The Simulation and Analysis of e-Business Model

A Case Study of Witkey

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Abstract. Based on the value-oriented ontology approach, we present a simulation analysis with the e^3-value software, and study the Witkey business model with structural analysis modeling method. The feasibility analysis on Witkey business model has been proved theoretically through the adjustment and estimate of parameters. Finally, the paper concludes with practical recommendations for business model innovation.

1 Introduction

The business model is one of the important factors to influence firm performance. It explains the business logic and the way of earning, as well as how to maintain the enterprise's competitive advantage. So far, we still hardly attain the conclusive definition in the business model literature. Eisenmann (2002) thought the concept of business model is widespread used but short defined [1]. Timmers (2000) deemed the scholar usually not be able to give any definition for the management mode [2]. But existing research about innovative motive and formed mechanism of the enterprise business model also are difficult to form a systemic, universal suitable theoretical analyze frame, for example, Weng Junyi (2004) defined business model as a value analysis system in three-dimensional space through the segment of the inside and outside of the enterprise operation environment. Value proposition, value support and value maintenance as three components of the value analysis system have provided the ideological method for business model design and analysis [3]. Luo Min (2005) explained the driving force for enterprise innovation from the economic perspective with the method of rent of enterprise [4]. Gao Chuang (2006) carried on a systemic and clear explanation from the view of value chain innovative theory to the realizable way of enterprise business model's innovation [5].

Please use the following format when citing this chapter:

Ou, Y., Zhao, H., Zheng, G., Wang, L., 2007, in IFIP International Federation for Information Processing, Volume 251, Integration and Innovation Orient to E-Society Volume1, Wang, W. (Eds), (Boston: Springer), pp. 551-559.

The study above mentioned mostly can be regarded as a theoretically analysis tool for business model innovation with the qualitative methods. We here think that it is necessary to do simulation analysis with the help of relevant simulation software to concisely illustrate the business model innovation and evolution. We can further explore the guideline for business model implementation and innovation. Simulation modeling based on the e^3-value ontology, can demonstrate the essence of e-business, value creation on the one hand, and give the concise description to business model on the other hand. So we can reason about that creative ideas for the study of e-business model can be derived from the application of the e^3-vallue simulation modeling.

2 The modeling analysis for e-business model

2.1 The e^3-value ontology for e-business

An e-business model gives a precise representation, which can be used to reach agreement among the stakeholders and can be used during the building of a commerce system as a specification. The key essence of e-business model is about who offer what to whom, and the expectative benefit. So, value, the core concept in e-business, plays the role of the linkage among various elements [6]. And value is also the key element of the e^3-value ontology, which aims at identifying exchanges of value objects between the actors in a business case. It also supports profitability analysis of business cases [7]. The ontology was designed to contain a minimal set of concepts and relations to make it easy to grasp for the intended users. In the case of e^3-value models without actor compositions a value exchange is a pair of value ports of opposite directions belonging to different actors. It represents one or more potential trades of value objects between these value ports. A value activity is an operation that can be carried out in an economically profitable way for at least one actor [7, 8, 13, and 14].

Therefore, we can deconstruct the value elements to study the innovation of an existing business value model [15]. And e^3-value ontology takes the value elements as the negative factors to the original value model, mainly including the following three components: (1) Value activity deconstruction: Find 'smaller' value activities, which can be assigned to different actors; (2) Value port deconstruction: Find ports with 'smaller' value objects; (3) Value interface deconstruction: Split up interfaces with ports > 2 into interfaces with fewer ports.

