

The Performance Evaluating Method for Taobao Network Marketing Strategy based on AHP Algorithm

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Abstract. How to evaluate the performance of network marketing strategy becomes an important issue. Regarding this problem, this paper proposes performance evaluating method for network marketing strategy from aspect of marketing objectives, target marketing, marketing data using AHP algorithm.

Keywords: AHP, network marketing strategy, performance evaluating.

1. Introduction

As a new marketing strategy, network marketing [1], brings more and more broad developing space to Modern Corporation with the advantages of extensive radiation, low investment and quick effect. The value of network marketing is growing rapidly. According to the report of iResearch[2], the market size of marketing has reached 8 billion yuan in 2009, and expected to be over 40 billion. With the development of internet technology, there were many new forms of marketing. In addition to sophisticated forms of online marketing like search engines and online advertising, Community, interactive and other new forms of marketing have also emerged. Internet marketing has become a very important part of corporate marketing strategy. with the depth and the development of network marketing, how to evaluate the performance of network marketing business become an important issue.

2. Analysis of Network Marketing

In recent years, many scholars began to research on the performance of network marketing strategy, several achievements have been reached, some of them with representatives can be listed as follows. Cai, Jingjing[3] proposed a performance evaluation model of agricultural products network marketing based on rough set theory. The model used genetic algorithm to reduce the initial decision table and, through calculating the importance of the decision attributes in the reduced decision table, identified the weight coefficients of various influencing indexes, effectively overcoming the subjectivity of weight coefficient determination in the current evaluation models. Tang, Ping[4] make surveys for moral status of China's network marketing, analyze the moral failure and the causes of network marketing to try to build moral system and evaluation model of network marketing in the harmonious society, establish normative measures for network marketing moral. These achievements greatly increased the degree of awareness attention for the performance evaluation method of online marketing, but the one can really meet the reality of network marketing, and be operable is still missing.

2.1. Summary of Performance Evaluation for Network Marketing

Performance evaluation of network marketing has gone through the traffic to predict market trends and the potential number of visitors, by clicking on the number of network marketing to evaluate the effectiveness of single indicators to assess the stage of development to the current build network marketing performance evaluation metrics system.

The actual operation, mostly by means of installing third-party log analysis software, data access operation of the Site, to analyze the effect of network marketing. This approach is difficult to obtain high credibility, the system, a comprehensive performance evaluation data, and lack of objectivity of evaluation results, the follow-up of business decision-making guidance, drawing little effect.

Compared with traditional marketing activities, easy to collect data and statistics online marketing activities (such as customer data, access data, etc.) is advantage to carry out a performance evaluation for network marketing, but there are still considerable difficulty lies on the research and practice of the performance evaluation for network marketing, which can be summed up in three aspects. (1) The effect of network marketing is difficult to clearly define. Any network marketing, such as search engine advertising or search engine optimization and promotion, the effect may be caused by many (such as offline sales promotion), may also be long-term (such as the upgrading of the network brand). (2) Business management features, which is decided by the combination of online business and offline business, the one of network marketing and traditional marketing. (3) As the difference between the network marketing platform for Internet and traditional marketing depends on the media.

After detail research, a conclusion can be made that the root cause of these problems lie on three points. (1) The ambiguity for the purpose of the evaluation. This was reflected in the network marketing business purpose and was not quite clear, the evaluation is often part of the network marketing function for the overall function. (2) Uncertainty evaluation methods and inconsistency of evaluation criteria. Some of them make internal evaluation by themselves, and some invite relevant experts to make third-party evaluation, there are few cases focus on the users evaluation. (3) Evaluation data of non-objectivity. As the purpose of the evaluation and assessment methods problems, often leads to evaluate the objectivity of the data can not be guaranteed, or indicators of data difficult to obtain.

Therefore, the establishment of a methodology that can not only reflect the network marketing goals, but also has a strong operational performance evaluation system of the enterprise to understand the effect of network marketing, make better marketing decisions has important practical significance.

