Pricing and Marketing Strategy for Scooters Based on Matrix Data Analysis System

Chen-Chiou Chiu[1, a], Lai-Chung Lee [1,b]
National Taipei University of Technology
No 1, Sec. 3, Zhongxiao E. Rd.
Taipei 10608 Taiwan, R.O.C.
+886-2- 2771-2171ext.2826, [a] g7190313@gmail.com, [b] f10666@ntut.edu.tw

ABSTRACT

In the past, once a new product appearing in the market, consumers first check if the price is reasonable, if it is within their budget, if the product's functions meet their requirement, and if the appearance of the product caters to their preferences, etc. In fact, in addition to the corporate's brand image, the price, functionality and appearance will be the key success factors of product sales. Therefore, this study is aimed to design an information system for a company to compare their own products with competitors and do an analysis in product price and marketing strategy. In this paper, the system has provided a user-friendly interface, analyst could pre-entry the data of project and related products. It allow analyst to choose different ways to quantize the relevant comparative data. After the business owner to adjust or change their marketing strategy, that can encourage their products competitiveness and sales in the market and increasing profit opportunities.

Keyword: Price setting strategy, marketing strategy, product development

INTRODUCTIONS

In the past, companies sold their products through limited and small quantities of mass production, and then using the traditional marketing ways (such as DM, magazine and newspaper advertisements, and even by advertising anniversary) to achieve their marketing purposes. With the progress of information technology, buying pattern has changed. People search for product information on Internet, and even compare the features and prices of different products. Therefore, launching a marketing strategy that meets the demand of consumers (such as understanding the consumer's behavior and having a good relationship with customers) is critical to maintaining their competitiveness in the market.

Once a new product appearing in the market, consumers first check if the price is reasonable, if it is within their budget, if the product's functions meet their requirement, and if the appearance of the product caters to their preferences, etc. After a series of comparison and thinking, consumers are willing to buy this new product. In fact, in addition to the corporate's brand image, the price, functionality and appearance will be the key success factors of product sales. Therefore, this study is aimed to design an information system for a company (Target Company) to compare their own products with competitors (Comparison Company) and do an analysis in product price and marketing strategy. Through a quantitative model, the company can figure out the best sellers, and the competitive products of the high, middle and low price ranges. This system helps the marketing department to understand the market demands and provides objective decision analysis information of pricing and marketing strategies for their reference.

When doing a comparative analysis, consumers usually consider the appearance, features and price of a product if they exclude the brand value. Now there are existing analytical tools, many of them focus on the appearance and feature analysis. For example, Liu [11] discussed the relation between the bike appearance and consumer's visual cognition. Huang [9] used a research of product type and lifestyle pattern analysis through the Web-based two-dimensional analytical tool. Zhou [7] used a questionnaire investigate the relation between lifestyle and perception of bicycle form. Wu [6] used a questionnaire to make a survey of the aesthetic imagery and preferences of Taiwan festival lantern's appearance. These studies collected and analyzed research data by using different tools rather than an integrated system. They discussed more about the appearance sensibility analysis, product type analysis and consumer cluster preference analysis. They conducted a few research in price and marketing strategies. This study is aimed to design a strategy analysis information system. With this system, a company can customize their product information to compare with other competitors, such as implementing quantitative analysis of monthly sales of goods, and understanding the pros and cons of each marketing strategy through the weight of sales.

LITERATURE REVIEW

This section focuses on the literature review of product strategy, product development strategy, product design strategy, pricing and marketing strategies.

Product Strategy

Product strategy covers new product development strategies [12]. For a company, the product strategy plays an important role in marketing and business strategy. Companies achieve their goals of growth and survival through product sales and services. When studying new product strategies, Pressemier [15] developed eight strategies based on the product freshness in the target market and the degree of technological innovation. (1) Product redesign: increase the attractiveness of existing products. (2) Attract new users: sell the existing products to new customers. (3) Product rebuild: slightly altered to improve the quality and reduce cost. (4) Product improvements: use technical improvements to make the product more suitable for existing customers. (5) Market extension: provide improved products to new customers. (6) Reset: make larger changes in order to improve quality and reduce cost. (7) Expanding product lines: adopt new technologies in order to provide more extensive product lines. (8) Diversify: provide new products with new technologies to customers.

