

A Division of Value Model for Competitive Advantage in Internet Service Industry : Best Practice in Taiwan

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Abstract

In order to understand how various firms may take advantage in the rising Internet service industry to develop their operational types with a competitive edge, it is necessary to find out how each firm creates value through the Internet. Yet, there are few theories to underpin the probe into the division of value of the Internet service industry. This study is to shed the light on the model of division of value that maximizes the industry value after the division and develops a research framework for value creation of two facets—source of value and value configuration based on the theories. From the case study of the four best practice Internet service firms in Taiwan, we find the industry can be divided into value chain, value shop and value network after corresponding the business and revenue models of value source to those of value configuration while at the same time these three configurations will define the business type of four divisions of value into Internet content provider (ICP), Application service provider (ASP), Internet service provider (ISP), and Mediacy service provider (MSP) in the Internet service industry.

Keywords: Division of value model; Value configuration; Business model; Revenue model

1. Introduction

Rising and spread of Internet is but in the last decade. However, it has brought unprecedented convenience and prosperity. Internet service industry, according to IDC (2001), will reach a scale of 69 billion dollars globally by 2005. Especially, in the global e-era, Internet service industry is trying to reinvent itself to create business opportunities for the enterprises and organizations with its expertise and sources. Compared with other industries, Internet service industry is still in the embryonic phase while classification of the start-up industry remains to be a significant issue. In light of Stabell & Fjeldstad (1998), different from the value creation logic of manufacturing industry, there are value chain, value shop and value network in service industry. Hardly is there any complete discussion on the division model in Internet service industry in foreign literature at most the definition by IDC (2001): “Internet services are the consulting, implementation, and operation services associated with the development, deployment, and management of Web initiatives,” as the

research population of their study (Christensen, Schmidt, & Larsen, 2003). Many of the researches and analysis reports in Taiwan are based on the classification of Marketing Intelligent Center, MIC but without underpinning by theories. Therefore, an advanced study on this is necessary.

On the other hand, despite of the huge network business opportunities inviting firms to invest, business model still remains vague and are most frequently discussed by researchers and practitioners (O'Connor & O'keefe, 1997; Timmers, 1998; Venkatraman & Henderson, 1998; Amit & Zott, 2001), and hence, it is also a critical issue not thoroughly understood. Based upon previous reasons, the purpose of this paper is to (1) based on the current classification of value configuration (Stabell & Fjeldstad, 1998), find out whether three complete but parsimonious configurations exist by understanding the operation method of Internet service industry in the highly dynamic environment; (2) propose the division of value model for Internet service industry with the goal to help firms to achieve competitive advantages and maximize the value of the firms. However, how do firms create values by operational methods and attain competitive advantages? Reviewing the literature, we discovered that one firm acquires its competitive advantages once it implements a value creating strategy not simultaneously being implemented by any current or potential competitors (Barney, 1991). There are at least two ways of creating values—one is source of value through novelty, efficiency, complementarities and lock-in value driver (Amit & Zott, 2001) whereas the other is value configuration. Different typology of technologies corresponds to different value configurations while and different value creation logic lies in different value configurations (Stabell & Fjeldstad, 1998) , bringing the competitive niche to the firms. To better realize how Internet service firms create values, this study proposes a value creation research framework of two main facets—source of value and value configuration. Source of value is to view the approaches with which firms create values with five theories combined by the scholars who propose the business model construct; i.e. unit of analysis of value creation (Amit & Zott, 2001) and revenue model construct with financial outlook. Value configuration is, on the other hand, based on the propositions of Stabell & Fjeldstad (1998) for the classification of value chain, value shop and value network. The four best practice firms, qualified to cover the overall Internet service industry in Taiwan, will be the case study.

The rest of this paper is organized as follows. Discussion of relevant literature in section 2, framework of this study, mainly focused on illustration of the construct of value source in theory in section 3, approaches of this research in section 4, explanation on the four case studies with best practice in Taiwan in section 5 and a set developed propositions from the four cases in section 6. Finally, section 7 summarizes the findings, limitations and advanced issues.

