The Impact on Customers’ Perception of Product Variety

Young Ah Kim

Abstract

Increasing product variety might have a strong impact on a firm’s business operations such as increasing manufacturing costs and complexity. Increasing product variety raises the complexity of demand forecasting and matching supply with demand along the supply chain (Whang and Lee, 1998). Therefore, companies that increase variety in their product lines should also understand the ramifications it may have on all relevant costs as well other functions performed by its manufacturing, marketing, logistics, purchasing, and engineering departments. Consumers represent a major demand source for variety with each individual having different quality valuations, tastes or budget constraints; hence firms strive to satisfy their customers by offering a wide range of products. Prior research shows that marketers should not overload consumers with too much variety, as it may confuse consumers. In this paper, the literature on consumer’s variety seeking behavior is presented and a survey of consumers was designed to better understand the customers’ perception on product variety, especially for consumer electronics and computer hardware products. Data from a survey of one hundred and ten customers between the ages of 20 and 60 was collected and analyzed. This purpose was to investigate customers’ perception on product variety, when purchasing computer hardware and consumer electronics products. An attempt was made to answer the question and summary results are presented in the following paragraphs.

I. Introduction

Product variety can be defined as the range of different models/types offered within a single product line or category. There are several other definitions of product variety available in the literature. Fisher et al. (1999) stated that product variety can be defined in two dimensions: the breadth of the products that a firm offers at a given time and the rate at which the firm replaces existing products with new products. Martin et al. (1996) defined two types of variety, spatial variety and generational variety, where spa-
tial variety indicates the variety that a company offers the marketplace at a point in time, and generational variety means variety across future generations of products. For manufacturing firms, product variety is defined as the various products types or models offered within a product line.

One of the main reasons for increases in variety within a product category is the consumer. Consumers are the ultimate source of demand for product variety, as each individual has a preference for different product variants. Companies try to satisfy their customers by offering products, which ideally satisfy customer needs, in order to increase their sales, market share, and profits. This can also give companies a competitive advantage by increasing customer value. Multi product firms increase variety within a single product category to capture the surplus of customers, attracting new customers as well as retaining existing customers.

II. Relation to Variety and Consumer Behavior

The consumer is one of the major sources of demand for variety. Each individual is characterized by having different quality valuations, tastes or budget constraints; hence firms strive to satisfy their customers by offering a wide range of products. Prior research shows that marketers should not overload consumers with too much variety, as it may confuse them.

One of the oldest reasons offered in the psychological and consumer behavior literature as to why consumers seek product variety is that consumers get bored with current selections and desire something new (Menon and Kahn, 1995; Kahn, 1998). Consumers typically use a product until an optimal level is reached after which, satiation sets in and the consumer looks for something different (Jeuland, 1978; Mc Alister, 1982). Few researchers have said that consumers seek variety because of their curiosity to learn about new things (Raju, 1980; Hirschman, 1980). Another explanation is that consumers seek variety not because they want to maximize the utility of each choice, “local maximization,” but rather because they want to maximize the utility over a stream of choices, “global maximization” (Kahn, 1998).

Larger assortments lead to stronger preferences because they offer more options, and allow consumers to maintain flexibility when making a purchase decision. Experiments done by Greenleaf and Lehmann (1995) showed that consumers may delay purchases because they are unaware of the distribution of potential alternatives, and are uncertain of the degree to which the available set of choices is representative of the entire set. Chernev (2003) through a series of experiments identified that consumers without a readily available ideal point are likely to face a rather complex two stage decision, which might lead to weaker preferences when the assortment is large.

A common assumption is that a larger assortment is beneficial for consumers since it provides for a best match possibility between the consumer’s preferences and the products’ offerings. Past research suggests that increasing choices confuse customers (Dhar, 1997) and increases the probability of customers delaying their choice or not
choosing at all (Greenleaf and Lehmann, 1995). Malhotra, (1982) investigated the effects of information overload on consumer decision making and found that the respondents felt more certain of their choices as the alternatives in the choice set increased, but were also confused as the alternatives increased. Kahn (1998) through her research on consumer behavior found that too much variety could complicate the choice or frustrate the consumer. As a result, marketers should become more cognizant of customers’ preferences, and reduce information overload. The goal of the marketer is to reduce the complexity of the assortment and to maximize the satisfaction of the customer.

