

# A Research of the Determinative Factors in Consumers' Choice of Air Conditioning Products --from the Aspects of Quality

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**Abstract**—The research method of the present study took Linear Probability Model and distributed 600 questionnaires to related consumers in the northern, central and southern parts of Taiwan. The purpose of this research is to understand what important factors there are and among which what is the most crucial factor as long as a consumer purchase a new air conditioner, in order to give some advice to the relevant producers. The studying result shows that under the significance level (i.e.  $p=0.05$ ), whether the following ten factors have obvious effects on a consumer's buying activity of an air conditioner in a household: (1) types of air conditioners, (2) brands of air conditioners, (3) the person who made the decision of purchase, (4) the preferred brands, (5) the "Green factor", i.e. whether an enterprise is environmental friendly or not, (6) health and safety considerations, (7) quality- or service-related factors, (8) promotion, (9) locality, and (10) annual income of a family.

**Keywords**—Life-cycle of a product, consuming culture, cost-driven leadership, product-differentiation.

## I. INTRODUCTION

THE penetration of air conditioner in Taiwan has highly reached 96% or above. As far as the status quo of the market of family-owned air conditioner, circa 900,000 pieces are sold each year, with its output value equivalent of more than 20 billion NTD. However, owing that the saturation of this market has reached its peak and that the product-technology has come to its maturation, the growth rate of this market is not obviously high. From the perspective of the current market in Taiwan, the growth-peak has been passed. Nevertheless, due to the sharp competition among different enterprises in the market and whose innovations, the average sales growth comes to 5%. In a time of flourishing economics, consumers tend to change their due-concerns as it comes to buying a new product. Under such an ongoing changing consuming cultural climate and the influence of mass media with the accompanied commercial strategies and allures of the latter, discrete consuming groups are generating a totally different consuming cultures than before. Based on the total effect of such changes, the number of brands consumers choose has enormously increased, causing their arbitrary

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abandoning some non-brand products according to such unfamiliar reasons as prices, quality, functions and so on.

Moreover, a consumer's purchasing behavior is conceived of as an intervening process that as he or she 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 lives. (Kotler, 2000). As to the purchasing behaviors on the one hand they concern the individual consumer's ones, which are to satisfy his own, her own, or familial needs in everyday life, and on the other hand are targeted on the ensuing decision-making activities of an enterprise, whose various apparent behaviors during purchasing its preferred goods or services are intended to meet the production needs. Furthermore, an individual's purchasing behavior originates from the purchasing process of a system and is affected by a variety of either endogenous or exogenous variables. The complexity and the variety of buying behavior of consumers bring questions and challenges to the selling aspect of a manufacturer. To the best of the selling aspect of a manufacturer, it is very critical for him to grasp the decision-making process and the relevant factors that influence the process of his clients. 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 consumer's 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 an enterprises to envision its relevant strategies that cope with their organization targets, environmental characteristics and any timely tendency.

## II. LITERATURE REVIEW

### A. Process of consumer decision making

Among all countries in the globe, research on consumer purchasing behavior allows an enterprise to compare and quantify its related development. By capturing which factors are most effective on consumer behavior, an enterprise can assure itself that its strategies target on the key demands of its consumers and thereby be tailored for them. Therefore the connotations of "consumer behavior" refer to "an individual's behavior directly getting or utilizing some goods or services, including those processes that cause or lead to such decision."

(Engel, Blackwell & Miniard, 1990) Besides, a consumer behavior is formed under a certain of circumstances unto a certain of specific products. That is to say, a buying behavior changes if its corresponding product changes, varied products; considering still further, even with the same product, its consumer behavior differs if its users differ. (Hawkins, Best, Coney, 1996).

*B. Related overview of decision making*

When making a purchasing decision, consumers search information in advance before making the decision of purchasing. Assael (1998) 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 (2002) 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 think that consumers interiorly use previous related product and service knowledge from their long term memory, 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 originates from past experience, 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 evaluation criteria to make buying decisions. The final result displays in their consuming behavior.

III. METHODOLOGY

The worst defect is that the estimate of dependent variable might fall outside of (0,1), which disagrees with the expectation of conditional probability .

The regression model is:

$$Y = \beta_0 + \beta_1 HA + \beta_2 HS + \beta_3 HB + \beta_4 HD + \beta_5 BF + \beta_6 BB + \beta_7 GF + \beta_8 HF + \beta_9 FOF + \beta_{10} PF + \beta_{11} QSF + \beta_{12} SPF + \beta_{13} SF + \beta_{14} A_1 + \beta_{15} A_2 + \beta_{16} A_3 + \beta_{17} B_1 + \beta_{18} B_2 + \beta_{19} B_3 + \beta_{20} C_1 + \beta_{21} C_2 + \beta_{22} C_3$$

Among the analysis, the explanatory variable is if the consumer bought a HWARIN air conditioner or not. (Y=1, means s/he bought a HWARIN air conditioner before; Y=0, means s/he did not buy any HWARIN air conditioner.)