2. Literature review

2.1 The evolving Internet service industry

Internet extends the possibility of space, making service boundless in place and time. Further with the application software, it provides search and transactions between supply and demand, causing the interaction in between unlimited geographically. In the five forces analysis of Porter (1985), it is presumed that completions among industries are static. However, under the significant changes of Internet, the process of firms striving for competitive advantages is a dynamic one. Meanwhile, the structure and management of industry change as it develops. In 2000, from a report of Department of Industrial Technology, Ministry of Economic Affairs in Taiwan, Internet used to refer to value added service in the time when technology, market and demand were not mature. The Internet service today contains the firms generated after the booming of Internet—electronic information service and Internet application service. Electronic information service is categorized as electronic database and Internet content while Internet application service is divided into Internet connection service, other value added services and data circuit rental. Fransman (2001) clearly pointed out that three layers of service; equipment, network and service exist in the telecom industry before the deregulation. Thanks to Internet, it might be divided into six layers after deregulation—equipment and software, network, connectivity, navigation, middleware, and applications including content and customers. What will be expected is interactions and cooperation among e-commerce's various industries, which include EC applications, common business services infrastructure, messaging and information distribution infrastructure, multimedia content and network publishing infrastructure as well as network infrastructure (Kalakota & Winston, 1997), will increase.

In the age of New Economy, business scopes of internet service operators in Taiwan are too general, including portal, shopping/auction, games/literature, art and entertainment, e-news/finance & stock market, community portal and transaction agency, etc. This requires coordination of deconstruction for telecom industry to be redefined. In general, facing the new tendency of Internet service development, Internet service operators have to think how to improve their own added values by differentiating with other competitors.

2.2 Source of Value

Amit & Zott (2001) argue that value chain analysis (Porter, 1985) and concept of virtual value chain (Rayport & Sviokla, 1995) are not enough to fully express the richness of e-business activities. They also suggest that opportunities to create values in virtual markets may result from new combinations of information, physical products and services; innovative configurations of transactions and the reconfiguration and integration of resources, capabilities, roles and relationship among suppliers, partners and customers. To fill in the gap in the analysis of value chain, they also argue that firms are able to create more values for themselves and the customers by lowering the cost and differentiation (Porter, 1985; Porter & Millar, 1985), creative destruction (Schumpeter, 1942), marshalling and uniquely combining a set of complementary and specialized resources and capabilities (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993), network density, centrality

(Freeman,1979), network externalities(Katz & Shapiro,1985), the attenuation of uncertainty, complexity, information asymmetry, and small-numbers bargaining conditions(Williamson,1975). Finally, the three constructs of business model are defined: transaction content, transaction structure and transaction governance as the unit of analysis for firms to create values.

We, however, believe one is unable to fully grasp the meaning of source of value simply by the unit of analysis of business model construct. In addition to the viewpoints of entrepreneurship and strategic management, those of finance opinions are needed to fully illustrate the competitive advantages brought by the differences of value creating strategy. Another key factor is, therefore, to determine the source of the income and profits of a firm.

Some scholars hold that business model includes revenue model (Timmers, 1998; Mahadevan, 2000) while Amit & Zott (2001) argue that business model and revenue model are two different complementary concepts. Due to the different perspectives, these two models are often mixed up. Which is why Porter (2001, p.73) argues: “The definition of business model is murky at best. Most often it seems to refer to a loose conception of how company does business and generates revenue.” Adam Smith is the most influential British philosopher and economist in the 18th century. In his book *The Wealth of Nations* in 1776, he proposed a powerful way of analysis applied in production and share of economic values. One of his posits is: “Capital is the most useful tool to create values.” Firms probably put in the surplus or profits into the capital of production, making us believe revenue model is another unit of analysis in source of value. Also from financial management perspective (i.e. value [profit] = income – [cost + expense]) and balance of financial and non-financial performance measurement (Kaplan & Norton, 1996), provided business model is a construct of value creation, revenue model can be treated as another. Furthermore, in terms of supply/demand rules in economics, business model is to seek the surplus satisfaction of consumers while the revenue model is to seek the surplus of producers and create the values for shareholders. As a result, for source of value, both business model and revenue model play the same important role.

