The Research on Business Model Evaluation Based on Internet Free Services

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Abstract. The development of Internet economy promotes the diversified proceeding of new economy's business model and innovational business logic and operation mode. Taking the typical internet corporations of china as samples, this essay analyzes the business logic which is based on strategy and establishes evaluation index system on the basis of internet business model. The author analyzes the business models of Google, Tencent, Sina, Baidu and Netease through **f**uzzy comprehensive evaluation method. Some statistics and comparative analysis is implemented on the assessment result which is based on the profit model of free services. Finally, this paper generalizes the evolution regularity of business model for the internet corporations in china, which is from the single-node free services (portal website information providing, email distribution and reception et al.), to the multi-thread function traction (retrieval, email manage system, network games, web-chatting, e-commerce and web-based learning), to TNT network attention(blog, Twitter or microblog) , and to integration of network resources(cloud computing and storing).

Keywords: Internet Business Model, Evaluation System, Internet Economy, Free Services, Network Attention.

1. Introduction

In the 1980s, the Internet gets into civilian use. And the rapid development of the Internet technology and the active participation of capital drove the emergence of the Internet enterprises in the business field. And the Internet enterprises relied on the Internet. As a result, the Internet economy became a representative industry in the new economy. Under the globalization, marketization and informationization, the Internet enterprises meet new chances from the sustainable development of economy. Meanwhile, the Internet enterprises are confronted with the challenges from homogenization. Nowadays, the Internet and the Internet business model have brought great changes to society and economy.

Compared with the traditional economy model, the business logic, such as return of investment, operation model and profit model of Internet economy and Internet enterprises, shows distinguished and mysterious. The reason why the above phenomena emerge is the high growth, high innovation and high frequent emergence of free service and high return. By analyzing the present business model and operation model of Internet, this essay tries to construct theoretical analysis framework of the business model which is based on the free service of the Internet enterprises. And this essay also tries to explore and summarize the business logic of the development of the Internet enterprises in our country. Among the Internet enterprises, the competition in the basic content of the management decision has transferred from enterprise to the entire business model. Analyzing and researching the business model of the Internet enterprises, and designing the

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business model and evaluation methodology that are suitable for the business model of the Internet enterprises, are significant to the development of the Internet business in our country.

2. Literature Review

2.1. The Definition of the Core Concepts

The business model is defined as the following: "in order to maximize customers' value , the business model refers to the integrated solution, which could integrate inter and outer elements, form high efficiency operation system with special core competence, and obtain sustainable profitability though providing products and service, " In this definition, " integration", " high efficiency" ; "system" and the basic and the "core competence" is the key; "to maximize customers' value" is operation goal; "sustainable profitability" is business result and a standard which measure the efficiency of the business model.

In recent years, with the development of the Internet, the duplication and communication of the information products are nearly free, which promotes the development of the operation model of the Internet enterprises. The university and low price of the information communication make the consumers' attention the scarce resource and the traditional cross subsidy model already could not attract the consumers. As a result, most of the Internet enterprises start to try the totally free model, such as free operating system, free electronic mail service and free anti-virus software.

The free business model not only changes the public's traditional consumption concept, but also outs challenges to the traditional profit mechanism of the enterprises. The ultimate aim of the merchants' providing products and service is to strive for the scarce resource, that is to say consumers' attention. Vying for the scarce resource not only is the fundamental hypothesis of economic theories, but also the fundamental starting point of the enterprise's striving for value of commodity and profit.

3. Literature Review

Various researches have been conducted in definition, classification, evaluation and innovation in the foreign countries, among which the evaluation of the business model is the most difficult. In the prediction and evaluation, Hamel（2000）、Gordijn （2001）and Morris （2003）have made some research. Some scholars divide factors that reflect the potential of the business model into four categories: efficacy, specialty, elasticity and profit driver. (Hamal, 2000). Some other researchers pointed out that the business model evaluation should analyze the value flow between different participants (Gordijn, 2001).

