Research on the Measurement of Customer Value: The Case of Cell Phone Industry

Gao He

School of Management, Dalian Jiaotong University, Dalian, P.R.China, 116028

(E-mail: rain0101@163.com)

Abstract　In this paper, the theory of customer value throughout the entire process of research, centered on how to measure customer value and develop competitive strategy with the theory of customer value. Firstly, the paper introduced the idea of "competition" to the theory of customer value measurement, pointed out that the measurement of customer value needs to select and integrate the existing methods; Based on empirical study, obtained two factors of perceived value attributes when consumers used the cell phones, found that three foreign brands in terms of the difference of customer perceived value was more obvious, the competition between the two domestic brands was most intense, and the customer perceived value of foreign brands ware higher than domestic brands.

Key words　Customer value; Measurement of customer value; Competition-oriented; Customer perceived value

1 Introduction

Western marketing academic began to research on the theory of customer value in the late 1980s, but it once proposed has aroused growing concern by academic and the business community, and quickly became a new hotspot in marketing research field. In just two decades, scholars did a lot of research on the concept and meaning of customer, measurement of customer value, innovation and application of customer value. In regard to how to measure customer value, many scholars have put forward their own theories. In early 1980s, the values and lifestyles (VALS) which were proposed by (Mitchell 1983) are the most classic methods for value research. His theoretical foundation based on the Maslow's hierarchy of needs (1954) and social characteristics concept, which segmented the U.S. consumers as 9 kinds of lifestyles groups. Although the impact of VALS is enormous, but the academics didn't pay attention to this special measurement system at that time[1]. During this period another methodology of value was List of value (LOV) proposed by the researchers of the Survey Research Center in the University of Michigan which can substitute the VALS. The development of LOV based on the research of value by Feather, Maslow and Rotech. It is most closely related to the social adaptation theory[2]. At present, Japan and other countries have also developed their own VALS. In addition, Woodruff's theory was introduced the qualitative analysis into the measurement of customer value[3]. (James and Dipak 1993) based on the past related customer value assessment methods summarized 9 kinds of customer value assessment methods which are widely used in practice, these methods assessed customer value from the point of the attributes and feature of the product, mainly used to assess customer value of industrial products[4]. (Gale 1994) adopted two attributes which are quality and price, let the customer afford the weight of the criteria, through a simple customer perceived value chart to measure every brand's perceived value[5]. (Indrajit and Wayne 1998) used three-dimensional structure (brands, attributes, segments) to measure every brand's perceived value, proposed value map model for assessing customer value[6]. (Hogan 2001) proposed through four steps as distinguishing value center, assessing uncertainty factors, developing a relationship model and analyzing key variables to measure the expected relationship value[7].

In addition, there are other scholars' methods or tools being used to assess customer value, of which there have been many well-know methods, such as value-map (use price and quality as dimensions); but they have not formed a system of methodology, we will not enumerate. Most of the above-mentioned customer value measurement method can not properly reflect the customer perceived psychology, including many reasons: or more dimensions attributes of customer value can't describe; or the limitations of the definition of customer value affect the validity of the choice methods; or business is not understanding customer value from the customer perspective; or business do not realize the

---

[7] John E. Hogan. Expected Relationship Value: A Construct, a Methodology for Measurement and a Modeling Technique[J]. Industrial Marketing Management, 2001, 30:339~351

difference between the customer's own value demand, competitors' product value and own product value. Therefore, we consider that can not simply rely on one method to measure customer value, require to choose and integrate the existing methods; The accuracy of the customer value assessment depends on the science of the using method, yet the selection of the methods depend on the definition of customer value whether correct, and the content whether adequacy.

2 Research Method
2.1 Research framework
The empirical research framework are as follows: First, chosen the cell phone product as example, through the qualitative research, selected the product attributes variables which can reflect the customer value; Following study is divided into two aspects: on the one hand, using the customers' evaluation of the product attributes variables to carry out factor analysis, obtains the factors of customer dimensions, and draw the customer perceived value space map; the other hand, according to the customers' evaluation of the different brands' product attributes variables, draw the map of the different brands' performance in different customer value attributes.