2.3 Value configuration

Porter’s value chain configuration (1985) has been well known in the information management field and often treated as the framework of firm-level competitive advantage (Phan, [2003]). Porter (1985) argues that the products and/or services provided by the firms to the customers are created with a series of activities. Each activity has its distinctness which may promote the final products to promote the value. Nevertheless, Stabell & Fjeldstad (1998) believe that, under dynamic economic and institutional setting, each firm is to have its unique way of dividing and confirming its own value because of the technological characteristics and business strategies. It is not necessary to adhere to the classification of value activities by Porter. They also argue that value chain analysis does not apply to service industry as well as it does to manufacturing industry, since service provisioning has different value creation logic. Service providers tend to customize their service

rather than mass-produce as in the value chain model. They, therefore, group into three generic value configuration models of value chain, value shop and value network based on typology of technologies of Thompson (1967) and diagnose competitive advantages of firm-level of each configuration by value configuration analysis approach of value chain analysis logic.

Value chain configuration is composed of value activities and margin while the former contains primary activities and support activities (Porter, 1985). Value creation logic is to transform inputs into products while products have value at each intermediate stage of the process (e.g., car manufacturing), hence the competitive advantage is the efficiency, procedures and lowering cost. Difference between value shop and value chain is to categorize the primary activities into problem-finding and acquisition, problem-solving, choice, execution, control and evaluation. This sort of value creation logic is to solve the problems of customers instead of manufacturing any specific products. Examples are hospitals, professional service firms and law firms. Competitive advantage is to solve customers' problems in time. In turn, value network configuration is mainly on the competence of the intermediaries with primary activities including network promotion and contract management, service provisioning and infrastructure operation. Logic of value creation is to improve the relationships with the customers either directly or indirectly. Examples are telephone companies and ATMs. Competitive advantage is the customized and services differentiated concentrating on satisfying customers. In other words, based on value configuration of different core activities, firms will have different ways of value creation with their own competitive niche. Yet, the ensuing study shows that value chain can still be the analysis tool for non-solid products (e.g. entertainment goods) (Loebbecke & Powell, 2002). The role of the activities, however, turns to origination, transformation, production, and distribution/logistics. As for the telecom industry, paradigm of value chain is switched to value network (Li & Whalley, 2002). As a result, in spite that value chain is most suitable for value configuration of manufacturing and product-oriented firms, it still requires other configurations to maximize the values of the entire industry under the rising Internet environment.

3. Theoretical framework

As Amit & Zott (2001) propose, no single theory can fully explain the value creation potential of e-business. Yet, short of source of value cognizing organizational technology, operation type of organizations may disperse unlimitedly, making them unable to focus on the core configuration. Value configuration implies different value creation logic while source of value explicates different business methods of value creation. This study believes source of value and value configuration are both derived from value chain analysis, thereby there must be some kind of interdependence; both are complementary, helping firms achieve competitive advantages and maximize their division of value model. We, therefore, propose a research framework for value creation as Fig 1. Based on the theories of entrepreneurship, strategic management and financial viewpoints, one facet source of

value of basic construct for business model and revenue model is proposed. And the second facet is the value configuration based on typology of technologies.

This paper adopts definition of Amit & Zott (2001): “A business model depicts the content, structure, and governance of transactions designed so as to create value through the exploitation of business opportunities.” as our definition. We will also further probe the three constructs--transaction content, structure and governance. Among which, scholar also holds that content and structure constructs are paramount (O'Connor & O'keefe, 1997). Of the three constructs, transaction content refers to products and service items, core resources and abilities. Transaction structure includes the structures within and between the firms. Structure within the firms is the category of primary activities and interdependence in the firms’ activities while that between the firms is the exchange mechanism enabling transactions, links with parties and ways of exchange. Transaction governance means governance forms and nature of control mechanism. Besides, we define “revenue model” as “a revenue model refer to creating shareholder value through the cost factors and sources of revenue.” The two constructs of the revenue model, thus, are key cost drivers and sources of revenue.

