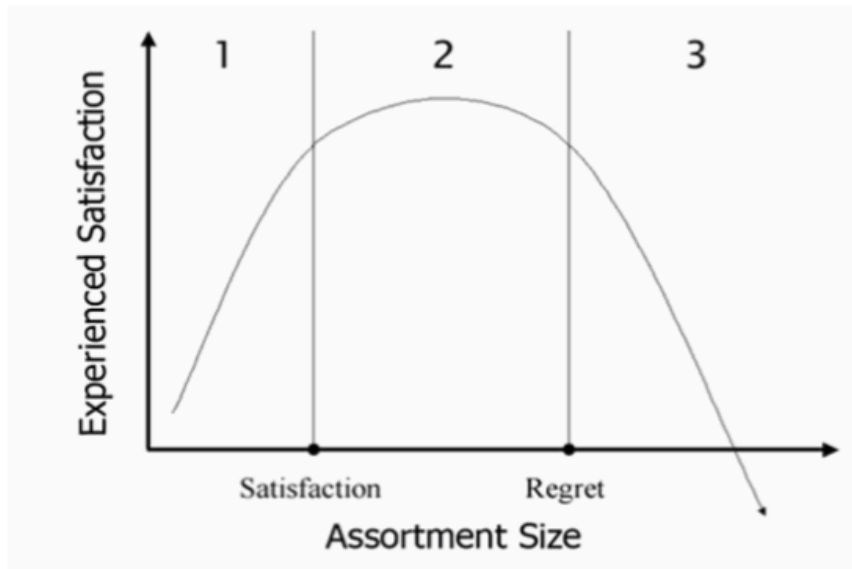
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Appendixes

Appendix 1



Graph 1. Inverted U-shape satisfaction graph

Appendix 2

Maximization Scale.

1. Whenever I'm faced with a choice, I try to imagine what all the other possibilities are, even ones that aren't present at the moment.
2. No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities.
3. When I am in the car listening to the radio, I often check other stations to see if something better is playing, even if I am relatively satisfied with what I'm listening to.

4. When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program.
5. I treat relationships like clothing: I expect to try a lot on before finding the perfect fit.
6. I often find it difficult to shop for a gift for a friend.
7. Renting videos is really difficult. I'm always struggling to pick the best one.
8. When shopping, I have a hard time finding clothing that I really love.
9. I'm a big fan of lists that attempt to rank things (the best movies, the best singers, the best athletes, the best novels, etc.).
10. I find that writing is very difficult, even if it's just writing a letter to a friend, because it's so hard to word things just right. I often do several drafts of even simple things.
11. No matter what I do, I have the highest standards for myself.
12. I never settle for second best.
13. I often fantasize about living in ways that are quite different from my actual life.

Appendix 3

| Analysis of Variance | | | | | | |
|----------------------|-------------|------|--------|----------|-----------|--------|
| Summary | | | | | | |
| Groups | Sample size | Sum | Mean | Variance | | |
| Small Assortment | 30 | 94, | 3,133 | 2,809 | | |
| Medium Assortment | 30 | 141, | 4,7 | 2,01 | | |
| Large Assortment | 30 | 184, | 6,133 | 0,809 | | |
| ANOVA | | | | | | |
| Source of Variation | SS | df | MS | F | p-level | F crit |
| Between Groups | 135,089 | 2 | 67,544 | 36, | 4,058E-12 | 3,101 |
| Within Groups | 163,233 | 87 | 1,876 | | | |
| Total | 298,322 | 89 | | | | |

Table 6. ANOVA. Manipulation Check.

Manipulation Check

Appendix 4

| Analysis of Variance | | | | | | |
|----------------------|-------------|------|--------|----------|----------|--------|
| Summary | | | | | | |
| Groups | Sample size | Sum | Mean | Variance | | |
| Small Assortment | 30 | 123, | 4,1 | 1,75 | | |
| Medium Assortment | 30 | 145, | 4,83 | 1,11 | | |
| Large Assortment | 30 | 172, | 5,73 | 1,03 | | |
| ANOVA | | | | | | |
| Source of Variation | SS | df | MS | F | p-level | F crit |
| Between Groups | 40,156 | 2 | 20,078 | 15,495 | 1,754E-6 | 3,101 |
| Within Groups | 112,733 | 87 | 1,296 | | | |
| Total | 152,89 | 89 | | | | |

Table 7. ANOVA. Anticipated Satisfaction

Anticipated Satisfaction

Appendix 5

| Analysis of Variance | | | | | | |
|----------------------|-------------|------|--------|----------|---------|--------|
| Summary | | | | | | |
| Groups | Sample size | Sum | Mean | Variance | | |
| S.A. | 30 | 107, | 3,567 | 2,53 | | |
| M.A. | 30 | 137, | 4,567 | 2,047 | | |
| L.A. | 30 | 145, | 4,833 | 3,109 | | |
| ANOVA | | | | | | |
| Source of Variation | SS | df | MS | F | p-level | F crit |
| Between Groups | 26,756 | 2 | 13,378 | 5,221 | 0,007 | 3,101 |
| Within Groups | 222,9 | 87 | 2,562 | | | |
| Total | 249,656 | 89 | | | | |

Satisfaction

Table 8. ANOVA. Satisfaction.

Appendix 6

| Analysis of Variance (One-Way) | | | | | | |
|--------------------------------|-------------|------|--------|----------|---------|--------|
| Summary | | | | | | |
| Groups | Sample size | Sum | Mean | Variance | | |
| Small Assortment | 30 | 103, | 3,433 | 2,461 | | |
| Medium Assortment | 30 | 119, | 3,967 | 2,654 | | |
| Large Assortment | 30 | 142, | 4,733 | 2,064 | | |
| ANOVA | | | | | | |
| Source of Variation | SS | df | MS | F | p-level | F crit |
| Between Groups | 25,622 | 2 | 12,811 | 5,353 | 0,006 | 3,101 |
| Within Groups | 208,2 | 87 | 2,393 | | | |
| Total | 233,822 | 89 | | | | |

Choice Difficulty

Table 9. ANOVA. Choice Difficulty.

Appendix 7

| Hypothesis Number | Hypothesis Description | Result |
|-------------------|---|---------------------|
| H ₁ | <p>a) <i>Small assortment leads to lower satisfaction with chosen option.</i></p> <p>b) <i>Medium assortment leads to higher satisfaction with chosen option.</i></p> <p>c) <i>Large assortment leads to lower satisfaction with chosen option.</i></p> | Partly Confirmed |
| H ₂ | <i>Larger assortments heighten consumers' anticipated satisfaction compared to smaller assortments.</i> | Confirmed |
| H ₃ | <i>Larger assortments lead to higher choice difficulty.</i> | Confirmed |
| H ₄ | <i>Maximizers are less satisfied than satisfiers with small and large assortments.</i> | Partly Confirmed |

Table 10. Hypotheses Summary