2.2 Selection of measured variables
Before the formal investigation, we use Woodruff's ladder method to do the pre-research, defined the value attributes of the cell phone market as 12 value attributes which is the quality of call, standby time, price and so on. (See Table 1)

Table 1　Customer Value Attributes Variables

Code	Variables	Code	Variables	Code	Variables
Q1	Quality of call	Q5	Edit SMS	Q9	Efficiency
Q2	Standby time	Q6	After-sale services	Q10	Conducive to health
Q3	Price	Q7	Reaction speed	Q11	Pleasurable
Q4	Appearance style	Q8	Convenience	Q12	Not affect others

In the choice of brands, for the simplicity of the questionnaire and to meet research requirements, we selected 5 brands which were Nokia, Motorola, Samsung, TCL, Bodao.These 5 brands both have international renowned brands, but also have domestic brands, with strong representation. In order to quantify customer perceptions, the questionnaire used Likert 5 scale, 1 represents "very poor", and 5 represents "very good".

2.3 Sample and data collection
The survey was conducted in May 2007, a total of 150 students participated in the survey, respondents distributed in various grades, including undergraduates, graduate students and doctoral students. In this paper, we use SPSS10.0 software to analyze, in the process of statistics, the treatment of missing value put forward Listwising method, and the effective sample size was 133.

3 Data Processing Results and Competition-Oriented Analysis
3.1 Factor analysis
The questionnaire items carried on factor analysis by method of principal component analysis, Bartlett spherical test results were significantly 0.000, KMO value was 0.926. According to the standard that Eigen value greater than 1 to determine the factors, we can see all the measured variables in the questionnaire can be explained by two factors, the cumulative contribution rate is 98.6%, meaning that two factors may reflect 98.6% of the total information of the original 12 indicators (see Table 2).

Table 2　Result of factor analysis (rotated factor loading)

Code	Factor		Code	Factor		Code	Factor	
	1	2		1	2		1	2
Q1	0.997		Q5	0.972		Q9	0.991	
Q2	0.980		Q6	0.991		Q10	0.994	
Q3		**0.984**	Q7	0.996		Q11	0.983	
Q4	0.790		Q8	0.987		Q12		**0.986**

Based on the analysis of the meaning of attributes various which included in the factor, combined the results of literature research and focus group interview, we named these two factors. Factor 1 could be called "interest factor", which is a set of interests that customers obtain from the particular product or service; Factor 2 can be grouped into the "cost factor", which refers to the estimated costs that arising when the customers assessing, obtaining and using of the product or service.

The result of factor analysis showed that customer's perception of value mainly came from the trade-off of the costs and benefits. This is consistent with the theory of Kotler's customer delivered value. Price level is the main factor to perceive cost, and other attributes were good or bad can mainly determine the size of the customer perceived interests.

3.2 Multidimensional Scaling (MDS)

According to the factor analysis of above 12 kinds of attributes obtained two dimensions of customer perceived value: the cost factor dimension and the interest factor dimension. Through the 5 brands' performance on different attributes which customer perceived, as well as the customers' overall rating for the barns, we can analyze the 5 brands' coordinates in two dimensions, and get the 5 brands' customer perceived value space map(See Figure 1). The horizontal dimension is cost factor, and the axis dimension is interest's factor. To note that the cost factor dimension from left to right not mean the cost increased, but said the value of cost was higher, that is, the cost dimension which customers perceived changed from bad to good. Thus, the upper right in the map is the highest point of customer value.

