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5P4F-BASED INNOVATION METHOD OF E-COMMERCE BUSINESS MODELS¹

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ABSTRACT

The development of Internet provides greater space and flexibility for business model innovations, while continuous innovations innately characterize the ecommerce models. The innovation activities have been greatly enhanced since the US Patent and Trademark Office issued a patent for the one-click shopping process invented by Amazon. This paper presents an analysis method, as well as the innovation method, of ecommerce business models, both based on 5P4F(5P---product, price, place, promotion, position; 4F---business flow, information flow, capital flow, logistics flow). The paper provides two ways to innovate EC business models : innovation of element property and innovation through model-composition. With these methods, practitioners can operate a detailed analysis of the present models and models of their enterprises to search for existing problems and consummate the present models with focus. As to the academic circle, it provides a general and referential frame, idea and method for the research on EC business model innovation.

Keywords: E-commerce; Business model; Innovation; 5P4F

1. Introduction

The electronic commerce, briefed as ecommerce, is the systematic integration of the electronic information technology involved in prospect of promoting business efficiency and convenience, which means enclosing the whole business process and transaction in an electronic way^[1]. With e-commerce as a new commercial platform, revolutionary changes have been made to the traditional business form in a new state of time and space, which find their source in the new characteristics of e-commerce^[2,3].

Statistics on the development of Internet in China issued on July 17, 2001 by CNNIC shows that, the number of netizens in mainland China has amounted to 26.5 million,

increased by 57% compared with the same time last year, with 73.9% of them "often browsing" or "sometimes browsing" over e-commerce websites. Of this population 31.9% ever made purchase on commodity or service in the nearest year through web-shops. The fact that Internet has been gradually penetrating the society is being more and more reflected in every aspect of our lives^[4]. Under these circumstances, almost the entire world is hailing to the successful application of Internet in commerce, and many hi-tech enterprises invest large amounts of money in building websites and advertising , or hurry copying models of western successful enterprises with no fruit or even loss of capital. Therefore, the following questions are necessarily taken into concern and reflected on by people in this line or in research: (1) what are the basic models of e-commerce? According to which system are they categorized? (2) How to innovate on the basis of categorization of e-commerce models; especially create one adapted to the particulars of a given enterprise? (3) How to procure wealth by use of Internet on the part of the individual and the enterprise? Which model and strategy should be adopted to achieve continual success? These are problems imperative to be tackled to make e-commerce readily accepted and a new economic model.

The dynamic of the rapid growth of ecommerce partly comes from the IT firms such as IBM, Microsoft and Oracle, providing the infrastructure for ecommerce, and more importantly, from the unprecedented way of business activity brought forth by use of Internet and Web-tech, in addition to the innovative force to transform the traditional business activity. Innovation of business model helped Amazon.com rise to the biggest bookstore in just four years, in place of barnesandnoble.com-----the tycoon in the traditional industry; direct sale and virtual integration made DELL a favorite of PC market. Consequently, the

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innovation of e-commerce models has become an important means of market-promotion and profit-procurement for both new-winners on web and traditional enterprises.

On this condition, developed countries are continuously coming up with new e-commerce models. In 1999, listed innovative models alone have amounted to more than a hundred^[10]; in 2000, models introduced to China exceeded 77^[11]. What is more, US Patent and Trademark Office approved the patent applications for one-click shopping process by Amazon.com and for reverse auction by Priceline.com^[12]. Many believed the fact which business models are protected as patents will undoubtedly stimulate the innovation of it. Quite a few research institutes and firms are pouring considerable fund and human resources to the development of new e-commerce models^[13,14]. Obviously, after the formal entry of China into WTO, many e-commerce projects like dangdang.com in China may face the obligation of turning in fee for using patents.

Except for logistics flow, information flow, capital flow and business flow have been integrated by e-commerce, which brings up many new variables and greater space for business model innovation. Nowadays, all the enterprises are on thin ice. Not only is the life circle of products shortened, but also is of the enterprise strategy. Bill Gates said a few years ago that Microsoft was only two years away from failure. And if failure is to be kept apart, the enterprise has to continuously innovate its business model. In the neo-economics, the key competitive advantage stems from non-linear innovations, so it is compulsory that enterprises be converted from the product-oriented concept to the idea of systematic innovation. While Post-It-Notes of 3M is product innovation, in addition to VCR, First Direct-----an insurance company-----and Amazon are both examples of systematic innovation. The stock turnover rate of DELL is 50/season, whereas that of Compaq is comparatively as low as 10-12/season. The difference does not result from restructuring of process, but a brand-new business model. In the past 20 years, the majority of enterprises have based themselves on optimization-----promotion of the efficiency of the available model-----but only a small number of them have kept on with exploratory experiments on new markets, new client groups and new business models. In the situation of web-economy in the 21st century, the challenge facing enterprises is to be the designer of their industry revolution, the creator and beneficiary of revolutionary innovation of

business models(Hamel, 1999)^[15].