If the company referred through the matrix of market freshness and the degree of technological innovation before prepared their business strategy that will be able to find the product strategy model of operation.

Product development strategy

Baxter [14] recommended three steps of the product development strategy: (1) Product maturity analysis. (2) Commodity analysis of competitors. (3) Risk assessment of subsequent development. He had also been divided the driving force behind product development into two parts. (1) Market pulling. (2) Technology push. Baxter also proposed the strategy

of product reform can be classified as leadership strategy, response strategy, the traditional strategy and reliance strategy. (1) Leadership strategy (as a leader): their goal is to achieve technology and market leadership. (2) Response strategy (as a challenger): They aims for leading competitors do react, but intentionally to allow other companies to bear the risk of new product development and developing new markets. (3) Traditional strategy (as a follower): In order to reduce costs, convenient for manufacturing and increase product reliability, that reform method usually limited to a small part of the product changes. (4) Reliance strategy (as a follower): The reform of this kind of company is often dependent on the parent company strategies or according to the preferences of consumers. Such internal reforms were usually confined to procedural reforms.

Product pricing strategy

For company's decision-makers, one of the most difficult and most complex decisions making was to formulate the price of products or services. That needs to consider with operational costs, marketing strategies, business environment, market competition, market demand, product styles, and marketing tunnels and other factors of survival [12]. Huang [8] and Hsiao [10] had discussed the impact factors of price making were divided into internal factors and external factors. The internal factor contains marketing goals, marketing combination strategies, operating costs and the organizational structure of company, etc. As for external factor that covers the nature of market demand, market competition and other factors.

Marketing strategy

In the market, most companies do not focus on one single product and marketing plan. The key point of being a winner was to choose attractive market segmentation. Lin [5] suggested to refer the table of market-attractive and competitive-position matrix that could to infer the future competition and cut into time of new markets. As the higher competitive position and market attractiveness, their main goal is to protect the competitive position of the target market. Invest their funds in highly profitable markets to maintain its advantages. Below the former, their goals are revenue management and to maintain the current advantage, invest their funds in low risk areas and change the competitive position. If both of market attractiveness and competitive position are lower, it is recommended to give up the market. It is expect to sell all products at highest value, then reducing other investments and fixed costs at the same time. (See Figure 1)

Market attractiveness \ Competitive position	Low	Middle	High
High	Selective mode of entry: 1. Lock the limited advantages of project. 2. Seek ways to overcome the disadvantages.	Invest in construction of the desired target market: 1. Challenge leader. 2. Selective to establish superiority. 3. Strengthen the contents of vulnerable areas.	Protect the competitive position of the desired target market. 1. Invest in the market of high growth rate. 2. Focus on maintaining their advantages.
Middle	A limited expansion or harvesting: 1. Seek for without high-risk expansion or to invest to a minimum.	Revenue management: 1. Protect the existing strengths. 2. Only invest in low-risk areas, to improve the competitive position.	Select the desired target market construction: 1. Improve productivity in order to achieve high profitability. 2. Constructed in response to market competitiveness.
Low	Abandon: 1. Selling goods under the cash value of the highest situation. 2. While reducing the fixed costs and avoid other investments.	Revenue management: 1. Protects the competitive position. 2. The investment is reduced to a minimum.	Protection or re-focus: 1. Defense advantage. 2. Under the premise without accelerated market recession and improve the income.

Figure 1: Competitive rank and Market attractiveness matrix.

The highest market share for leader, followed by the challenger, the follower, and final order is niches. Hsieh [2] suggested marketing strategy designed should be taking into account the competitors' strategy.

