Application of Linear Probability Model Analysis of the Determinative Factors in Consumers’ Choice of Air Conditioning Products

Chi-Fang Liu\textsuperscript{1a}, Tzu-Yorn Kao\textsuperscript{2b}, Wang-Te Wu\textsuperscript{3c}, Ya-Fen Chang\textsuperscript{4d}, Chao-Tsung Yeh\textsuperscript{5e}

\textsuperscript{1a} Assistant Professor, Department of Administration
\textsuperscript{2b} Associate Professor, Department of Administration
\textsuperscript{3c}\textsuperscript{4d} Lecturer, Department of Administration
\textsuperscript{5e} Master Student, Department of Administration, Cheng Shiu University

Abstract

This trend does not only leave an enterprise no other choices but to adjust its very own constitutions (such as the transformation of its interior procedures, reduce its own operating costs, and innovate a new product), but also renew its selling strategy in order to raise its market share. For example, due to the rapid revolution of technology, the consuming culture has also undergone a lot of changes. Because the consumers are easily influenced by mass media and commercial advertisements, a totally different consuming culture might have been formed. Owing to this fact, consumers might have lowered their loyalties to a brand so that an entrepreneur must apply the following strategies to regain his winsome advantages over his competitors.

Keywords

Linear Probability Model; Consumers’ Choice; Air Conditioning Products

Introduction

Consumer’s purchasing behavior is conceived of as an intervening process that as he or she is trying to satisfy his or her needs and desires by seeking, selecting, purchasing, utilizing and assessing the due products or services, including both his or her subjectively mental activities and physical dealing with things in ordinary living. (Kotler, 2000). Thus, the present study intends to proceed by constructing some models, analyzing their crucial but also influential factors on clients’ buying behaviors so as to deeply understand the key variables on consumers’ side that determine whether a client buy some product or not, founding upon quantitative basis; therefore, the teleology of my current study is to help enterprises to envision their relevant strategies that cope with their organization targets, environmental characteristics and any timely tendency.

Literature Review

When making a purchasing decision, consumers will search information in advance before making the decision of purchasing. Assael (1995) stated in his book that eight factors cause the search of information: (1) high involvement; (2) high perceived risk; (3) lack of product knowledge and experience; (4) specific purchase goal; (5) more time for making buying decision; (6) high prices; (7) more product differences between brands; (8) cost-effective information searching. Mowen and Minor (2001) pointed that after a consumer understands his problem, he will start the process of information search to get product knowledge for his problem. Both Mowen and Mino thought that consumers interiorly would use previous related products and service knowledge from their long term memories; they also collect information from external sources like friends, advertisements, product packing, consuming research or the salespeople. Butter and Peppar (1998) thought the traditional evaluation of information originated from past experiences, marketing and promoting, consuming groups, research agencies and reputations. Schiffman (2001) pointed that consumers tend to make a list of brand names under consideration and establish an evaluation
criteria to make buying decisions. The final result will be displayed in their consuming behavior.

**Methodology**

We can explain the above regression model as the probability of event happening \((Y_i=1)\) under the attribute of known individual \((X_i)\). Mathematically, it is just like to change discontinuous variables into continuous ones in order to be analyzed by traditional multiple regression analysis. Considering the range of probability is between 0 and 1, the new model should be:

\[
P_i = \beta X_i, \text{ when } 0 < \beta X_i < 1
\]

\[
P_i = 1, \text{ when } \beta X_i \geq 1
\]

\[
P_i = 0, \text{ when } \beta X_i \leq 0
\]

Reconsidering the probability distribution of \(\varepsilon_i\): When \(X_i\) is fixed (known), the distribution of \(\varepsilon_i\) equals to the distribution of \(Y_i\). \(E(\varepsilon_i) = 0\), so

\[
E(\varepsilon_i) = (1 - \beta X_i) \cdot P_i + (-\beta X_i) \cdot (1 - P_i) = 0
\]

\[
\therefore P_i = \beta X_i, \quad 1 - P_i = 1 - \beta X_i
\]