EC is a new economy formed on basis of information by both the new system and industrial organization. E-commerce effects new markets and new economic activities, including the instant flow of information, reduction of sectors in the value chain, emergence of new media as well as the dynamic transformation of the market and economic principles (Choi et al. 1997)^[16]. These variations lead to the change of fundamental value judgment; lead to the demand for new strategies and business models. Research by Amit&Zott(2000) demonstrates that the business model of a company provides soil for innovation, and the source of value creation^[17]. The value realized in business model innovation exceeds that in allocation of value chain (Potter, 1985)^[18], in forming of inter-company strategic web (Dyer& Singh, 1998)^[19], as well as in use of the specific core ability of the company (Barney, 1991)^[20].

The following contents are organized in this way: the sum-up of categorized descriptions of the e-commerce business models both at home and abroad are given in the second part; the description method of e-commerce models based on 5P4F are set forth in the third part; in the fourth part the innovation method and accompanying illustration are introduced; and the fifth part concentrates on the implications of the method of the 5P4F-based business model innovation, to both the practitioners and the academia and mentions further research directions; the sixth part is for conclusion.

2. E-Commerce Model & Its Categorized Description

Although the business model is possibly the aspect most discussed and least understood as to Internet, yet it proves to be part of the core content inspected by the VC investment company almost when every new company strives for the risk fund. The business model delineates the way of structuring and combination of market trading elements (Amit & Zott, 2000)^[17], in other words, the coordinative way of the flow of product-----commodity, service and information among market bodies in order to promote trade. Professor Michael Rappa(1999) pointed that, "as far as its most fundamental meaning is concerned, the business model means the way of doing business, a pattern vital to a company-----a pattern that brings about profit for a company. The business model defines the place of the company in the value chain, and directs it how to make

money". Paul Timmers(1998) views the business model as containing the following three elements^[22]: (1) the systematic structure of the commodity, the service or the information flow, including different commercial roles and functions; (2) the potential profits of different commercial roles, and (3) the source of income. The business model has appeared since the division of labor and trade first existed, and is the key to the success of traditional enterprises^[23].

The e-commerce model is the core of the existence and development of web enterprises, since they can seize the new opportunities of the electronic market by way of transform of the old model or innovation of a new model. Presently the enterprise circle and the academic circle are launching researches on business models one after another, with the research on categorized description of business models being one of them as the approach of innovating e-commerce models. Through categorized description the present model can be more clearly understood, and new room for model innovation can be founded through the categorized composition of models, thus feasible ones not available in the reality can be explored.

For the time being, the most widely understood and easily understood is the categorization according to business bodies, as to the e-commerce models, which is B to B, B to C, B to G, C to G^[24]. Obviously, this kind of categorization can not provide any valuable guidance for the enterprises to make business model innovations. Therefore, a more delicate one is necessary. In view of the fact that the e-commerce model need constant innovating as the stiff model can be instantly popularized by Internet, the imitation of which can soon squeeze out all the profit in the previous model, this being an important aspect of time on Internet, the e-commerce model innovation is the basic means in web-economy.

In light of this, many researchers abroad have started the research on categorization system of e-commerce models, attempting providing a starting point, a direction or an idea for the e-commerce model innovation. In this field, the present state and comments of the main relative researches are as follows^[28]:

(1) A mixed categorization frame of e-commerce models was published in *IT Managers' World*, No.5, 2000^[11]. The frame is featured by its two-sector division system, but in lack of coherence. Therefore it is a mixed categorization and covers a wide range, with a comprehensive pack of business models. However it is possible that a particular

model can belong to different types in this system at the same time, so it is not unique.

(2) The system proposed by Paul Timmers is based on interactive model and the integration of value chain^[22]. The systematic method of structuring business models includes de-construction and re-construction of the value chain. The structuring and realizing of a typical model usually requires recognition of the elements of the value chain(such as the purchasing logistics flow, production, sales logistics flow, marketing, development, purchase and human resources management), interactive model-----which means 1 to 1, 1 to many, many to 1 and many to many, and the latest development of technology. With this method, many different models can be constructed, yet only a few of them are proven feasible. The system provides the general way of thinking for business model innovation. For example, the blank in Timmers Matrix can be tried to discover new models. Notice that some models of them are copies of traditional models on Internet (for example, e-shop), while some are increased in value by way of innovation (for instance, the integration of the value chain).