HA : How many air conditioners there are at home

HS : What types of air conditioners there are at home

HB : What brands of air conditioners are at home

BD : Who made the final decision when buying a new air conditioner for the family

BF : The considerations of purchasing air conditioning products

BB : Top priority brands when buying air conditioning

products

GF : The environmentally-friendly (Green) factor

HF : The health and safety factor

FOF : The function and appearance factor

PF : The price factor

QSF : The quality and service factor

SPF : The special promotion factor

SF : The space factor

A<sub>1</sub>~A<sub>3</sub> : Age

B<sub>1</sub>~B<sub>3</sub> : Residence.

IV. FINDINGS AND ANALYSIS

*The regression analysis of the determinative factors that influence consumers' consumption of air conditioners*

This research analyzed the results of the questionnaires by SPSS. The explained variable was if the consumers bought HWARIN air conditioners and to figure 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 that explained the influence of variables on buying HWARIN air conditioners. The result was tested by different analyses to prevent 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 HWARIN air conditioners. The best regression model is:

$$Y = \beta_0 + \beta_1 HA + \beta_2 HS + \beta_3 HB + \beta_4 HD + \beta_5 BF + \beta_6 BB + \beta_7 GF + \beta_8 HF + \beta_9 FOF + \beta_{10} PF + \beta_{11} QSF + \beta_{12} SPF + \beta_{13} SF + \beta_{14} A_1 + \beta_{15} A_2 + \beta_{16} A_3 + \beta_{17} B_1 + \beta_{18} B_2 + \beta_{19} B_3 + \beta_{20} C_1 + \beta_{21} C_2 + \beta_{22} C_3$$

Table 4-1 shows that the regression equation is significant (F=5.6512 ; R squared=0.4682 ; P-Value=0.000), at the significance level of 0.05. All the following ten variables reach the significance level: Types of air conditioners at home (HS), Brands of air conditioners at home (HB), the decision maker of buying air conditioners (BD), Priority brands of air conditioners (BB), environmentally-friendly factor(GF), health and safety factor,(HF) \ quality and service factor (QSF), promotion factor, (SPF), space factor (SF), and annual family income(C<sub>1</sub> \ C<sub>2</sub> \ C<sub>3</sub>).

V.CONCLUSION

TABLE 4-1  
THE TABLE OF REGRESSION EXPLANATORY VARIABLES

Code	No. of Questions	Explanatory variables	Anticipate d symbol	$\beta$	p-value
A. The consumers' point of view of purchasing air conditioners					
HA	A-2	How many air conditioners are at home	?	0.309	0.442
HS	A-3	What types of air conditioners are at home	?	-0.083	0.002**
HB	A-4	What brands of air conditioners are at home	?	0.008	0.000**
BD	A-5	Who made the decision of buying air conditioners	?	-0.428	0.000**
BF	A-6	The considerations of purchasing air conditioning products	?	0.005	0.884
BB	A-7	Top priority brands when buying air conditioning products	?	0.008	0.000**
B. Factors that influence consumers					
GF	B-1~B5	Environmentally-friendly factor	+	0.269	0.004**
HF	C-1~C5	Health and safety factor	+	0.304	0.039*
FOF	D-1~D8	Function and appearance factor	+	0.683	0.492
PF	E-1~E5	Price factor	+	-9.494	0.146
QSF	F-1~F7	Quality and service factor	+	8.788	0.001**
SPF	G-1~G5	Special promotion factor	+	0.943	0.049*
SF	H-1~H6	Space factor	+	5.421	0.000**
C. Personal information					
$A_1$	I-1	Age	?	-0.158	0.752
$A_2$					
$A_3$					
$B_1$	I-2	Residence	?	-0.607	0.964
$B_2$					
$B_3$					
$C_1$	I-3	Annual family income	+	0.337	0.001**
$C_2$					
$C_3$					
R squared	0.4682	F	5.6512	P-Value	0.000**
Adj R squared	0.4233				

The inductive inference and the analysis according to the assumption established by the empirical consequence of our research are as follows:

*Hypothesis one: The different shopping backgrounds of the consumers have influence on the consumers' buying behavior, and there is significant correlation between those two factors.*

All that lies in consumers' memory about any brand imagery is "the association with brands in thinking," including product features, customers' profit, 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 other marketing proposals would affect the consumers' brand experiences. The more deeply the consumers think about the product information and connect it with extant brand cognition, the stronger associations with certain brands the consumers will have.

So the types of air conditioners at home(HS), the brands of air conditioners at home(HB), the decision maker of buying air conditioners(BD), and the top priority brands (BB) are the key factors to affecting the purchase of air conditioners.

*Hypothesis two: Different purchase views of the consumers have influence on the consumers' buying behavior, and there is significant correlation between those two factors.*

Price, the extent of advertisements and brand image are three most frequently chosen as outside attributes by scholars. Therefore the environmentally-friendly factor (GF), health and safety factor (HF), quality and service factor (QSF), special promotion (SPF) and space factor (SF) are key to the decision of buying air conditioners.

*Hypothesis three: Different demographic variables have significant connection with consumers' buying behavior.*

As for the annual family income, the consumption expenditure has the mathematical function relationship to the annual family income. Ceteris paribus, the more income, the more consumption whereas the less income, the less consumption. Thus, annual family income (C\_1、C\_2、C\_3) is the key factor to buying air conditioners.

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