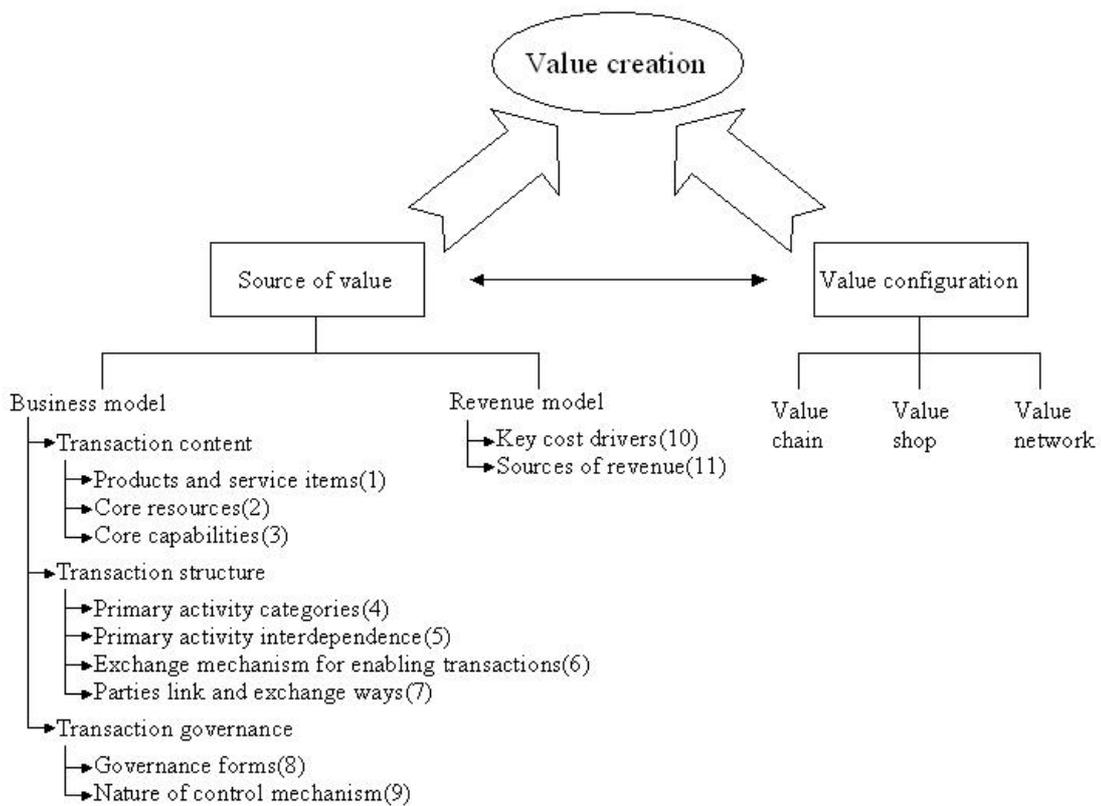


Fig. 1. Research framework for value creation

Following is the definition to the eleven sub-constructs of source of value along with the differences with three value configurations in this paper in Table 1.

3.1 Products and service items

Resources and products are two sides of a coin. Resources will not turn to values and profits of customers, so they have to be transformed into the products or services that customers need. Huizingh (2000) once compared the websites by content and design and categorized the content into information, transaction and entertainment. Value chain, as a result, can be regarded as a provision of content products (e.g. on-line games) that requires a series of manufacturing process. Value shop will be deemed as professional service firms who provide customers with total solutions and consultations. In addition to various application services between telecom infrastructure and end users (Li & Whalley, 2002), value network as cobweb established by information intermediaries (Hagel, 1999), and provides three tools and services—privacy protection, file management and service of extreme values.

3.2 Core resources

A firm's resources at a given time could be defined as those (tangible and intangible) assets which are tied semi-permanently to the firm (Wernerfelt, 1984). The tangible assets are computers, equipment connecting to network or value securities while the intangible assets are brand/goodwill, intellectual property (trade marks, patents and copy right), licenses, contracts and customer data. Miller and Shamsie (1996) further point out the differences between property-based and knowledge-based resources. Property-based resources include financial capital, physical resources and human resources, etc. Knowledge-based resources refer to a firm's intangible know-how and skills. For Internet service firms, most of them are based on knowledge-based resources and services (Christensen et al., 2003).

3.3 Core capabilities

Firms depend on their own ability or capacity of construct and allocation of resources to transform the resources into customer value and profits. Core abilities, based on Prahalad and Hamel (1990), can be defined as “a special technical skills, a result from blending complicated skills and work activities.” Core abilities possess some unique traits that create niche and competitive advantages. The added benefits are the niche that can be transferred to the values customers are aware of and expand to new markets. It is hard for competitors to imitate. Hamel and Prahalad (1994) further propose three criteria of company core abilities: high contribution to customer value, separation from competitors and extendibility of various products.