Kotler [13], Lin [5] proposed about leaders and challengers, followers and those niche strategies are discussed as follows: (1) Leader strategy: To lead the company to maintain its leading position, who should adopt the following three actions: (A) Defense the market share: (a) Consolidate their position (b) Side defense (c) Take preemptive action (d) Reverse attack (e) Defense without fixed position (f) Tactical retreat. (B) Expand the market share: (a) Product innovation (b) To ensure product quality (c) Product line extension. (C) Expand the overall market: (a) Create new user (b) Create new utilization. (2) Challenger Strategy: Challenger company's aims to become a leader in business, but not as a leaders' scale, try to use the same strategy to win is a very difficult thing. Therefore challenger was necessary to adopt a differentiation strategy different from the leader strategy. They expect to lead on cost reduction, but also to improve the sense of market competitiveness and consumer perceived feelings. There are three types of companies could choose to attack. (A) Attack the market leader: (a) Price discount strategy (b) Cheap product strategy (c) High quality strategy (d) Extending product functions strategy (e) Product innovation strategy (f) Service Improvement Strategy (g) Innovative marketing tunnel strategy (h) Reduce manufacturing costs strategy (i) Advertising and promotion. (B) Attack the followers of main market, whose status is stable: (a) Pay attention to consumer's satisfaction (b) Care about the potential demands of consumer. (C) Attack hold with limited resources of small-scale competitors: (a) Concentrate attack strategy. (3) Marked followers' strategy: (A) Imitator: Imitate the products of leaders and challengers. (B) Duplicator: Copy the overall market products and marketing steps of leader and challenger. (C) Reformer: Improved the products of leader and challenger, and sales them to other markets.

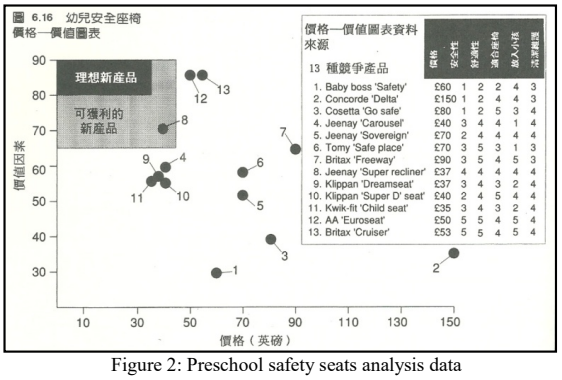

Figure 2: Preschool safety seats analysis data

Product price and value analysis

The value of products will not be necessarily proportional to its price. Baxter [14] had used preschool safety seats data to analyze (See Figure 2). For example, low price has high value (such as sample 8: the price is £ 37 and its value of score is 70), but the high price get its low value (such as Sample 2: The price is £ 150 and its value of score is 35).

 ISBN 978-1-5090-4897-7

Owada [1] in his analysis of price and sales chart, use the horizontal axis represents the proportion of sales and the vertical axis is the price. We can clearly from the chart to see that each of the market share of the price range, pricing strategies of each company's main products, and the functional and pricing of other competitors' products between different price ranges. In the study, we refer Owada's prices and marketing analysis table (named as PMA Table) as basis of system design. We import the real total sales amount of products as data of sells weight axis. Therefore, analysts can obtain those data of sells weight and market share after aggregation, classification and statistical procedures of these sells amount of products. These data can provide the decision-makers and analysts an objective suggestion of pricing and marketing strategies.