2.2 Theoretical feasibility analysis on e-business model

The e^3-value ontology not only provides the framework for e-business value model analysis and innovation, but also sets the foundation for us to simulation modeling. Then, before the application, we need to analyze the feasibility of a specific e-business model from the e^3-value ontology point of view. Then the following two questions need to be considered [6]:

Firstly, whether the value proposition of one business model is feasible. This refers to the existing meaning of an e-business model. Those practicable value propositions must be able to explicitly display the way of value creation and value exploitation, and has the ability to offer value for different stakeholders, such as customers, partners or employees. If this value proposition is accepted by the relevant actors, it in a sense shows its value for this e-business model. As far as the Witkey business model is concerned, the value proposition is to enhance the value of the knowledge. This value proposition is put forward on the condition of the improving environment for Witkey business model, the need for knowledge communication, as well as the situation of specific vertical website and comprehensive website co-existing, which could provide the feasibility theoretically [9].

Secondly, whether the process for implementation of this value proposition is consistent with business logic. That is, when we have solved the first question, the following question is about its feasibility in the existing business environment. For this question, we should consider about the value support and value maintenance in this business model. Value proposition, value support and value maintenance are interrelated with each other, value support has the role of promoting and keeping the value proposition in order. Value maintenance is contributed to the achievement of the formers. Many e-business application results have indicated that not all the advanced business model innovation is valuable in practice. An advanced and effective value proposition, if without proper value support and value maintenance, will not be implemented successfully. Even though the value proposition of Witkey is feasible theoretically, but if no suitable technologies support the relevant systems for offer, searching, knowledge database reserving, order-processing and trading, and on other business, such as the visiting volume, advertising, communication as well as the value-added activities, its value proposition of knowledge appreciation will not be achieved.

After the analysis of the theoretical feasibility, we can rely on the framework based on the e^3-value ontology to make structural analysis, integrate the relevant elements in the model, and collect the data needed to make simulation analysis.

3 The simulation analysis of Witkey e-business model

3.1 Brief introduction of Witkey business model

Witkey refers to those people who sell their intangible assets (intellectual goods) or make knowledge-related business on the internet. Witkey business model uses the wisdom of human to seek the solution for newly emergent events, which imply that knowledge makes money, which incorporate the value proposition of the Witkey business model [10].

Witkey websites coordinate multiply application systems, such as the inquiry and quoted price, search, knowledge database, order and the transaction system to achieve their value proposition. The tenders submit questions through inquiry and quoted price system, seek for the answer in knowledge database through search

system. If no proper knowledge is available, relevant experts would offer the answers through the order system, and the website will add the new knowledge into the database to avoid the repetition of knowledge creation. The transaction system will finish the knowledge acquisition. The knowledge database system consists of variety of sub-knowledge database and is managed by different expert groups and Internet service providers. Internet service providers can benefit from every business trade, and also through advertisement, communication and other value-added business to support the model operation [9]. At present, Witkey website model can mainly be classified as two types: member score and cash transaction model. For reason of their similarity in the essence and mechanism, we mainly study the second model to carry out the simulation analysis.

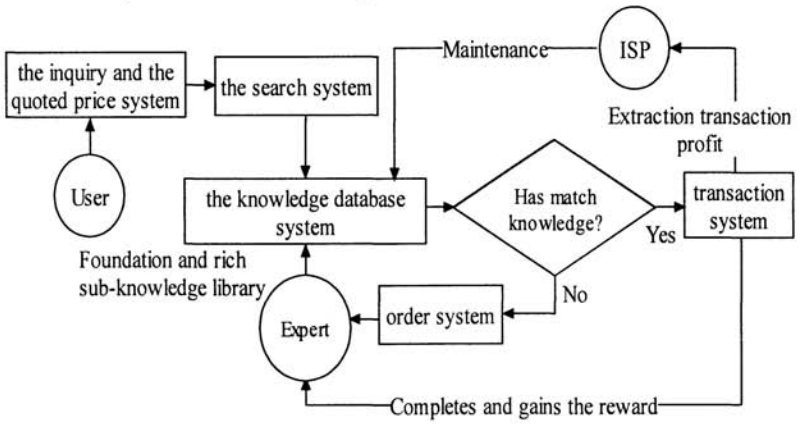

Fig. 1. Cash transaction Witkey website business model

According to the value activities of the Witkey business model, we can establish the Witkey business model with the e^3-value software which is designed by Gordijn, as shown in figure 2.