(3) Michael Rappa has made a categorical analysis on business models on Internet, and recognized nine basic forms including the agent model, the advertising model, the information middleman model, the merchant model, the manufacturer model, the member model, the subscription model and the utility model^[21]. This categorization belongs to a mixed one without a coherent system. However, it covers comprehensively, including almost all the models. Rappa division is the one widely cited.

(4) From the angle of the difference between the new and old models, Paul Bambury categorized Internet into two types^[25]: the transplanted real-world business model and the native Internet business model. An apparent advantage is that, it can distinguish between the featuring models of the old and new economy. This system is in possession of a distinct orientation system that is intact and coherent even in concept. There is no doubt that the coverage is considerably comprehensive. The weakness lies in that further division under these two category has not been given.

(5) A more careful categorization of B2B model is mainly in two kinds: one is based on purchase pattern; the other on pivot value-increasing pattern^[26]. The above two systems are characterized by their conciseness and

integrity. The introduction of the status and market feature of the three roles in B2B market is of good value for reference, as to the enterprises who are to adopt e-commerce; the reason is that they can apply relatively models according to the characteristics of the markets they are in. Yet, the above systems are aimed at the B2B pivot, and of little reference to enterprises that are not willing to trade by way of B2B pivot. In other words, there exist a large number of B2B models without media, and as expected, these models are not covered under this system.

Besides, on the basis of the dominative power over the business process, McKingsey & Company divided B2B models into four categories: the model of seller's domination, the model of buyer's domination, the model of the third party's domination; the model of mixed domination^[27]. Under different models, there is much difference between the buyer and the seller as to the relative initiative, reduction of cost, improvement of efficiency and extending of the market

In practice, there seemed to be no reason for failure of such business models as Haobianli on-line stores. However, the final loss resulted from the designer's false judgment of the professional moral presumption of the staff during China's transitional period (*Business Model Analysis Report of Haobianli On-line Stores*). Therefore, the success of a good business model relies on the compatibility with its business environment and the efficacy of its operational strategy. It will boost the success of the enterprise's e-commerce strategy if measures are taken to overcome the defects in the environment, to adjust the business model, or to design a suitable operational strategy when realizing the inharmonious relation between the good business model and the environment.

The achievements summarized above have yet a distance from providing the e-commerce model innovation with a systemized theoretical frame and an operational system of methods, not to mention directing the enterprise as to drafting an optimized operational strategy for e-commerce according to the character of its product, the trend of the market, its place in the supply chain, and the technological condition of its customer and supplier. This is also part of the reason for the fact that innumerable enterprises spent enormously on the e-commerce projects without any gain. So far from last year, along with the fall of NASDAQ, a large number of websites at home and abroad closed down, with one of its fundamental reasons lying in that these

companies are in lack of innovation of business models. This can be further explained as lack of general frame and method for e-commerce model innovation, even assistant tools. Application of 5P4F to the description and analysis of the e-commerce model can supply not only the model innovation with referential frame and idea, but methodological guidance, which is to undertake the systematic valuation of a model designed.

3. 5P4F-based Description Method of EC Business Models

3.1 What is 5P4F?

5P4F, with 5P indicating Product, Price, Place, Promotion, and Position, and 4F meaning business flow, information flow, capital flow, and logistics flow. It develops from McCarthy's "4Ps" categorization of marketing portfolio, and provides a general frame and method for analysis of the operation and management of an enterprise. It can also be applied to the description of an enterprise's business model. The following is a detailed introduction of the connotation of 5P4F and its features in e-commerce.

Product

Product, the commodity and service provided for the target market, aims at satisfying the need of the target trading party. Under the web-environment, the product that can be provided are of a great variety, like books, CDs, flowers, cosmetics, wines, computers and relative products, air tickets, food, sports equipment, and etc. It contains all, while the worldwide-standardized products, the digital products, and the various intangible services are the most popular ones and enjoy a high rate of growth^[5].

The traditional product design is customer's demand-oriented, adapting to repetitive mass production; whereas under the web-environment, product design is interactive between the customer and enterprise. For example, Acumin, a vitamin supplier, can provide health-care nutriment according to the prescription of the customer, which contains more than a hundred kinds of vitamins, herbal and minerals. On net it can choose a suitable proportion from more than one hundred ingredients and provide nutriment that best answers the customer's need in accordance with the customer's symptoms^[7].