From the customer perceived value space map, we can see that: the interest's factors which customers perceived highest followed by Nokia, Samsung, Motorola, TCL and Bodao; the cost factors which customers perceived highest followed by Nokia, Motorola, Bodao, TCL, and Samsung. From the location in the map we can see that, the interest's factor of three foreign brands is much higher than the domestic brands.
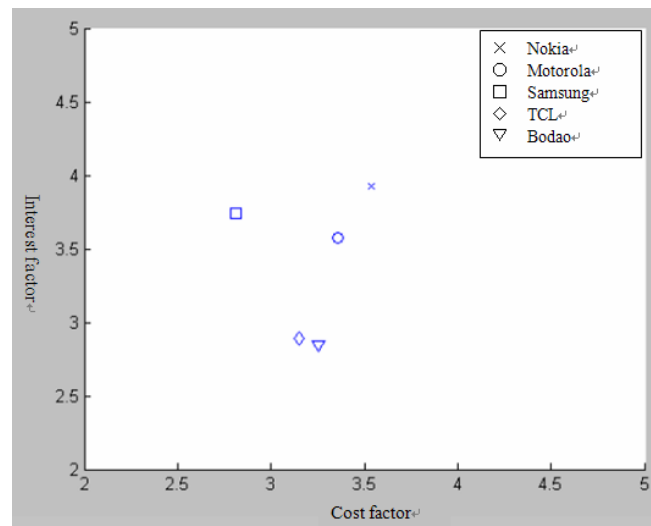

Figure 1   The customer perceived value space map of different brands

The location in the customer perceived value space map indicated the differences of the product value which customers perceived, which also showed the intense competition of different products. Can be seen from the figure, the position of the domestic brands TCL and Bodao is very close, which means that customers thought the value their products provided had little difference, and their target market are similar. The competition between them is the most direct competition, and is the most intense competition. Therefore, one party first started a strategic behavior, such as lower prices, the other party must make the appropriate response at the same time; otherwise it will lost a lot of market share. Because the value which products provided does not have unique, so they are easier to cause a price war. In contrast, the relative distance of three foreign brands is farer; the product value which customers perceived is unique. So, the target market they served is not the same.

In order to facilitate an in-depth analysis of every competitive brands, we do a normalization on the map, let the point which the interest factor value and cost factor value are 3 as the origin (See Figure 2). On this point, the customer interest's factor and cost factor all have general performance that is the starting point to achieve customer desired value. As can be seen from Figure 2, the X-axis and Y-axis respectively represent the cost factor and the interest factor, they divided the customer perceived value space map into four quadrants.

In the first quadrant, the cost factor and the interest factor the customers perceived are positive, that is, the value of the cost factor and the interest factor the customers perceived are more than the desired value, it is the region which the customer perceived value is highest. In this quadrant, the more to the upper right position, on behalf of the higher customer perceived value. Enterprise should work toward it.

In the second quadrant, the customers' perception of the interest's factor is positive, but the perception of the cost factor is negative; that is, the customer perceived value of interest factor is higher than customer desired value, but the customer perceived value of cost factor is lower than customer desired value. Enterprise in this quadrant, customers are satisfied with the benefits which its products provided, just to reduce the cost, can improve customer perceived value. So the enterprise should make its products in the second quadrant move to the first quadrant.
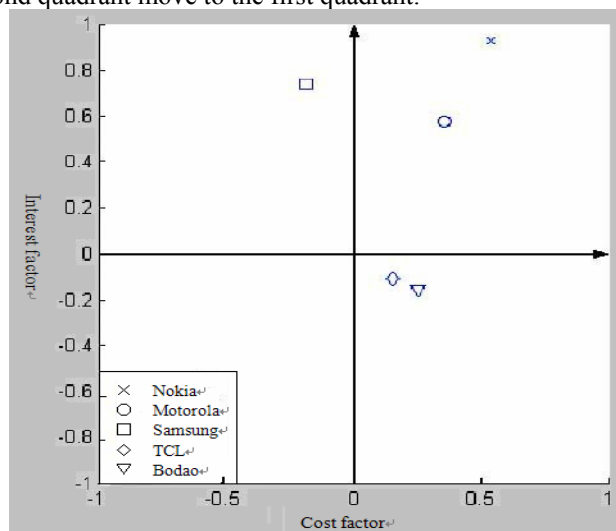

Figure 2   The customer perceived value space quadrant map of different brands

In the third quadrant, the customer perceived value of the interest factor and cost factor are all negative, that they are lower than customer desired value. Customer perceived value is lowest in this quadrant. Enterprise should strongly avoid this quadrant. If the enterprise's products in this quadrant, either the enterprise quit, or else raise the performance of the interest factor or cost factor, so that its products can move to the second quadrant or the third quadrant.