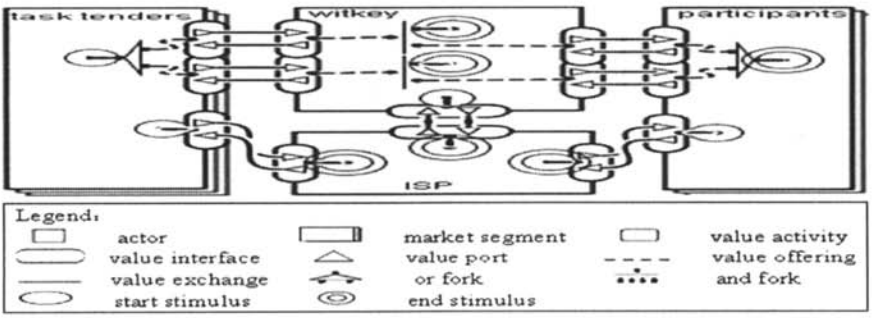

Fig. 2. The e^3-value model of Witkey business model

At present, Witkey business model emerge in our country in short time, they are still in the period of market entrance stage. The five key modules, the quoted price system, the search system, the knowledge database system, the order system and the transaction system, are not mature. The further cultivation is required, so we did not display the value activities detail in our model.

3.2 Value calculation

We choose an existing Witkey website, and give the presumption, say 1000 tenders pay 1000 RMB per person and 1000 task actors are involved. Every person average publishes and engages activities 5 times every year, and tenders get the satisfying answer with the likelihood of 4/5. The Witkey website will benefit 20% discount (no matter whether he or she can get the right works or not). Besides, the three parties all need pay for internet access service: the single user should pay 1000 RMB per year, and witkey website should pay 15000 RMB per year. We assume that the witkey website need 100000 RMB as the primary investment, other management and maintenance fee is 10000 RMB per year.

In order to take the non-monetary value in business environment and Witkey business model into consideration, we need further investigation for the real situation. We assume that tenders get more value from the right answer than the monetary value they have to pay. Participants get more than what they have to spend. The amount of the money, which witkey website and users pay the ISP, is less than the value they will get from the internet service. We assume that task tenders get the non-monetary value equal to 1500 RMB per task, the non-monetary value from the internet service equal 1300 RMB. Task participants spend the non-monetary cost to finish the task equal 100 RMB every time. The non-monetary value from the internet service equal 1200 RMB; Witkey websites gain the non-monetary value from ISP equal 20000 RMB per year. We input the parameters into the model; calculate the profitability sheet for witkey website, task tenders and participants as shown in table 1, 2, 3.

The profit sheets below have indicated that the amount of profit of Witkey website, task tenders, and participants is 895000 RMB, 2100 RMB, and 2900 RMB respectively. All of them gain the positive revenue, which show that Witkey business model has its feasibility in some sense.

Table 1. The profit table of Witkey website

Interface	Port	Transfer	Occurrences	Valuation	Value	Total
MONEY , ISP service			1		5000	
	out: MONEY	MONEY	1	15000	-15000	
	in: ISP service	(all transfers)	1	20000	20000	
MONEY, satisfaction			4000		-3200000	
	out: MONEY	MONEY	4000	800	-3200000	
	in: satisfaction	(all transfers)	4000	0	0	
satisfaction, MONEY			4000		4000000	
	out: satisfaction	(all transfers)	4000	0	0	
	in: MONEY	MONEY	4000	1000	4000000	
MONEY, dissatisfaction			1000		0	
	out: MONEY	MONEY	1000	0	0	
	in: dissatisfaction	(all transfers)	1000	0	0	
dissatisfaction, MONEY			1000		200000	
	out: dissatisfaction	(all transfers)	1000	0	0	
	in: MONEY	MONEY	1000	200	200000	
INVESTMENT EXPENSES					100000	
total for actor					10000	895000