Price

The three traditional ways of pricing are: the one on basis

of cost; the one on basis of value, and the one directed by competition^[6]. The publicity of the information on net greatly increases the transparency of the price, and the same time, some middle links are reduced through net marketing, thus time is saved and sale cost lessened. As a result, the pricing strategy under the Internet environment should combine the above three, and be more variable.

On this condition, brand pricing proves to be of great significance, because (1) market monopoly decreases; (2) the customers' purchasing psychology tends to be more rational, as a result of the more choice brought by Internet and the following possible comparisons. If the enterprise prices its product according to the brand, the non-price factors, reputation and credit can be built then^[7].

Auction can be even more easily transplanted to the web. For example, ebay.com, auction.com and etc. succeed by pricing through auction.

A new pricing way-----reverse auction-----can display the demand of the customers through web. Like, a customer publicizes his/her demand of 100,000 kg of eggs, together with his/her requirement of a low price. Through Internet, the reasonable dynamic choosing will intensify the inter-enterprise demand. At the same time, if a single one cannot meet the demand, it will seize to find a partner to fulfill the demand together^[7].

Some enterprises, such as ASP (application service supplier), satisfy the customers who need a lot but are not willing to buy and who need temporarily but not in the long term, by leasing software on Internet. There are some other

enterprises that adopt the pricing strategy of installment and time-discriminated use.

Place

Marketing channels indicate the circulating path through which certain commodity or service shift from producers to consumers. The traditional marketing channel involves a number of levels such as the producer, the agent, the broker (the primary, secondary and third brokers), and the ultimate consumer, and thus multi-dimensional management. The function of the traditional marketing channel is unitary, no more than a channel through which commodity transfer from the producer to the consumer. It largely depends on the quality of the product and the advertisement.

In contrast, the function of web marketing is multifaceted. Firstly, the web channel is the one that spreads the information. Secondly, this channel is the shortcut to sell products and provide services. Thirdly, it is the ideal place for inter-enterprise business activity, technological training for customers, and after-sale service^[8].

Web marketing channels have two kinds: the direct retailing one and the indirect retailing one, as shown in Chart 1. The direct one, as the traditional one, is 0-level selling. For example, Dell is a computer company of direct sale. However, the intermediate retailing channel includes only one level, in other words, there exists only one information broker to communicate the buyer and seller, and no other levels. China Commodity Trading Center and Sina City of Commerce are both good examples^[8].

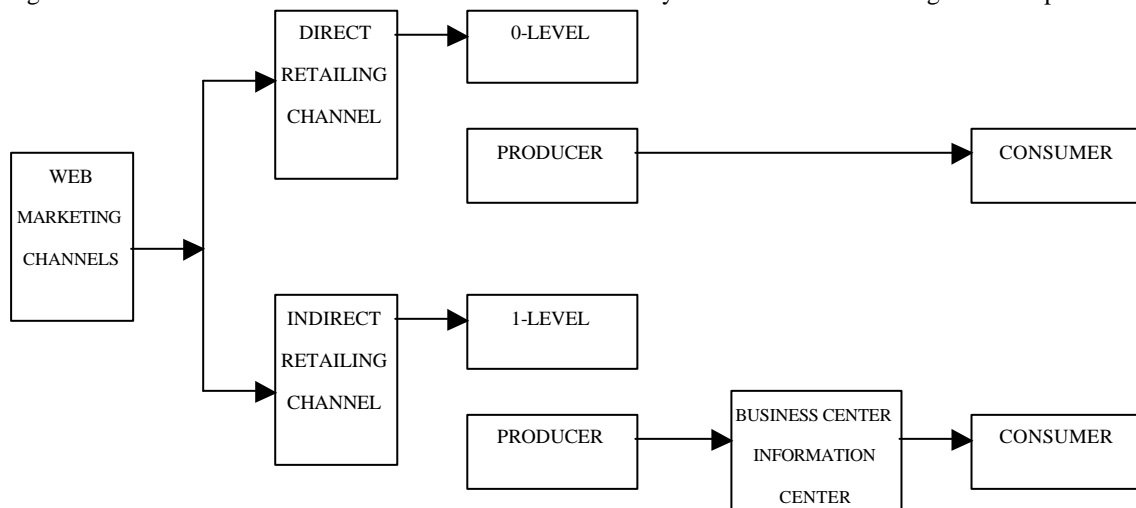


Chart 1 Categories of web marketing channels

The launch of WAP mobiles provided another channel for web marketing. It adds the access to Internet to all the present functions of mobiles. The telecommunications operators combine Internet with the

mobile communication system, fulfilling people's need for mobile office as well as mobile information. Efficiency again has been increased. As acknowledged, there were 830,000 mobile holders who had used the

value-added service of WAP, by the end of 2000. there is no doubt that the wide application of WAP will become a new channel of web marketing.