3.4 Primary activity categories

As mentioned earlier, Stabell and Fjeldstad (1998) illustrate categories primary activities with different value configuration diagrams. Based on long-linked technology, tasks are interrelated with priorities. Primary activities of value chain, as a result, transform the input by different procedures into products. Intensive technology aims to solve customer problems and primary activities of value shop focus on real time and repetitive problem-solving and decision-making of expertise. Mediating technology facilitates exchange relationships among customers distributed in space and time, thus value network firms depending on mediating technology must focus on the provision of Internet services in order to sustain competitiveness.

3.5 Primary activity interdependence

Thompson (1967) defines three kinds of interdependence which influence organization structure—pooled, sequential and reciprocal. The lowest is pooled interdependence between departments in which tasks do not circulate among units. Each unit is a part of organization and has to contribute to the organization. The task is independent. Examples are McDonald's and banks. The sequential interdependence is the situation when output of one unit becomes input of another. This interdependence is higher than pooled one such as automobile industry. The most highly interdependent is reciprocal one where interactivities and coordination among units are must and occur frequently in integrating products or services. Thompson (1967, p.55) also believes that there lies different degree of interdependence among organizations, but all organizations have pooled in interdependence.

3.6 Exchange mechanism for enabling transactions

This sub-construct refers to ways or process between buyers and sellers to enable transactions. It can be divided into three parts--vender-driven, buyer-seller negotiation and customer-driven. Vender-driven is the model that firms determine customers with assistance of markets. Firms set a single price and different channels (e.g. retailers and branch offices) in search of suitable customers to make profits in firm centered markets. In contrast, customer-driven is the model that power shifts to consumers. Consumers look for the firms in the markets and try to obtain benefits from the firms while firms are passive. Example is the concept of **buyer-driven commerce** of Priceline.com, which won Patent #5794207 in August 1998 in the States. The third, negotiation model, is a model of one to one where both sellers and buyers know each other and they are even like hosts/guests in the traditional bricks-and-mortar or hybrid clicks-and-mortar (Oliveira,2002) markets.

3.7 Parties link and exchange ways

Meaning of parties link and exchange ways is diversified, which refers to novel links that parties select. i.e., whether combination of on-line and off-line exchange ways or simplification of integration and transaction between demand and supply, etc. In this highly mobilized Internet industry, many novel ways of linking are still under test. They might be popular or disappear anytime. For example, the Easy Card initiated by Taipei City Government and Department of Rapid Transit Systems, TCG with City Bus (payment and settlement are fully integrated with computers) in 2003 replaced the coins and Coupon Cards. Another example is the booming of transaction platform and application software rental in North America (Kern et al., 2002). These are far beyond traditional links and exchange ways.

3.8 Governance forms

Williamson (1979) proposes that the minimum amount of the addition of production cost and transaction cost is the best resource governance policy. He also classifies another three types of governance forms in addition to market governance.

Unified governance—if the items are specialized products (high cost for searching, negotiating and supervision) with high frequency and transaction cost of purchasing externally is far higher than advantages and benefits of manufacturing internally, it is better to adopt internal organization style.

Bilateral governance—when products are semi-standard ones with lower frequency, it is better to build a long-term cooperation relationship between two parties to lower the cost of transaction.

Trilateral governance—items are not standard products with low frequency and high cost to purchase externally while it is not economical to produce internally. It is suggested to have professional assistance of intermediate agencies to conduct transactions to lower cost.

3.9 Nature of control mechanism

The nature does not exist on shelves, in TV commercials, or on websites, but merely exists on people's mind. Thus, nature of control mechanism is basically a certain kind of psychology warfare. In traditional value chains, firms may gradually build their own reputation and goodwill through excellent product image, outstanding service, keeping promises, punctual deliveries, punctual payments and loyalty to the contracts. Trust, however, has been recently regarded as the foundation of the digital economy (Stewart et al., 2002). In the organizational literature, trust was normally posited to operate as a governance mechanism (Bradach & Eccles, 1989), diminishing opportunism in exchange relations. Similarly, scholars (Amit & Zott, 2001) refer to trust and incentives of nature of control mechanism from strategic network. Trust does not only mean the guarantee of safety, reliability, availability of the products but also merchandise refund, quality and protection of privacy (Joo, 2002). We in this study also believe trust appeals to different meanings under different value configurations.