III. Customers’ Perception of Product Variety

A survey was designed to obtain information regarding the impact on customer perception of product variety. The survey questionnaire comprises seven questions with all questions developed through the study of the literature. The survey was designed to better understand how product variety can affect customer perception, especially with regards to consumer electronics and computer hardware products. The questionnaire was distributed to several customers between the ages of 20 and 60. Data was collected from over 130 customers and 110 were analyzed.

Table 3.1: Survey Sample

<table>
<thead>
<tr>
<th>Customers Contacted</th>
<th>Responses</th>
<th>Response Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>130</td>
<td>110</td>
</tr>
</tbody>
</table>

The collected data was analyzed using different statistical methods with most questions analyzed using descriptive statistical analysis (charts and frequency distributions). The mean and the variance of the sample were estimated and inferences were drawn based on the data sample. Questions, which asked participants to rank various options, were analyzed by assigning points to each option. Finally, points for each option were summed and the total points were used to analyze the data.

Q1. Are you willing to pay higher prices to have more variety / options / models within a product?

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 [ ]</td>
<td>4 [ ]</td>
<td>3 [ ]</td>
<td>2 [ ]</td>
<td>1 [ ]</td>
</tr>
</tbody>
</table>

* The range of customers’ willingness to pay higher prices was divided into five categories from “Strongly Agree” to “Strongly Disagree”. Each Category represents a number of points on a declining scale from five to one, where 5 points signifies Strongly Agree, 4 for Agree, 3 for Neither agree nor Disagree, 2 for Disagree, and 1 for Strongly Disagree.
As evident from the responses, around fifty-five percent of the customers were willing to pay higher prices to have a greater variety of products within a product line. Previous research indicates that companies tend to charge higher prices for offering more variety of products within the same product line. Pashigian (1988) showed that price is positively correlated to variety, and Kekre and Srinivasan (1990) showed that companies with higher prices have higher relative prices. Companies tend to increase their prices with variety because of increases in their costs (manufacturing, inventory, etc) when manufacturing more models. The response data indicates that fifty-five percent of the respondents were willing to pay higher prices to have more variety; hence companies can increase the variety of products they offer, in spite of increases in costs.

Comparision between Male and Female Responses:

* Female: Mean: 3.23, Standard Deviation: 0.848,
  Male Mean: 3.53, Standard Deviation: 0.942
The above data shows that forty-five percent of female respondents were willing to pay more to have more variety. Thirty percent of respondents neither agreed nor disagreed and twenty-three percent of respondents were not willing to pay more to have more variety. As evident from the responses, around sixty percent of male respondents were willing to pay more to have more variety. Thirteen percent of respondents were not willing to pay more to have more variety. We can conclude that the male respondents are willing to pay higher prices to have more options/models to choose from when compared with female respondents.

Data Classified According to Age:

**Figure 3.3. Response Data Chart for Q1: Age Classification**

![Paying Higher Prices for More Options/variety](chart.jpg)

The above chart indicates that more than fifty percent of the respondents between the ages of 20 and 50 are willing to pay higher prices for more models/options within a product line. When compared to older customers (50-59), younger and middle aged customers are willing to pay more for product variety. Despite the increase in costs, companies can gain by increasing the variety of products targeted to younger and middle-aged customers, as the customers of these age groups are willing to pay more for a wider selection of options. Companies should consider carefully before deciding to increase the variety of products targeted towards older customers.

**Q2. Are you willing to pay more to purchase models released with the latest technologies?**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
Mean: 3.5, Standard Deviation: 0.906

Over sixty percent of respondents were willing to pay higher prices to purchase the latest technology products released into the market. From the above data we can conclude that companies may gain from releasing products into the market with new and updated technologies. With customers willing to pay more for the latest technology products, it may be advantageous for companies to invest in the research and development, and develop products with new features and functions.

Comparison between Male and Female Responses:

Figure 3.5. Response Data Chart for Q2: Comparison between Female and Male

*Female: Mean: 3.39, Standard Deviation: 0.88,
    Male: Mean: 3.57, Standard Deviation: 0.92

Around fifty-six percent of female and over sixty percent of male respondents were willing to pay more for the latest technology products. Companies can therefore conclude that both male and female customers are willing to pay higher prices for prod-
ucts released with the latest technologies.