SMS is the value-added service provided by mobile service producers. With this service, users can receive and dispatch any kind of message by mobiles. By way of Internet, users can dispatch short message to another specified user. Along with the increase of the number of the users who gain access to SMS, dispatch of short message through Internet will be a more convenient and rapid channel of marketing.

Promotion

Promotion is an important way for enterprises to extent their market. It is a key link for an enterprise to realize its operational value and profit that it chooses a practical strategy and method according to the particulars. The emergence of Internet changes the basis on which the former marketing theory and practice exist, and also the way of promotion, method, and the environment^[8].

Web promotion means transmitting information about relevant commodity and labor with modernized web technology, in the hope of stimulating the demand-----activities to set off consumers' purchasing desire and behavior^[8].

Website promotion is establishing a website for the enterprise to build up the enterprise' s image, publicize the product and launch promotion activities.

Web advertisement is to propagate and promote the product through ISP, For example, the banner and floating balloon ads of the front page on portal sites like sina.com and the ads of size on webpages and other categorized advertisement.

Mass mail advertisement promotion is to know the e-mail boxes of a large number of users to rapidly send the product information to the e-mail boxes of the consumers. The sender can adapt the message being sent to the need and preference of the receptors in order to satisfy the individualized demand of the consumers better.

Besides, the free use promotion, the inter-linkage promotion, the point-earning promotion, the discount promotion, and the free gift promotion are all other ways of the web promotion.

Position

Client position is interpreted as the orientation of the target that the product or service is intended for, or the problem

that who to serve. In e-commerce, the orientations of customers are mainly: the masses, a certain consuming group (like people of a certain profession or a certain age group, and so on), enterprises, government and etc.

What commodity currency stands for is the trading of commodity with money as its intermediary, as well as the social and economic transfer of commodity from the production field to the consuming field. According to the twoness of the commodity value, the forms of commodity currency are divided as logistics flow and business flow, which suggests the separation between logistics and business. Together with the development of the social economy, the commodity trade has been extended to a new depth and width while the significance of the information of the commodity currency has been day by day emphasized. Furthermore, what' s accompanying the web economy and the electronization of the business process is the more and more different features, of the way of payment and its channels within the traditional intention, from the business flow^[9]. Hence, the commodity flow is divided into business flow, information flow, capital flow and logistics flow on the e-commerce condition.

Business flow

Business low is the trading of commodity between selling and buying and the moving process of the proprietary rights, in particular, submission and acceptance of orders, purchasing, and such selling proceedings. Under e-commerce circumstances, business flow reflects only the transfer of the proprietary rights, but not the payment, transfer, and etc. of capital^[9].

In web economy, the media of business flow are mainly: 1.EDI, stipulating a contract by EDI. The technology of electronic digital inter-exchange transmits electronically and processes automatically the digital report format, which is produced according to a widely acknowledged standard between the economic bodies, on computer with the third party' s service or VAN (Value-Added Net) ^[9]; 2. the submission of orders by Internet. It means, the consumers browse over the commodity they need and submit orders through Internet according to a certain process.

Information flow

Information flow covers not only the provision of commodity' s information, promotion and selling, technological support and after-sale service, but also the

commercial trading certificates like inquiries, quotation sheets, payment notices, archive-transferring notices and also the financial standing and the credit standing of the trading parties^[8].

The present main forms of information flow are Internet propagation, e-mails, telephone calls and letters.

Capital flow

Capital flow principally refers to the transfer of capital, including the flow of credit cards, drafts, currency between sellers and buyers at different levels together with their agents by way of banks^[8]. For the time being, Internet payment has become an important way of capital flow. However, due to the inconvenience for some consumers to go on net and worry about the safety of net payment, many web companies support collection at door and remittance through postal and bank at the same time.

Logistics flow

In 1999, the UN logistic committee held that, logistics flow is the effective movement of raw materials, intermediate stocks, ultimate products and relevant information from the start to the end to meet the demand of the consumers, and the process of planning, realizing and operating of the reserve. Ecommerce logistics flow refers to the allocation of the networked materials and services on basis of information flow, business flow, and capital flow^[8].

The present patterns of entity commodity logistics flow are the enterprise self-owned logistics, postal logistics, railway logistics, third party logistics and the pattern of logistics flow of 8848.com.

The enterprise self-owned logistics suggests that the enterprise meet the demand for logistics by way of self-provision. In order to improve the efficiency and service of logistics flow, the enterprise has to manage the logistics flow by setting up its own logistics management department.