Through bundling, the manufacturer strengthens the consumers' spending will and scale effect is higher than the ordinary marketing, thus obtaining more profit (Jean Tirole, 1998). And some scholars also illustrate the information products manufacturers' price discrimination. For example, through providing the book edition or free edition of the Internet information products, the enterprises could rapidly meet the market demand and get a large market share. Thereafter, a new product strategic standard is formed (Carl Shapiro & Hal Varrina, 1999).

The Internet enterprise model describes the role of and correlation between the consumer, client, coordinator and provider. Through analyzing the model, the product logistics, information logistics, capital logistics and the participants' gains (Weill & Vitale, 2001). The Internet business model is a capability model through which an enterprise gets profit with the help of the Internet. From the perspective of the core element, business model indicates the profit way of the enterprise and the profit plan in the future. The business model could be generalized a system which integrates value, scale, profit source, price, connected activity, integration, capabilities, durability and so on. The Internet business model also contains the above elements. And the only difference lies in the Internet business model's application of conducting operation using the Internet (Allan Afuah & Christopher Tucci, 2005).

4. The Establishment of the Model

4.1. The Assessment Index System of the Free Internet Business Model

In this essay, the free business model is divided into two levels. The highest level is the assessment objective level. On this level the increase of commercial value is realize through assessment. The other is the

assessment criteria level, mainly including management strategy, organization structure, resource setting, products & services, financial condition, profit potential, customer value and market environment. In the later level, the assessment is conducted from different levels in every perspective against relative indexes. And the key indexes are as table 1.

This essay uses the analytic hierarchy process (AHP) and the Delphi method to endow the key indexes. In the first step, the index group which is correlated with decision is divided into target, criteria and scheme. Then the index system, sub-index system and constraint condition will be out into the relevant hierarchy. Next, according to affiliation and relevance relation, different elements are composed into a multi-hierarchy structure model. In the second step, use the comparison method to determine the matrix and calculate the maximum eigenvalue. Then take the components of the vectors of the corresponding features of the maximum eigenvalue. And ultimately, summarize all the elements' weight.

Table 1. The assessment criteria of Internet free business model

Assessment criteria level	Key index level
management strategy	Core technology, innovation capability, brand value and enterprise culture.
organization structure	management system, upgrade capability
resource setting	operation/total profit, diversified income
products& services	core products share, product service differentiation, registered users, advertising browse ratio
financial condition	profitability, ability to raise capital, income, cost
profit potential	profit margin ,derived income index, access number conversion rate, income growth rate
customer value	client base, customer pace of expansion, customer satisfaction, customer loyalty
market environment	industry influence rate, government support force, public acceptance

Data source: designed by the author

Use the Delphi method to determine each criteria hierarchy and key weighting of index.

According to the formula (1), get the average of all of the weighting of indexes which were proposed by the specialists, and then the determined criteria hierarchy and the key weightings of indexes are as the following:

$$r_i = \frac{1}{n}\frac{1}{n}\sum_{j=1}^{n} r_{ij} \left(i = 1, 2, ..., m\right) \tag{1}$$

5. The Evaluation of Free Internet Business Model

Comprehensive Evaluation refers to the comprehensive and integral evaluation of objects with multi-attributes and systematic structures by adopting certain methods.

According to given conditions, every object will be given a value of estimate, based on which the system will be arranged in order and the optimal choice will therefore be made. Comprehensive Evaluation technology is a newly emerging research field, which developed from multidisciplinary edge crossover, mutual penetration and multi-point support. It began with research done from the aspects of statistics, management and system engineering theory. Recently, with the occurrence of some subjects like fuzzy mathematics, gray system theory, and the neural network technology, some new research methods are gradually being introduced to the research of CE methodology.

Due to the fact that evaluation factors and levels involved in the free internet business model are too many, this paper adopted the secondary fuzzy comprehensive evaluation model so as to fully consider

relevant key indicators. The hierarchical structure of this model is shown as figure 1. The expert advice needed in the evaluation process is gained through the Delphi method.