2.2. Nature and Characteristics of Network Marketing

Network economy is a market shift power from businesses to consumers, that a seller's to buyer's market transfer times. Network marketing is an Internet-based marketing activities to target customer-oriented, emphasizing the full personalize marketing. Compared with traditional marketing, Internet marketing has two differences. (1) the core of marketing is different from the core of network marketing is not "push" product, but rather "pull" the customer, the customer is no longer in a passive position, but can be more proactive in seeking goods information that is turned by the push-pull marketing marketing, mainly for the user to choose a more active information. (2) the effect of different marketing, network marketing has spread a wide range of interactive, targeted and so on. In the network environment, the enterprise network marketing system to provide consumers with comprehensive product information display and multi-commodity search mechanism, a consumer with demand for immediate online search for the right producers of goods or through the network to make their own individual needs, so every one marketing process is to meet consumer demand marketing process, to achieve a complete segmentation of the market. (3) Interactive Internet marketing process. Internet marketing environment, the production and consumption directly into the company's marketing process. Internet marketing with network interaction, two aspects of production and consumption integrated into the overall marketing process, marketing process so as to meet consumer demand in the process, while businesses can easily access real-time customer information and needs to achieve a dynamic customer management.

3. Metrics of Network Marketing

Traditional performance measurement indicators are mainly accounting, financial indicators, the focus is reflected in the results of the process, with fine, reflect the characteristics of single and passive, can not be comprehensive and dynamic process reflecting the problem, can not take the initiative to carry out analysis and management . Relative performance in terms of traditional marketing, online marketing performance measurement of a broader, including not only companies selling products and expanding markets for the marketing budget, but also to meet the customer's personalized, convenient, fast and so needs to increase

investment ; also has a multi-objective nature, it is necessary to the pursuit of higher corporate profits, market share to maximize the quantitative target market, but also to achieve customer satisfaction, integrated sustainable development of enterprises and other qualitative objectives Standard. Therefore, the performance evaluation of network marketing network marketing system must meet the requirements of the management itself, reflecting the overall dynamic process of network marketing.

3.1. Classification Criteria for Metrics

Marketing performance evaluation metrics system, either on the overall performance of network marketing situation of objective, comprehensive judgments, but also the classification of indicators by comparison, clearly affect the performance of sensitive network marketing factors in the evaluation process can be subjected to layers to determine, identify business weaknesses in network marketing, network marketing strategy for the company to take appropriate measures to improve the direct basis. The performance evaluation process of network marketing needs to follow a few basic guidelines.

Objectivity. Use open, fair way to get data and information, to avoid the use of secondary data. In addition, try to use statistical data from the objective to avoid the use of subjective rating data.

Independence. Evaluation metrics system of the indicators are statistically independent or small correlation, the same level indicators reflect different aspects of marketing performance characteristics.

Operability. Each indicator has a clear meaning, index data is concise and easy to get, all indicators are computable.

Continuity. Indicator data can be used continuously can provide a basis for marketing decisions. Both between the various indicators can be their own network marketing activities, more vertical, and horizontal inter-industry can be compared.

Open. Metrics should be comprehensive, multi-angle picture of the business network marketing conditions. However, due to the rapid development of network economy, we can not achieve a closed system of longitudinal comparison. Therefore, we have established a network marketing evaluation system, the core layer in the target, the focus in the target layer, the key in the data layer. With the development of marketing network, system indicators can be constantly replenished.

3.2. The Construction of Metrics System

According to the process of enterprise network marketing activities and characteristics, performance evaluation system in line with multi-objective multi-level, a combination of qualitative and quantitative indicators of the requirements, the need to define the following three levels.

Target layer. Overall network performance evaluation part of the network marketing, which reflects the goal structure of network marketing, the less costs, enhance the effect of extending their influence.

Metrics layer. From different aspects of the comprehensive measure marketing performance, marketing performance is a direct description of the network layer of refined marketing objectives.

Data Layer. Performance analysis of network marketing, and ultimately through the collection to be complete and accurate data analysis to be completed. Each refers to the standard values by a number of marketing data calculated according to weight. Currently, many third-party monitoring software can automatically obtain Web access data on the situation, but only the data is not enough to describe the performance of network marketing, different types of businesses have different marketing data, therefore, the data layer is an open structure.