China's post service is distinguished as to logistics allocation, for (1) it has a huge staff for delivery and a comprehensive delivery network; (2) it enjoys a good social reputation; (3) the present premises, installments, business functions and disposition process of the post service have been equipped with a crude frame of modern logistics flow. Nowadays, electronic post service has been set up in places like Beijing, Guangzhou, and Xi'an^[8].

The railway transportation has an incomparable advantage in e-commerce logistics flow. For instance, Legend computers are transported everywhere in the country by

railway. The railway network will become an indispensable part of the enterprise's network of logistics flow. And with cooperation, the advantages of each party can complement the other, while the railway logistics pattern of e-commerce will be set up^[8].

As the earliest EC company specialized in B2C model, 8848.com has worked out a pattern of logistics flow of its own. There are four levels in this pattern: (1) cooperating with national delivery enterprises to send commodity to users' homes in 29 cities in the country; (2) using China Post Express to help outside these 29 cities; (3) using the present traditional commercial chain organization like Uni-bond national chain software company; (4) adopting UPS-----the worldwide express company-----as to overseas customers^[8].

The third party logistics (TPL), also called agent logistics, refers to logistic service provided by the specialized logistic intermediary in the logistics channel, for other companies in a given period, by way of stipulating a contract, like the firm, Sunny Wangda, which sets up its own website and provides unified management over the logistic system as well as standardized service in about 30 cities over the country, with the help of Internet, wireless communication, bar code, and such modern information technology^[8].

3.2 5P4F-based Description of EC Business Models

5P4F provides a way to systematically describe the EC business models, and brings along the following advantages and features:

1. EC models are never separated from the market since the descriptions are given on the point of market;
2. It benefits the practical operation of the EC model to emphasize the operational pattern of the model;
3. It can result in a more clear and distinct understanding of EC models;
4. It will facilitate the development and innovation of EC models.

Several typical business models are introduced on the basis of 5P4F for examples, as shown in Table 1. There are several points to be clarified as to Table 1: (1) the certain properties that a model shares are marked by “* ”; (2) Not every model can have properties in all the elements; (3) here are listed only the main properties of 5P4F; (4) the marks within the brackets in the property column are codes for the

properties with a view to facilitate the later description of the radar chart.

Table 1 5P4F-based Description of EC Business Models

5P4F		News service	Teaching on line	Bit vendor	Free e-mail
Elements	Properties				
Product	Physical products (Pd1)				
	Digital products (Pd2)			*	
	Information services (Pd3)	*	*		
	Communication services (Pd4)				*
Price	Brand pricing (Pr1)				
	Competition-oriented pricing (Pr2)				
	Leasing software on Internet (Pr3)				
	Member fee (Pr4)		*		
	Distinction pricing (Pr5)			*	
Place	Direct retailing (PL1)	*	*	*	*
	E-marketing (PL2)				
	E-mail (PL3)				
	SMS (PL4)				
Promotion	Web advertisement (Pm1)			*	
	Free use promotion (Pm2)	*			*
	Discount promotion (Pm3)		*		
	Free gift promotion (Pm4)				
Position	Masses (Po1)	*			*
	a certain consuming group (Po2)		*	*	
	Enterprises (Po3)				
	Government (Po4)				
Business flow	EDI(Bf1)				
	Internet(Bf2)	*	*	*	*
Information flow	E-mail(If1)				
	Webpage(If2)	*	*	*	
	Internet(If3)				*
	Telephone(If4)				
	Mail(If5)				
Capital flow	Credit card (Cf1)				
	Internet payment (Cf2)		*	*	
	Traditional payment (Cf3)		*		
	Collection at door (Cf4)				
Logistics flow	Enterprise self-owned logistics (Lf1)				
	Postal logistics (Lf2)				
	Railway logistics (Lf3)				
	TPL(Lf4)				
	Integrative logistics (Lf5)				
	Internet(Lf6)	*	*	*	*

4. 5P4F-based Innovation Method of EC Business Models and Application

The 5P4F-based descriptions of EC business models can provide the general, referential frame, idea, approach, and process, and furthermore, can be the assistant tool for innovation.

The idea of 5P4F-based innovation method of EC business models is that, after the systematic analysis of the various properties of EC business models in web economy according to 5P4F, the radar chart of feasible models can be structured in order to explore and discover new EC business models from the combination of joint points of the various properties on the radar chart. The work is of

referential value and guidance for enterprises to carry on the model-innovation and design their own models.