6. Data Description and Statistics

In order to analyze the current business model of free Internet services, this paper selects two typical free business model: the first kind is the three party market model, the representatives of which are Google, Baidu and Sina, which provides free services for users and charge the advertising company, the third party, for money.；the second type is developing value-added services, the representatives of which included Tencent and Netease, while they provide free services for the Internet users, they gain profits through designing various kinds of personalized value-added services.

(1) Google is the most influential Internet comprehensive service provider in the world, the concise portal window of which accepts more than 60% of the worldwide search requests(tab.2)

(2) Tencent was established in Nov. 1998. Tencent Company is currently one of China's biggest Internet comprehensive service providers and also one of the Internet enterprises that enjoy the largest number of users in China. On June 16, 2004, Tencent came into main board market of Hong Kong Stock Exchange. At present, Tencent, with the total market value of $44.6 billion, is China's Internet listed company of the highest market value.

Table 2. Google Company expert assessment form

U	U_i	E	G	C	D	U_i	E	G	C	D
Operating strategy	U_{11}	0.32	0.21	0.24	0.23	U_{13}	0.32	0.21	0.24	0.23
	U_{12}	0.56	0.33	0.07	0.04	U_{14}	0.75	0.1	0.1	0.05
Organizational structure	U_{21}	0.34	0.34	0.21	0.11	U_{22}	0.65	0.22	0.1	0.03
Resources set	U_{31}	0.61	0.11	0.18	0.1	U_{32}	0.11	0.13	0.32	0.44
Products and service	U_{41}	0.65	0.21	0.14	0	U_{43}	0.23	0.12	0.54	0.11
	U_{42}	0.25	0.25	0.25	0.25	U_{44}	0.25	0.25	0.25	0.25
Financial situation	U_{51}	0.79	0.11	0.1	0	U_{53}	0.8	0.2	0	0
	U_{52}	0.55	0.22	0.13	0.1	U_{54}	0.22	0.11	0.56	0.11
Profit potential	U_{61}	0.12	0.16	0.65	0.07	U_{63}	0.25	0.25	0.25	0.25
	U_{62}	0.25	0.25	0.25	0.25	U_{64}	0.1	0.1	0.7	0.1
Customer value	U_{71}	0.58	0.23	0.09	0.1	U_{73}	0.25	0.25	0.25	0.25
	U_{72}	0.21	0.23	0.33	0.23	U_{74}	0.28	0.22	0.31	0.19
Marketing environment	U_{81}	0.77	0.11	0.07	0.05	U_{83}	0.21	0.29	0.32	0.18
	U_{82}	0.25	0.25	0.25	0.25					

Data source：Designed by the author (E-excellent; G-good; C-common; B-bad)

(3) Sina was founded in 1998, which is currently the largest portal in China. During the 20 years' high-speed development of China's Internet, Sina, acting as a mainstream enterprise, has witnessed the whole development process of China's Internet. Recently, with the arrival of WEB2.0 times, Sina net, good at portal technology, develops at a relatively pace, with its market value following some other companies such as Tencent, Baidu, Alibaba and so on. (Due to limited space, the table 4,5 which is Sina Company expert assessment form is omitted.)

(4) Baidu was built in 2000, which is a domestic leading Chinese search engine company, with its market share reaching 76% in the year 2010. At the beginning of this century, Baidu seized the technical innovation opportunity to adjust the Internet directory services form artificial maintenance to intelligent retrieval, becoming the first company launching the Chinese search engine, and thereafter long being in the leading position in domestic search engine market. (Due to limited space, the table 6 which is Baidu Company expert assessment form is omitted.)

(5)Netease was established in 1997. As a domestic relatively early established Internet company, Netease was an eponymous portal company with Sina and Sohu at the end of 1990s. After the burst of

Internet bubble, the three portals kept suffering from losses due to the advertising slump and the fact that portal media platform effects had not come into form. Netease seized the opportunity to develop the Internet entertainment function much earlier, focusing on the development of online games and wireless value-added services, and therefore realized profits. (Due to limited space, the table 6 which is Netease Company expert assessment form is omitted.)