4. Hierarchical Analysis of the Performance of Network Marketing Strategy

4.1. Summary of AHP

AHP(The Analytic Hierarchy Process) is a qualitative analysis and quantitative analysis of combined systems analysis approach is to use people's subjective judgments expressed in the form and number of treatment methods, referred to as AHP. AHP is to break down complex issues into constituent elements, dominated by the relationship of these factors in turn grouped to form a hierarchical structure. By pairwise comparison of the various factors determine the relative importance of integrated decision-makers to determine and then to determine the relative importance of the overall decision-making program order.

4.2. Work Steps of AHP

AHP system analysis, design, decision-making can be divided into four steps.

- Analysis the relationship between various factors in the system, establish the hierarchical structure of system.
- Elements of the same level in a layer on the guidelines on the importance of pair wise comparison, structure matrix of pair wise comparison judgments, according to

$$x = \prod_{i=1}^n x_i^{w_i} \quad (1)$$

- calculating the relative weights of the criteria compared by the comparison matrix element, according to equation

$$\omega_i = \frac{1}{n} \frac{\sum_{j=1}^n a_{ij}}{\sum_{k=1}^n a_{kj}} \quad (2)$$

- calculate the synthesis of weights and sort Layers of elements on the target system and check for the consistency by equation

$$C.I. = \frac{\lambda_{\max} - n}{n - 1}. \quad (3)$$

5. Algorithm Application in Taobao Network

5.1. Summary of Taobao

Taobao network is Asia-Pacific's largest network of retail and business district, to build the world's leading network of retail and business district, by the Alibaba Group in May 10, 2003 investment in the creation. Taobao is now operational across the C2C (person to person), B2C (business-to-individual) of two parts. As of December 31, 2008, Taobao over 98 million registered members, covering most of China's online shopping population; 2008 trade amounted to 99.96 billion yuan, accounting for 80 percent of China's online shopping market share.

5.2. The Metrics System of Taobao

According to the definition of metrics system, the metrics system of taobao corporation can be described like figure1.

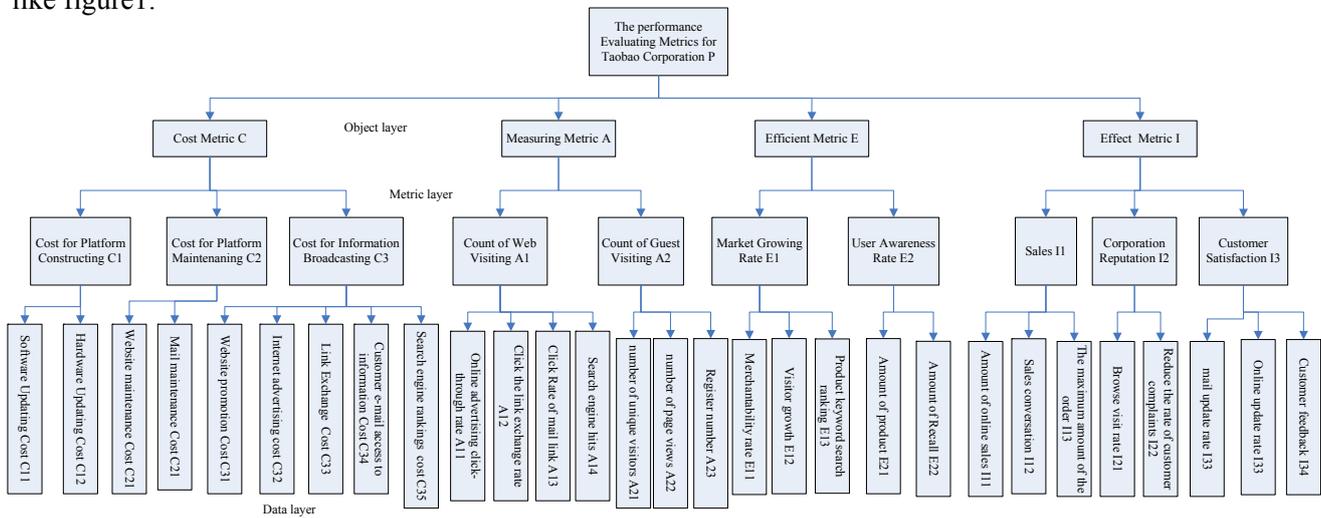


Fig. 1: the metrics system of taobao corporation.