The line with arrowhead in the chart stands for the element of 5P4F, and it is called the element line, while the joint point on the element line stands for the property of the element. Every property of the elements in 5P4F of every business model is marked on the line and a joint chain

appears after all the joint points are linked together. Each joint chain describes a business model, and a number of chains form a radar chart. The business model radar chart of News service and Bit vendor is shown in Chart 2. Since news service is provided for free, there is no joint point on the Price and Capital flow element lines.

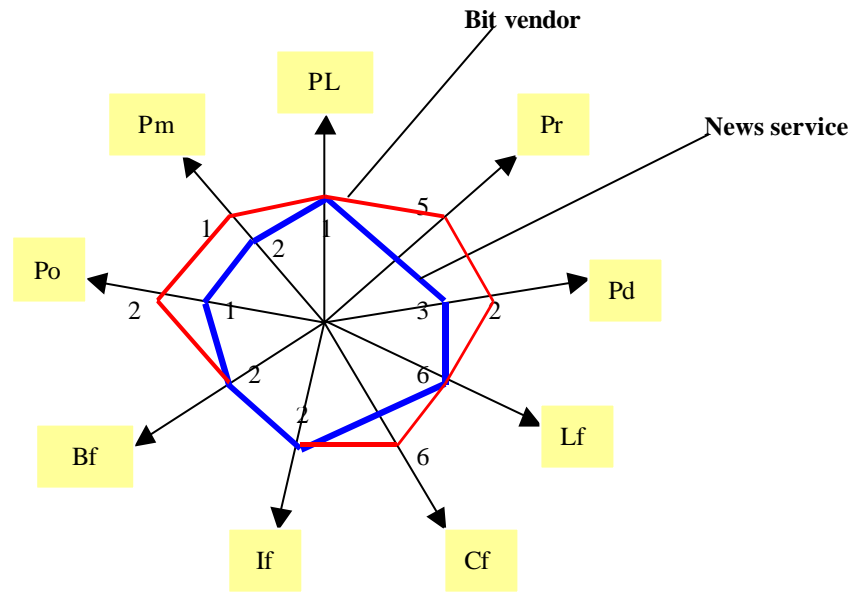


Chart 2 the business models radar chart of News services and Bit vendor

Combining the description method of 5P4F and the radar chart, we can innovate EC business models in two ways: innovation of element property and innovation through model-composition.

1. Innovation of element property

5P4F analysis method describes EC business models according to the element and the property. Every model in the radar chart links all these properties, and on every element line lie much property joint points. Thus innovation can be effected through changing or increasing joint points as regards a specified EC model chain, in other words, new business model chain can be gained by changing or increasing properties. The feasibility of the new model can be tested in practice according to certain rules.

For example, news service are generally provided for free, so there are no joint points on the Price and Capital flow element lines. In order to make full use of the news resources, a joint point can be added to the Place element line-----SMS for mobiles-----it means that news information channels have been increased; and on the Price element line, a joint point can also be added-----the

competition-oriented pricing; also, in the Capital flow element line a point may be added-----sharing with telecommunication operators according to one's proportion (transferring accounts through banks). In this way, a new business model comes into being, which is just the newest model-----SMS, presented to public by the influential news portal sites not long ago, and through which considerable income has been brought to these web companies.

2. Innovation through model-composition

Innovation through model-composition means combining different EC business models by inter-permeating and coordination to effect complementation of each other's advantages and values so as to generate a new EC business model and alongside new values. The first step is to describe the basic EC models in 5P4F way, and then work out the element property, characteristics and customers' value of various models. With this, value-complementary models can be combined to form a new one. After the combination, the element property may be adapted to the demand of the market according to the features of the new model. The following takes the cases of two basic models-----free e-mail and teaching on line-----as

illustrated in Table 1, to demonstrate the method and process of innovation through model-composition.

Chart 3 is the radar chart for free e-mail and teaching on line. There are some common points shared by these two models, and at the same time, plenty room for value-complementation. The characteristics of free e-mail are listed as follows: (1) providing for free with a large

quantity of users; (2) high rate of use, almost every day; (3) mass-orientation with fairly comprehensive and true registration information of users. The characteristics of teaching on line are listed as follows: (1) charging service, hence with difficulty in building a large group of users; (2) relatively low frequency of registered users.