3.10 Key cost drivers

According to Porter (1985), firms' competitive advantages may be either cost leadership or differentiation. Cost position of a firm results from the properties of cost of value activities while properties of cost are related with a series of structural factors affecting the cost. The latter is called cost driver. Properties of cost of value activities are determined by ten primary cost drivers—scale, learning, capacity utilization, linkages, interrelationships, vertical integration, timing, policy decisions, location, and government regulations. Hills (1988) also agrees that three sources to lower the cost are learning effects, economies of scale and economies of scope.

3.11 Sources of revenue

With the Internet, the need to determine the sources of revenues and profits is even more critical largely because of its properties of mediating and network externalities. (Afuah & Tucci (2001), ch4) Sources of revenue on the Internet are mainly from sales commissions, fixed transaction fee, referral fee, advertising fee, consultancy fee, subscription or membership fee, revenue sharing (Amit & Zott, 2000; Joo,2002). We argue that on-line information and entertainment content of value chain are mainly commercial rental and transaction service revenues. Value shop provides value added service of software and solution and revenue will be based on fees of software rental and consultation. Making customers more connected, revenue of value network should be from membership fees and revenue sharing such as amazon.com affiliate program.

Table 1.

Differences between constructs of value source and three value configurations

	Value chain	Value shop	Value network
Products and service items	<ul style="list-style-type: none"> ● Informative content ● Entertaining content ● Search service 	<ul style="list-style-type: none"> ● Application software ● One-Stop Service ● Providing platform technology 	<ul style="list-style-type: none"> ● Application services except for telecom infrastructure ● Tools to protect privacy ● Tools for managing files ● Service of extreme values
Core resources	<ul style="list-style-type: none"> ● Innovative and professional content ● Diversified content ● Search engines 	<ul style="list-style-type: none"> ● Professional IT staff ● Profound knowledge in the field and ability to integration of software/hardware 	<ul style="list-style-type: none"> ● Customer data Standardization ● Internet service (stability of equipment, quality of goods, ability of virus protection)
Core capabilities	<ul style="list-style-type: none"> ● Making products, moving them through distribution channels and marketing 	<ul style="list-style-type: none"> ● Matching and mobilizing the right mix of resources (people, financial, 	<ul style="list-style-type: none"> ● Monitoring customer behaviors, clustering customers together, mediating exchanges between

	Value chain	Value shop	Value network
	them to customers	knowledge) needed to solve a specific problem	them and multiplying these exchanges by finding and exploiting new connections
Primary activity categories	<ul style="list-style-type: none"> ● Inbound logistics ● Operations ● Outbound logistics ● Marketing ● Service 	<ul style="list-style-type: none"> ● Problem-finding and acquisition ● Problem-solving ● Choice ● Execution ● Control/evaluation 	<ul style="list-style-type: none"> ● Network promotion and contract management ● Service provisioning ● Infrastructure operation
Primary activity interdependence	<ul style="list-style-type: none"> ● Pooled ● Sequential 	<ul style="list-style-type: none"> ● Pooled ● Sequential ● Reciprocal 	<ul style="list-style-type: none"> ● Pooled ● Reciprocal
Exchange mechanism for enabling transactions	<ul style="list-style-type: none"> ● Vender-centric 	<ul style="list-style-type: none"> ● Buyer-seller negotiation 	<ul style="list-style-type: none"> ● Customer-centric
Parties link and exchange ways	<ul style="list-style-type: none"> ● Establishment of communities. ● Use of coupon card for pre-paid payments for high frequency users 	<ul style="list-style-type: none"> ● Application software rental and provision of transactions on special platform 	<ul style="list-style-type: none"> ● Emphasis on running customer relationship and making profits by commissions.
Governance forms	<ul style="list-style-type: none"> ● Unified governance 	<ul style="list-style-type: none"> ● Bilateral governance (cooperative network) 	<ul style="list-style-type: none"> ● Market governance ● Trilateral governance(in arbitration)
Nature of control mechanism	<ul style="list-style-type: none"> ● Brand ● Incentives 	<ul style="list-style-type: none"> ● Reputation (goodwill) ● Trust refers to reliability, availability, and assurance of quality 	<ul style="list-style-type: none"> ● Loyalty ● Trust means security, refund and privacy protection
Key cost drivers	<ul style="list-style-type: none"> ● Scale ● Capacity utilization 	<ul style="list-style-type: none"> ● Learning 	<ul style="list-style-type: none"> ● Scale ● Scope ● Capacity utilization
Sources of revenue	<ul style="list-style-type: none"> ● Advertising fee ● Transaction fee 	<ul style="list-style-type: none"> ● Software rental fee ● Consultancy fee 	<ul style="list-style-type: none"> ● Subscription or membership fees ● Revenue sharing

Especially by looking vertically from the above table, the three value configurations are distinct; i.e., those with same or similar characteristics of vertical eleven sub-constructs can be classified into

corresponding configuration.