Table 2. The profit table of task tenders

Interface	Port	Transfer	Occurrences	Valuation	Value	Total
MONEY , ISP service			1		300	
	out: MONEY	MONEY	1	1000	-1000	
	in: ISP service	(all transfers)	1	1300	1300	
MONEY, satisfaction			4		2000	
	out: MONEY	MONEY	4	1500	6000	
	in: satisfaction	(all transfers)	4	1000	-4000	
MONEY, dissatisfaction			1		-200	
	out: MONEY	MONEY	1	200	-200	
	in: dissatisfaction	(all transfers)	1	0	0	
COUNT	1000					
total for actor						2100

Table 3. The profit table of task participants

Interface	Port	Transfer	Occurrences	Valuation	Value	Total
MONEY , ISP service			1		200	
	out: MONEY	MONEY	1	1000	-1000	
	in: ISP service	(all transfers)	1	1200	1200	
satisfaction , MONEY			4		2800	
	out: satisfaction	(all transfers)	4	0	0	
	out: satisfaction	EXPENSES	4	100	-400	
	in: MONEY	MONEY	4	800	3200	
dissatisfaction , MONEY			1		-100	
	out: dissatisfaction	(all transfers)	1	0	0	
	out: dissatisfaction	EXPENSES	1	100	-100	
	in: MONEY 1000	MONEY	1	0	0	
COUNT total for actor						2900

3.3 Value analysis and the relevant countermeasures

We should pay emphasize to the logic behind the website well-running, not just give the simple evaluation to a website, so as to learn the effective way for e-business model practice and innovation [11]. We here don't mean the real estimate for the profitability with the profit sheet. The meanings of these data here lie in seeking for business opportunity and the condition for the opportunity [6]. So we can further reveal the real practicing process and the mechanism of the e-business model, and meanwhile contribute to our evaluation as well as seeking for the more effective innovative measure based on the e^3-value elements deconstruction. As the result of the estimation for the profitability of the e-business model above, we can recognize the existing problems and the relevant countermeasures:

First, the existing Witkey models are lack of the brand and the social influence, the quantity of Witkey participant are not enough, and cannot achieve the economies of scale. Some phenomena, such as knowledge-lacking about the witkey website, the low degree of the trust, and also the fraudulent events, have driven some brilliant witkey away [12]. In our opinion, witkey website should undertake the deconstruction in value activities and value ports, through some value behaviors activities, such as technologies-updating, management improving, content expanding. We could distribute some small value activities to participants for their value-adding profit. Through the deconstruction of the value ports, such as mass media propagandizing and the cooperation with other large website, they could seek for new ports with relevant value objects. We assume that the witkey website cost 100000 RMB per year for the content expanding and advertisement; consequently it attracts 500 new tenders and 500 participants. Then the website could gain 1295000 RMB.

Second, some problems, such as, low level of property management and running regulation, choke point of trust and intellectual property protection, are still existing. At present, network intellectual property and income tax which is brought by Witkey website still have no conclusion. Further more, the special transaction model of Witkey website made the intelligence achievement, which is provided by Witkey is extremely easy to be embezzled and imitated. How to coordinate trade operation of Witkey website have become the urgent issues that need to be solved [12]. It needs the Witkey website start with the deconstruction of value interface: through value interface deconstruction (improve its value activities of search system and knowledge database system) to split up interfaces into small interfaces with fewer ports. In other words, it may be attribute to avoid the repeated creation of knowledge with the help of searching system and knowledge database system, further save the trading expense, which not only increase utility of participants, but also can cause the decrease of website's management expense and increase the number of participants. We assume the expense that the Witkey website spend to enhance value activities quality of searching system and knowledge database system is 100000 RMB per year, which cause the participant's cost reduced 20 RMB for every time. Meanwhile, relevant expense reduction in management for 5000 RMB per year, and the increase of 500 tenders and 500 participants, then the website could benefit 1400000 RMB and participants' profit increases to 3000 RMB.

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