7. Evaluation Analysis and Result Discussion

The free Internet business model gained earlier and expert comments obtained through Delphi method will be used to give a comprehensive evaluation of the five companies adopting the fuzzy comprehensive evaluation method. Due to the space limitation of this paper, this part will only use Google Company as an example to introduce the evaluation process.

(1) Determining index weight

In the process of index system formulation, we have already determined the weight of every key index in index system by adopting Delphi method. A_1 to A_8 is the inner index weight set of the sub-set index system U_1 to U_8, with A being the weight set of every index sub-system in the whole index system U.

(2) Establish fuzzy evaluation matrix

According to the fuzzy evaluation expert comments of every company (see the "fuzzy evaluation original data table" in every company's business model introduction part.), the fuzzy evaluation matrix of every sub-index system can be gained. (Due to limited space, the evaluation matrix is omitted.)

(3) The first level comprehensive evaluation calculation

$B_1=A_1*R_1=$ (0.488 0.213 0.163 0.136); $B_2=A_2*R_2=$ (0.495 0.28 0.155 0.07)

$B_3=A_3*R_3=$ (0.36 0.12 0.25 0.27); $B_4=A_4*R_4=$ (0.345 0.208 0.295 0.152)

$B_5=A_5*R_5=$ (0.59 0.16 0.19 0.06); $B_6=A_6*R_6=$ (0.18 0.19 0.463 0.167)

$B_7=A_7*R_7=$ (0.33 0.233 0.245 0.192); $B_8=A_8*R_8=$ (0.41 0.217 0.213 0.16)

(4)The second level comprehensive calculation

Combine the above evaluation vectors into a higher evaluation matrix R_{google}

$B_{google}=A*R_{google}=$ (0.399 0.202 0.246 0.153)

According to the principle of maximum membership degree, we choose the maximum value b1=0.399, the final evaluation of Google's business model, therefore, is excellent. At the same time, based on the scores of every grading level set in figure

(5) according to the weight of B_{google}, the final score of Google's business model is:

$W_{google}=0.399*7+0.202*5+0.246*3+0.153*2=4.847$

The scores of Tencent, Sina, Baidu and Netease, calculated in the same way as Google is calculated, are listed as follows respectively:

$W_{tencent}=4.905$; $W_{sina}=4.052$; $W_{baidu}=4.764$; $W_{netease}=4.282$

From the final points of the above-mentioned five companies, it is noticed that Tencent and Google achieved relatively higher scores, Baidu ranked in the middle and Netease and Sina got relatively low scores.

The reason why Tencent has achieved a relatively high score is that its advantages are mainly shown in the aspects of resources distribution and profitability. Moreover, it basically has no disadvantaged projects. The advantages of Google are mainly shown in operating strategies and product service, with its biggest advantage of core technology and brand value. However, its indexes in terms of financial conditions and profitability influence its overall performance to a large extent. Baidu Company has very good performance in terms of financial conditions and profitability, but the diversified business concerning resources distribution is not satisfying. Besides, in the aspect of operating strategy, expect its core technology has some advantages, the corporate innovation ability and corporate culture are not appreciated by experts. The biggest problems that Netease and Sina are faced with are small-scale income and inadequate business diversification. However, the profit margins of the two companies are fairly high, which presents the reason

why they have strong capability of accumulating money. But the high PE ratio also means relatively high investment risk. In a word, the results produced by fuzzy evaluation, to some extent, proved the earlier-made comparative analysis of the five companies.

8. Summary

From the analysis of the overall characteristics of the Internet industry, China's internet companies have experienced the business model evolution rule from single node free services(portal, email), multi-line function traction (search, email, games, chat, e-commerce, online learning) , TNT network attention (blog, micro-blog) to the network resources integration(cloud computing and storage, etc.).

9. Acknowledgement

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