*Data Classified According to Age:*

**Figure 3.6: Response Data Chart for Q2: Age Classification**

The chart clearly indicates that customers between the ages of 20 and 50 are willing to pay more for the latest technology products. However, customers above the age of 50 are less willing to spend more on the latest technology products. This shows that companies should focus on customers between the ages of twenty and fifty, as these customers prefer more variety, are willing to pay higher prices for both more options/models within a product line and the latest technology products.

**Q3.** You prefer having to choose between several models within a product class because you have several options before choosing a product.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 [ ]</td>
<td>4 [ ]</td>
<td>3 [ ]</td>
<td>2 [ ]</td>
<td>1 [ ]</td>
</tr>
</tbody>
</table>

**Figure 3.7: Response Data Chart for Q3**

Mean: 4.15, Standard Deviation: 0.756
The above data clearly indicates that customers want more variety /models /options to choose from as over eighty-five percent of respondents said that they prefer to have more variety within a class of product. Customers prefer more variety of products so that they can choose the product that satisfies their needs the most. Past research indicates that more variety offered in a product enables customers to choose different options to satisfy their needs. However, manufacturing firms should be cautious before increasing variety within a single product category. Consumers view products of same brand as similar, and tend to evaluate the products jointly when making the purchase decision. This might lead to undesirable local competition, product cannibalism, and therefore limit sales of the entire product line (Hui, 2004).

Comparison between Male and Female Responses:

Figure 3.8: Response Data Chart for Q3: Comparison between Male and Female

Over ninety percent of the female respondents and around eighty percent of the male respondents said that they prefer to have more models/options to choose from before making their final purchase decision. It is clearly evident from the data that consumers prefer more variety. It can be recommended that companies increase the number of models offered within their product lines.

Q4. What are the factors you consider before selecting a product? Please rank your options. Please rank the most important option as 1 and the least important option as 10.

[ ] Technology [ ] Price [ ] Features provided [ ] Design [ ] Quality
[ ] Size [ ] Performance [ ] Service [ ] Others_________________
Respondents were asked to rank the factors they considered before selecting a product. The factors were ranked (1-8) with the most important factor ranked 1 and the least important factor ranked 8. Finally, the rank points were summed for each given option and the average rank calculated. The option with the minimum rank points was the most important factor customers considered before purchasing a product.

**Figure 3.9: Response Data Chart for Q4**

As reported in the chart above, the top factors customers consider before choosing a product are price, quality, technology, and features respectively. The factors that customers ranked least are performance, design, size, and service.

Even though customers are willing to pay more to have more options and models to choose from, they are sensitive to the price of the product. Price is the primary factor customers consider before purchasing a product. Over fifty percent of the customers agreed that they are willing to pay more for the latest technology products, but seventy-three percent of these customers also ranked price in the top four factors they consider before selecting a product.

Multi-product manufacturing firms should take advantage of the situation that customers are willing to pay more for the latest technology products, and capture the surplus customers. Manufacturers can cover their costs, invested in developing and manufacturing these products by charging more for these latest technology products. Companies, before making a pricing decision, should keep in mind that even though customers are willing to spend more on the latest technology products, they remain price conscious. Therefore, the price of the products should not be so high that the customer might not purchase the product at all since customers might choose an alternative product offered at lower prices.
Comparison between Male and Female Responses:

Figure 3.10: Response Data Chart for Q4: Comparison between Male and Female Responses

Female customers ranked both quality and price as the top factors they consider before selecting a product. As indicated in the above data chart, the top factors male customers consider before choosing a product are price, quality, technology, and features respectively. The factors that male customers ranked least are performance, design, size, and service.

Data Classified According to Age:

Figure 3.11: Response Data Chart for Q4: Age Classification
The top four factors customers between the ages of 20 and 29 consider before choosing the product are quality, price, technology, and features respectively. The factors that customers ranked as least important are performance, design, size, and service respectively. The top factors customers between the ages of 30 and 39 consider are price and quality respectively. They ranked technology and features third. The factors that customers of this age group ranked as least important are performance, design, size, and service respectively. The top four factors customers between the ages of 40 and 49 consider before choosing a product are price, technology, performance, and features respectively. The factors that customers ranked as least important are quality, design, size, and service respectively. The top factors customers between the ages of 50 and 59 consider before choosing a product are price and quality. They ranked performance and technology third and fourth respectively. The factors that customers of this age group ranked as least important are features, design, service, and size respectively.