4. Research approach

This research follows an explorative-description approach. The case study methodology is used since it is best suited to the empirical inquiry that investigates bounded contemporary phenomena within the real life context (Creswell, 1997). The characteristic of a case study is that it strives towards a holistic understanding of the phenomena under research. The case study methodology is appropriate when organizational rather than technical issues are the focus of research.

A detailed analysis of four cases on the Taiwan Internet service industry is the focus of this research. To make an overall division of value for Internet service industry, the selected cases are firms that can represent overall Internet service industry in Taiwan (including three different Internet services defined by MOEA, Taiwan and human resources agencies). In addition, these four firms have been awarded or made special contribution to Taiwan. They also posed outstanding revenue numbers in the .com bubble times, and are indeed the best practice firms in the industry.

This research is based on information collected via in-depth formal and informal interviews and published material. Prior to the interviews, systemized filtration and sorting have been made on the documents regarding Internet service operators (including numerous press releases, company reports, sales and marketing brochures and detailed review of the company various web-sites). The in-depth interviews with senior managers of each firm are in open-end semi-structured questions in four types (based on the framework in this research)—transaction content, structure, governance of business model and revenue model. Interviews with each interviewee lasted about one hour and recording of the full interview is agreed for further analysis.

We adopt deduction and induction at the same time to analyze secondary information and interview content. Deduction is used to explain specific phenomena and strategic behaviors by theories in the literature. The collected interview content is then induced to develop a generalized principle in order to explain and observe relationship between variants. In the end, we make cross-examinations from relative theories, secondary information and interviews to induce conclusions and suggestions.

5. Case study

5.1 ChinaTimes.com

The newspaper went on-line as early as in 1995. ChinaTimes.com obtained Computerworld Smithsonian Award in April 2001, being the only winner in Taiwan, listed in *Honorary Collection of Computer World* in the National Museum of American History.

5.1.1 Business model—transaction content

In April 1999, Cyber One Media Network was set up, providing cTech, cMoney, cLife, and cTravel for different groups of users, bringing brand new value system for Cyber Readers. Of the content, China Times has been one of the two largest print media in Taiwan with sound systems of human resources, material resources and senior reporters (personal contact, writing skills and reporting perspectives, etc.) The website put up by newspaper office has, as a result, advantages of database search, in-depth content and group operation; competence is further improved by combination of web page layout by information technology and presentation of online advertisements.

5.1.2 Business model— transaction structure

Production process of ChinaTimes combines not only the traditional ways of newspaper or broadcasting of pre-process (covers and typing entry), production (article selection and editing), post-process (special effects and designing related to page layout), but also marketing with virtual collection, organizing, selection and arrangement of financial information.

For business customers, Internet advertisement, planning of Internet activities, and making of web pages are provided by ChinaTimes. They have served many famous firms such as China Trust, President Enterprise Group, Phillips, and Hinet, etc. In addition to serving enterprises, ChinaTimes also provides an environment where personal consumers can access news information as well as make purchase. It adopts NetCommerce solution of IBM with SSL security mechanism for consumers.

5.1.3 Business model—transaction governance

China Times Group is of multi-scope operation. News content is made and sold (newspapers, website and magazine) by themselves. The group transfers its traditional brand image (e.g. newspaper) to Internet and adds attraction (e.g. providing on-line video news) which is an important factor to push audience and cooperation firms to participate. In 2000, the Group integrated all the websites under www.chinatimes.com in the concept of One Brand, One Site and enhanced the information content, converged streams of viewers and reinvented itself as an Internet commerce medium. ChinaTimes.com also exchanges information, commercials, on-line shopping and e-commerce with other news media of different attributes for strategic alliance. For example, Dow Jones cooperates with ChinaTimes.com and establishes CT-DJ Chinese Financial Wire in Chinese.