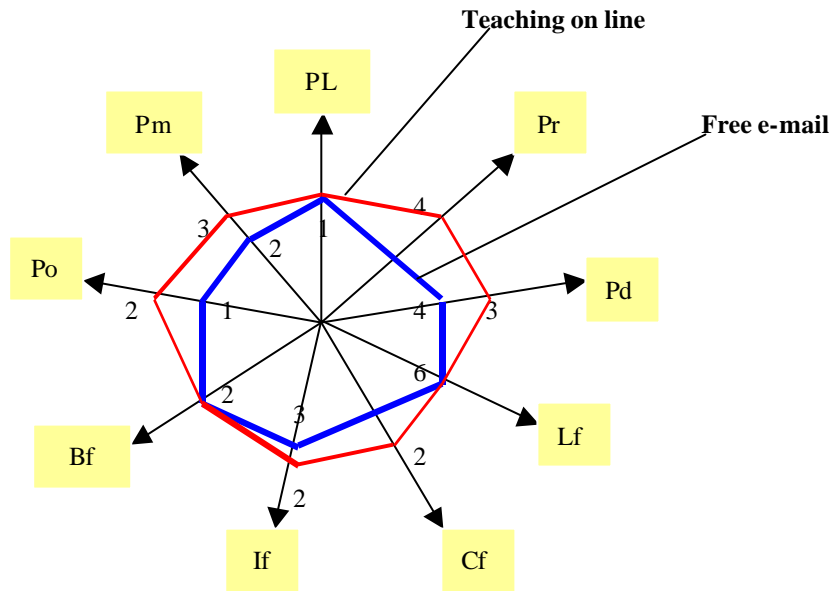


Chart 3 the business models radar chart of Free e-mail and Teaching on line

According to the different characteristics of these two models, a new model can be produced through combination-----teaching on line by e-mail. The characteristics of this innovated model are that: (1) focalized promotion of on-line education by e-mail, like trial use for free; (2) teaching contents being sent every day or according to the demand of users by e-mail, users being able to choose between using on line and downloading; (3) users being able to deliver suggestions and feedbacks to the service provider by e-mail. In this way, both the advantages and customers' value of the two models can be brought into play, to take form in a new composite EC model for new

customers' value more suitable to the demand of users.

Chart 4 is the radar chart for teaching on line by e-mail. a joint point has been added to the Place element line-----e-mail; and on the Position element line, a joint point also has been added-----masses; also, in the information flow element line a point has been added-----e-mail. In this way, a new business model, teaching on line by e-mail , comes into being. For instance ,the websites,XianFeng English and Englishtown.com are both using this kind of business model.

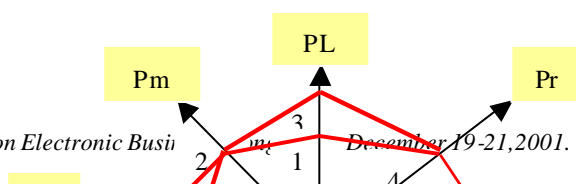


Chart 4 the business models radar chart of Teaching on line by e-mail

5. Implications and Further Research Directions

On the point of the practitioners, the 5P4F-based EC business model innovation method provides a useful way of analysis as well as a tool for innovation. With this method, practitioners can operate a detailed analysis of the present models and models of their enterprises to search for existing problems and consummate the present models with focus. Besides, all-round business model innovation can be conducted in this way and practical operational strategies of EC business models can be drafted by enterprises from the angle of the market with the help of the 5P4F-based method.

As to the academic circle, it provides a general and referential frame, idea and method for the research on EC business model innovation, as well as methodological guidance for the design of EC models. It can also be applied in the systematic valuation of the present and designed business models.

Further research directions are, to search for practicable principles of EC business models, to analyze the characteristics of the EC business model innovation method based on the value-chain and the value-network, and to combine it with the 5P4F-based innovation method.

Meanwhile, it is extremely necessary to conduct systematic analysis and valuation of the present EC models with 5P4F-based method to detect the possible defects and design corresponding measures for remedy. Take the case of such auction websites as eBay. There is already an auction-sniper software designed directing against its rules of auction (<http://www.esnipe.com>), which has already continually succeeded in helping associate roguery. This just proves that there are defects existing in the present EC

business models. What is more, it is also an important aspect for business model research to decide according to which elements, methods and patterns of categorization to design a dynamic EC business model for a certain enterprise, and which strategies and operational measures to take.

6. Conclusions

The development of Internet provides greater space and flexibility for business model innovations, while continuous innovations innately characterize the e-commerce models. A successful enterprise should keep close watch on the development of the market, and perfect or redesign the business model of the enterprise, so as to maintain continuously the competitiveness. The innovation activities have been greatly enhanced since the US Patent and Trademark Office issued a patent for the one-click shopping process invented by Amazon. This paper proposed a systematic method for property description of EC business models based on 5P4F, and a method and an idea for EC business model constructed on this basis.

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