And

\[
E(\varepsilon_i)^2 = (1 - \beta X_i)^2 \cdot P_i + (-\beta X_i)^2 \cdot (1 - P_i)
\]

\[
= (1 - \beta X_i)^2 \cdot P_i + (-\beta X_i)^2 \cdot (1 - \beta X_i)
\]

\[
= (\beta X_i) \cdot (1 - \beta X_i) - [(1 - \beta X_i) + (\beta X_i)]
\]

\[
= P_i \cdot (1 - P_i)
\]

\[
= E(Y_i) \cdot (1 - E(Y_i))
\]

**Analysis**

This research analyzed the results of the questionnaires by SPSS. The explained variable was if the consumers bought air conditioners and figured out its correlation with consumers’ opinions of buying air conditioners and the factors that influenced purchasing, which included environmentally-friendly (Green) factor, health and safety factor, function and appearance factor, price factor, quality and service factor, special promotion factor and space factor.

Furthermore, this research established the regression model to explain the influence of variables on buying air conditioners. The result was tested by different analyses to avoid any influence of variables on it so it became meaningless. Moreover, to get the best regression model that well explained the correlation of variables on buying air conditioners.

**TABLE 4-1 THE TABLE OF REGRESSION EXPLANATORY VARIABLES**

<table>
<thead>
<tr>
<th>Code</th>
<th>(\beta) (p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HA</td>
<td>0.317 (0.431)</td>
</tr>
<tr>
<td>HS</td>
<td>-0.075 (0.003**)</td>
</tr>
<tr>
<td>HB</td>
<td>0.015 (0.000**)</td>
</tr>
<tr>
<td>BD</td>
<td>-0.532 (0.000**)</td>
</tr>
<tr>
<td>BF</td>
<td>0.016 (0.751)</td>
</tr>
<tr>
<td>BB</td>
<td>0.012 (0.001**)</td>
</tr>
<tr>
<td>GF</td>
<td>0.369 (0.002**)</td>
</tr>
<tr>
<td>HF</td>
<td>0.403 (0.041*)</td>
</tr>
<tr>
<td>FOF</td>
<td>0.964 (0.480)</td>
</tr>
<tr>
<td>PF</td>
<td>-8.126 (0.184)</td>
</tr>
<tr>
<td>QSF</td>
<td>8.357 (0.002**)</td>
</tr>
<tr>
<td>SPF</td>
<td>0.549 (0.045*)</td>
</tr>
<tr>
<td>SF</td>
<td>4.441 (0.000**)</td>
</tr>
</tbody>
</table>
The best regression model is:

\[ Y = \beta_0 + \beta_1 HA + \beta_2 HS + \beta_3 HB + \beta_4 HD + \beta_5 BF + \beta_6 BB + \beta_7 GF + \beta_8 HF + \beta_9 FOF + \beta_{10} PF + \beta_{11} QSF + \beta_{12} SPF + \beta_{13} SF \]

**Research Conclusions and Recommendations**

All of that lies in consumers’ memory about any brand imagery is “the association with brands in thinking,” including product features, customers’ profits, product purposes, the appearance of products, life styles, competitors, and nationalities. To confirm if the association is linked to the brands, we need to ponder how the other marketing proposals would affect the consumers’ brand experiences. The more deeply consumers thinking about the product information and connection with extant brand cognition, the stronger association with certain brands the consumers will have.

Furthermore, the characteristics consumers were provided with subjective satisfaction and both visible and invisible needs. (Grapentine, 1995). A product is consisted of a set of attributes like appearance, brand, function, and price. Product attributes can bring advantages to enterprises among other competitors. Different consumers have varied preference and priority level on product attributes. Product attributes can inspire consumers’ need and hence differentiate their buying behaviors. More than this, the quality of service is also an important factor in a successful business. It is eternally true that consumers are always looking for good quality of services, especially when the price of products and their costs remain the same. Quality is an important element to satisfy consumers beneath the surface of service, a fortiori an important concept in service.

Besides the scale restriction, the current situations of the air conditioner industry mostly result from the mechanic’s and the industry’s preference of imported goods. Adopting home products, which were frequently designed without uniform standards, leads to the fact that the manufacturers are usually exhausted to deal with the cases of different type specifications, so the manufacturers cannot proactively research, develop and configure. For lack of the powerful support from the domestic market, the manufacturing industry cannot improve nor has international competitiveness.

**REFERENCE**