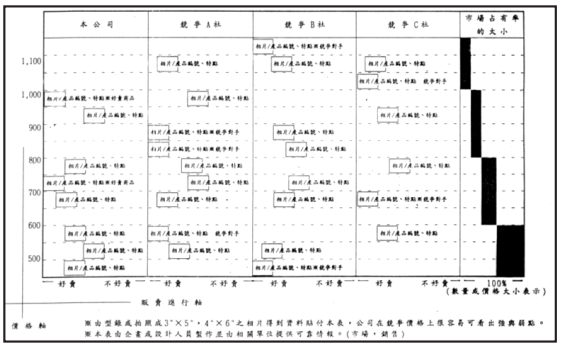

Figure 2: Prices and marketing analysis table

SYSTEM ARCHITECTURE

WWW (World Wide Web) from 1994 to date released more than twenty years, with the advancement of information technology and communications standards constantly updated; today's Web Service technology is quite advance. Therefore, our goal is to integrate existing Web Service technology to construct an information system for company's analyst to compare their products with competitor's products. (See Figure 3) This system is the type of web site, users can login the system through a browser, so the system does not have to worry about compatibility issues. On client site, user presented with HTML tag form, and use by JQuery and Flash Player API tools kit to transmit data with HTPP protocol or pass by AJAX (Asynchronous JavaScript and XML) technology between client and server. When the server receives a message transmitted from the client site, and then specifies the content of the received packet according to the parameter parsing program, and binding with the database system. Filtering data with SQL script or transmit to others API tool kits (such as SPSS API) for subsequent processing. Finally, response data with HTML tag or XML format back to the front end, and then browser refresh the contents. In addition, this system could use serverlet script language (for example ASP/PHP/Python) to combine with IBM Statistics API tool kit, then filtered data is converted to SPSS statistical system can access data format. After that SPSS Syntax Script call SPSS statistical system to execute statistical and classification, and finally the output is converted to standard web format, then again with JQuery or XML parsing engine, post back to the front end and display related statistical information.

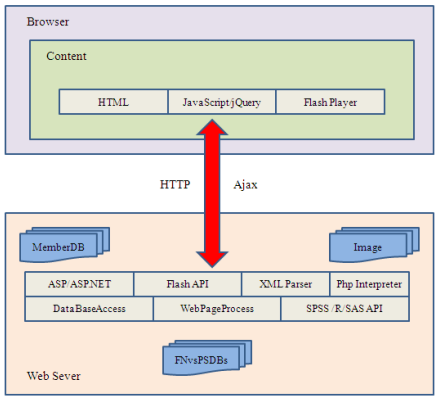

Figure 3: System architecture.

SYSTEM DESIGN

Analysts will first be asked to entry account and password data for authentication. If he/she passes identity verification, system will show related project data on the menu, but if not verified will repeat procedures for authentication. The system will check user identity whether as the Administrator or not. If he/she is a managers identity, browser will show with full menu, otherwise will show normal menu. Operational flow of this system is divided into eight parts. (1) Project definition. (2) Company data maintain. (3) Production data maintain. (4) Project competitor defined. (5) Product sell data maintain. (6) Price interval defined. (7). Marketing strategy defined. (8) Product functions and prices analysis board. (See Figure 4)

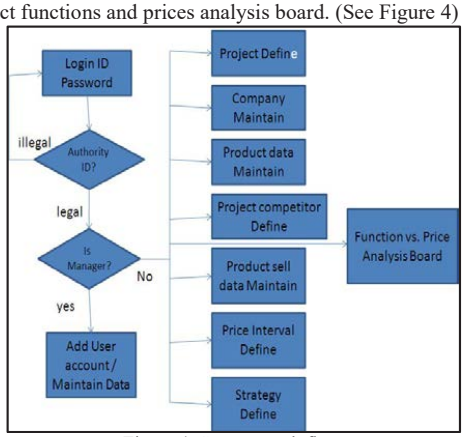

Figure 4: System work flow

Normalization of sales weight slope

When testing the system with scooter marketed data, we had founded that the weight values of test data were less than 1 and close to zero. To facilitate with building the production of PMA table, we use normalized slope formula and corrected the sell weight values range between 1 and 10. Each original sales weighted value is between 0 and 10. We can see that equation of straight line 2 in Figure 5 is X-Y=0. So the solution of this equation is (ω, ω), ω as any real number. After that we set X=ω and put it in the equation of straight line 1, then the solution of Y is the right value of normalized sales weight. (See Figure 5)