In the fourth quadrant, the customers' perception of the interest's factor is negative, but the perception of the cost factor is positive; that is, the customer perceived value of interest factor is lower than customer desired value, but the customer perceived value of cost factor is higher than customer desired value. If the enterprise's products located in this quadrant, indicating the value of the product can not make the customer satisfaction, only the price is relatively lower. After all, if the customers' perception of the interest's factor is long-term very low, but the perception of the cost factor is higher, then it will easy to make the customers to form an impression of that the enterprise's products are low price and low quality. This is not conducive to long-term development of enterprises. The products in the fourth quadrant, enterprise can improve the attributes of interest factor to enhance the customer perceived value, make the product's perceived location move to the first quadrant.

As can be seen from the above analysis, customer perceived value of the product is the highest in the first quadrant, perceived value of the product is the lowest in the third quadrant. The products in the second quadrant or fourth quadrant, enterprise should be further analyze what value attributes the interest factor or cost factor represented can not make the customers satisfaction, whether these value attributes can be improved by using existing resources in the short term ,or can not be improved.

Combined with our empirical research, the distinction of three foreign brands in terms of customer perceived value is more clear and intuitive. Nokia and Motorola in the first quadrant, the customers' perception of the interest factor and cost factor are both higher, while the Samsung is in the second quadrant, the customers perceived value of interest factor is high, but the perceived value of cost factor is low. In fact, Samsung's customer perceived value performance was the worst among the five brands. Therefore, the overall view of customer perceived value; Samsung is inferior to Nokia and Motorola. In addition, with our analysis above, customer perceived value of TCL and Bodao are close, they are located in the fourth quadrant, TCL and Bodao's perception of interest factor are negative, reflects the university students generally recognized the interests factor provided by the foreign brands are higher than the domestic brands. From the above analysis, we can see that the competition among TCL and Bodao is the most intense, their competitive strategies on the other party are the most effective; the competition among the foreign brands is not very intense.

4 Conclusions

The correctness of customer value measurement depends on scientific measuring methods, however the selection of methods depends on whether the definition of customer value is correct and the content is complete. This study regards cannot solely rely on one way to assess the customer value, because only using one measuring method cannot describe customers' perceived psychology very well, require to choose and integrate the existing methods.

Through the empirical study, this study get two factors which are the consumers' preferences of value attributes for mobile phones, which are "interest's factor" and "cost factor". The result of factor analysis showed that customer's perception of value mainly came from the trade-off of the costs and benefits. This is consistent with the theory of Kotler's customer delivered value.

Based on the factor analysis, this study draw up the customer perceived value space map which indicated the differences of the product value which customers perceived, which also showed the intense competition of different products. In addition, according to the performance of different brands, drawing the customer perceived value space quadrant map, makes the performance of different brands in the value attributes is more clear and intuitive.

References

[1] Lynn R. Kahle, Sharon E. Beatty, Pamela Homer. Alternative Measurement Approaches to Consumer Values: The List of Values (LOV) and Values and Life Style (VALS)[J]. Journal of Consumer, 1986, 13:405~409

[2] Lynn R. Kahle. Social Values in the Eighties: A Special Issue[J]. Psychology and Marketing, 1998, 2(4), 231~237

[3] Robert B. Woodruff, Sarah F. Gardial. Know your customer new approaches to understanding customer value and satisfaction[M]. USA: Blackwell publishers Inc, 1996

[4] James C. Anderson, Dipak C. Jain, Pradeep K. Chintagunta. Customer Value Assessment in Business Markets: A State-of-Practice study[J]. Journal of Business-to-Business Marketing, 1993,(1):3~28

[5] Gale, Bradley T. Managing Customer Value[M]. New York: The Free, 1994

[6] Indrajit Sinha, Wayne S. Desarbo. An Integrated Approach toward the Spatial Modeling of Perceived Customer Value[J]. Journal of Marketing Research, 1998, 35(5):236~248

[7] John E. Hogan. Expected Relationship Value: A Construct, a Methodology for Measurement and a Modeling Technique[J]. Industrial Marketing Management, 2001, 30:339~351