Q5. Why do you seek variety in the products you purchase? (Check all relevant options)

- [ ] Getting bored with the current selection
- [ ] Desire of something new
- [ ] Curiosity to learn about things
- [ ] To adapt to the changing environment
- [ ] Several options to satisfy your needs
- [ ] Others________________

Figure 3.12: Response Data Chart for Q5

Past research in consumer behavior suggests that consumers seek variety because of their desire for something new (Menon and Kahn, 1995 and Khan, 1998), curiosity to learn about new things (Raju, 1980; Hirschman, 1980), to adapt to the changing environment, and because of boredom with the current selection (Khan, 1998). The above data shows that the majority of customers prefer having more variety of options to satisfy their needs. From a behavioral aspect, over forty percent of respondents said that they seek variety because of their desire for something new and to adapt to the changing environment. Around thirty percent of respondents seek variety because of their curiosity to learn about new things. Less than twenty percent of the respondents said that they seek variety because they are bored with the current products.
IV. Conclusions

A common notion until now is that larger varieties of products and a wider range of options to choose from allow customers to better choose the products that satisfy their needs the most. This research investigated how the existence of product variety affects customer perceptions when purchasing computer hardware and consumer electronic products.

Past research indicates that companies tend to increase their prices as the variety of products they offer increases. Pashigian (1998) showed that price is positively correlated with variety in a time-series study of price and sales data for department stores. Also, Kekere and Srinivasan (1990) showed that firms with greater varieties offered had higher prices in a cross-sectional study of over 1,400 business units. The data collected clearly indicates that consumers prefer more variety (want more options to choose from) as it offers them the opportunity to better match between their preferences with product offerings. The results indicate that over fifty percent of respondents were willing to pay more for a wider selection options to choose from and for purchases of new product releases having the latest technologies.

Comparing the data for customers willing to pay more for more options / models with customers willing to pay for the latest technology products, most of them were willing to spend on the latest technology products. Companies releasing new models should design models that do not have similar characteristics as the existing ones, and should release models that have additional features and functionalities. The above data implies that there is a greater willingness for customers to pay for the latest technology products, and for products and models with new and updated design, features and functionalities.

Question 4 of the survey tried to determine which factors customers consider before making a purchase decision (in consumer electronic and computer hardware products) in order of importance. The data indicates that, the top four factors consumers consider before purchasing a product are price, quality, technology, and features respectively. The difference in the points assigned to each of these factors is negligible. The next four factors considered, in the order of their ranks are performance, design, size, and service.

Correlating the data for questions 1, 2, and 4 indicates consumers give significant weight to the price factor. Seventy-three percent of the respondents who were willing to pay more the latest technology products ranked price within the top four factors before making a purchase decision, while fifty-two percent of respondents considered price to be in the top two factors considered before making a purchase decision. Around seventy-five percent of the respondents who were willing to pay more for variety ranked price in their top four factors considered before purchasing a product. This data can be interpreted in two ways. First, even though customers consider that price is one of the most important factors, they are willing to spend more if the product has updated technology with new features and functionalities. Customers are sensitive to price, although they are willing to spend more for the latest technology they are not willing to spend a lot. Manufacturers should recognize that even though customers are willing to pay more for the latest technology products, and for more models, they are also sensitive about the
price. Companies who release new models should offer them at a reasonable price, which is not too expensive for the customer and which is profitable to firm.

Question 5 intended to study why consumers seek variety in consumer electronics and computer hardware products. Menon and Kahn (1995) and Khan (1998) studied the variety seeking behavior of consumers and found that consumers seek variety because of their desire for something new, curiosity to learn about new things (Raju, 1980; Hirschman, 1980), to adapt to the changing environment, and because of boredom with the current selection (Khan, 1998). The data indicates that customers seek variety mainly to satisfy their needs. When provided with many options, they are able to find the product that satisfies their requirements best. Coming to the behavioral aspects, the option selected most frequently by consumers is the need to adapt to a changing environment, which is closely related to their desire for something new.

With a survey of 110, which is considered to be a good sample size to analyze the data, it is relatively small to draw inferences about the population.

References


vine, CA, August 18-22, 1996.