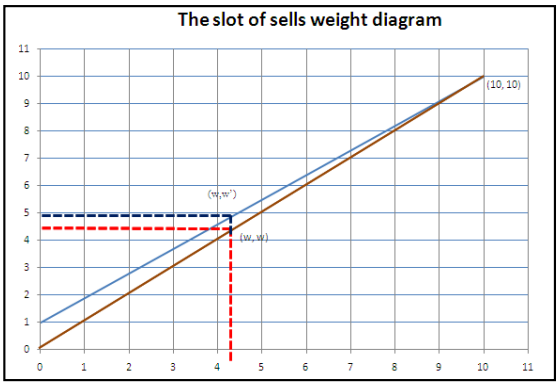

Figure 5: The slope of the sales weight formula.

Product functions and prices analysis diagram

When Analyst has chosen this option, system will filter all the project data related with analyst from project define table. The system responded a drop-down list on analyst's browser with project name. After he has finished selection, system will filter all the products data related with that selected project number. The system will to summary all the weight of products sell amount and its price range, and summarize the radio of market share value that respectively belong to high, medium and low range. (See Figure 6) Analysts then have the following mode of operation, and the results provided to the managers as the recommendations who should be taken in response to a competitor's marketing strategy. (A) View any product information (such as product contents, features, etc.). (B). Select the analyst's company and other companies' products to compare. (C) Choose one price range to view all the comparison of products within the range. (D) Choose some products to compare.

Figure 6: PMA Table

CONCLUSIONS

In this paper, the system aimed to provide integrated information system for companies. Analyst could take their products compare with competitor's products price, value and feature in the face of fierce competition environment. The system has provided a user-friendly interface, he/she could pre-entry the data of project and related products. It allow analyst to choose different ways to quantize the relevant comparative data. After the business owner to adjust or change their marketing strategy, that can encourage their products competitiveness and sales in the market and increasing profit opportunities.

Reference

[1] Minoru Owada, "The actual method of product development – Case study: Consumer product values and planning of Japanese", 1996, External Trade Development Council Conference, R. O. C.
[2] Phillip Kotler, et al., "Marketing Management", 2th ed., 2002
[3] Rafael. Muhammad, "Good price to let you earn money : the price strategy that you should know it", 2007
[4] Jian-Huang Lin, "Marketing Management", 2002, Best-Wise Publishing Co., Ltd.
[5] Long-Yi Lin, "Marketing Strategy Management", 2006, 5th ed., Wu-Nan Book Inc., R. O. C.
[6] Xuan-Qing Wu, "A questionnaire to make a survey of the aesthetic imagery and preferences of Taiwan festival lantern's appearance", 2011, Lantern Celebration Art Images Investigation of Taiwan, Design and Art Master Thesis of Da-Yeh University, R. O. C.
[7] Wun-Xiang Zhou, "A questionnaire investigate the relation between lifestyle and perception of bicycle form", 2001, Design and Art Thesis of Da-Yeh University, R. O. C.
[8] Jiun-Ying Huang, "Principles of Marketing", 2007, Hwa Tai Publishing Co., LTD.
[9] Shih-Yen Huang, "A research of product type and lifestyle pattern analysis through the Web-based two-dimensional analytical tool", 2011, Chuan Hwa Book Co., LTD.
[10] Fu-Feng Hsiao,"Consumer Behavior", 2008, Best-Wise Publishing Co., LTD
[11] Zhang-Hao Liu, "Research of the relation between the bike appearance and consumer's visual cognition with Eye Tracking System", 2009, Institute of Industrial Design Master's Thesis of National Cheng Kung University.
[12] J.Paul Peter, James H.Donnelly., "A Preface to Marketing Management", 9th ed., 2003
[13] Kotler, P. and Armstrong, G., "Marketing Management : Application, Planning, Implementation and Control", 1999
[14] Mike Baxter," Product Design", 1995
[15] Pessemier, E. A., "New Product Decisions : An Analytical Approach", 1996, McGraw Hill, New York, p9.

 ISBN 978-1-5090-4897-7