5.3. Data Set Description

The data set of taobao corporation can be described like table 1-3, which provide the detail data of cost metric C, Measuring metric A, Effect metric E separately.

Table 1 data of cost metric C

Category	Raw Data	Value of Cij	Weight of Cij	Value of Ci	Weight of Ci	Value of C
Cost of hardware update	6	0.8	0.4	0.8	0.3	0.7
Cost of software update	6	0.8	0.6			
Maintaining cost of web server	3.6	0.7	0.5	0.4	0.3	
Maintaining cost of mail server	1.2	0.1	0.5			
Website promotion costs	48	0.9	0.3	0.8	0.4	
Web site advertising fee	36	0.9	0.2			

Link Exchange fee	0	0	0.1			
Mail information obtaining fee	6	0.8	0.2			
Search engine ranking fee	6	0.8	0.2			

Table 2 data of measuring metric A

Category	Raw Data	Value of Aij	Weight of Aij	Value of Ai	Weight of Ai	Value of A
Online advertising click-through rate	6	0.8	0.4	0.007	0.4	0.5
Online advertising click-through rate	6	0.8	0.6			
Click Rate of mail link	3.6	0.7	0.5	0.8	0.6	
Search engine hits	1.2	0.1	0.5			
number of unique visitors	48	0.9	0.3			
number of page views	36	0.9	0.2			
Register number	0	0	0.1			

Table 3 data of effect metric E

Category	Raw Data	Value of Eij	Weight of Eij	Value of Ei	Weight of Ei	Value of E
Merchantability rate	0.23	0.8	0.4	0.7	0.5	0.7
Visitor growth E12	1	0.8	0.6			
Product keyword search ranking	0.36	0.7	0.5			
Amount of product	1	0.1	0.5	0.7	0.6	
Amount of Recall	0.48	0.9	0.3			

5.4. Result Analysis

According to the AHP algorithm combining with the data given in 5.3 we can calculate the $P=0.786$, which passed the consistency check from AHP. The results reflect the description of C in the network marketing business on the cost of inputs, the index system of network marketing is the inverse indicator of the relative point of view from the index is currently in the network marketing business on the investment period, investment in information and communication charges C3 in a significant share in overall investment. Cost index in the index system of network marketing than the major value High, thereby affecting the evaluation of overall performance. A is a network marketing system of indicators measuring indicators, mainly reflecting the network client on the corporate Web site visits, can be seen from Table 4, the site was visited by A. Still very low, indicating that the company still remains in the network marketing into the construction period is not yet customers viscosity, customers need to increase promotion. j reflects the company's influence, from the data, its influence has significantly increased, mainly as corporate reputation and customer satisfaction I2, I3 increased rapidly.

That the taobao company is still in the network marketing investment period, the proportion of the cost of investment is relatively high, the effect of network marketing is not obvious, especially the target efficiency level is relatively low.

6. Conclusion and Future Works

Internet network marketing is based on the use of digital information and interactive online media to achieve the objective of supporting the marketing of a new marketing approach. This paper proposes a AHP based performance evaluating method for network marketing strategy. The structure of metrics and the workflow of AHP is described in detail. Based on these statements, taobao corporation is considered as a case to verify the validity of the method proposed. In the future, we will introduce fuzzy theory to describe the uncertainty of the evaluating process, which will help for the improvement on the performance of algorithm.

7. References

- [1] Yuhuai, W. and Q. Ming. *Research and design of network marketing system based on expert system*[C]. 2007. Nanjing, China: Inst. of Elec. and Elec. Eng. Computer Society.
- [2] iResearch. *China Social Network Marketing Research Report*[R]. China: iResearch China Social Network Marketing Research Report, 2008.
- [3] Cai, J. and J. Hua. *Study on the performance evaluation of agricultural products network marketing based on rough set theory*[C]. 2009. Wuhan, Hubei, China: Inst. of Elec. and Elec. Eng. Computer Society.
- [4] Tang, P., Y.M. Yang, and J.H. Wang. *Moral system and evaluation model of network marketing*[C]. Shanghai, China: IEEE Computer Society.