5.1.4 Revenue model

ChinaTimes.com is the largest brand in China Times Group with current daily pages viewed for more than 5.5 million. Home page is averagely viewed close to 500 thousand pages while daily visitors are near 500 thousand. Being one of the largest e-paper websites in circulation in Taiwan, 70% of turnover of ChinaTimes.com is from commercial rental while the balance 30% comes from

value added service of on-line shopping. In addition the current paid news search, VIP Internet stock real time quotes was introduced not long ago on cMoney, providing users a more stable and richer Internet stock quote service. Currently paid membership exceeds 1,000 and keeps growing steadily, meaning a mature paid information content in the future.

5.2 Trade-Van Information Service Co.(Trade-Van)

Trade-Van Information Service Co. was converted as a firm shared by public and private investments from Customs Clearance Team of Ministry of Finance on 1st July 1996 and formally initialized its customs clearance system in August 2002.

5.2.1 Business model—transaction content

Trade-Van has been trying to develop resources on the Internet. They introduced Virtra EDI/XML transaction platform, developed XML-based technology, expanded business fields and provided overall value-added Internet service. In June 2001, Trade-Van merged Internet Data Center (IDC) department of an American Internet firm, started application software service and Internet customer service center, built professional IDC control room and served both new and old customers with ASP.

5.2.2 Business model—transaction structure

Although the main business of Trade-Van is the large-scale customs clearance of goods, its core activity is to help parties establish Extranet or even Intranet of firms to solve problems of circulation in information, capital and goods of B2B e-commerce for firms. At the same time, it assists parties evaluate and switch on-line transmission system (EDI-XML), switches information among parties and provides value added services of integration of international logistics network around the world. To enhance security control of on-line transactions, it provides backup on different site, PKI certification and RSA encryption, which meet the requirements of ISO 17799.

5.2.3 Business model—transaction governance

Main customers include government institutes, firms in industries of transportation, service, financial industry along with small and medium enterprises. What is more, it has helped Formosa Plastics Group create e-procurement system. Total number of customers exceeds 20,000. The earlier goodwill of the company now transfers to the trust of customers. In addition, to conduct cross-country electronic data interchange(EDI) and cut cost of fax and communication, Trade-Van established Pan Asian E-Commerce Alliance with Tradelink in Hong Kong, Crimsonlogic in Singapore, KTNET in Korea, CIECC in China, TEDIANET in Japan, DagangNet in Malaysia, TedMev in Australia and EDI-Indonesia.

5.2.4 Revenue model

Business plan of Trade-Van is analyzed by input/output to calculate a reasonable charge. The cost includes security monitoring, maintenance of hardware and network, development of software, maintenance, customer service center, educational training, assistance in on-line setup, and electronic certificates, etc. 50% of annual turnover of Trade-Van comes from service to Directorate General of Customs, Bureau of Ports and other government institutes with 20% from B2B Internet service. Upon assisting more than 2 firms in getting on-line in each industry, the accumulated experience of the team will help Trade-Van handle requirements of other firms, saving a significant cost of staff for the company.

5.3 *Chunghwa Telecom Co. (HiNet)*

With the advent of Internet, ChungHwa Telecom Data Communication Institute was transferred as Chunghwa Telecom-Data Communication Business Group on 1st July 1996, being the largest in Taiwan, and 5th largest ISP in the world. It was successfully listed in NYSE for ADR on 18th July 2003, being the first successfully listed state enterprise of Taiwan in the U.S.A.

5.3.1 Business model—transaction content

Main products of HiNet are VPN and Internet connection while services are for both enterprises and private users. HiNet provides the broadband channels, standard telecom control rooms and integrated accounting data for customers. Particularly, precious experiences of building large MIS and network plans for the country since 1981 have become valuable asset and core ability. But, HiNet believes ISP is not to be confined in the current dial-up connection businesses in the B2B e-commerce trend. Instead, it should extend to Internet application services to be a real value creator. For example, business e-commerce (HiB2B) planned in August 2000 includes network (e.g., leased line, VPN), value-added service (containing ASP and payment transaction mechanism), Internet data center as well as operation of e-Marketplace.

5.3.2 Business model—transaction structure

Main activities of the company are enhanced services such as HiLink VPN for enterprises and promotion of certificates for government. Meanwhile, Hinet enhances services like video and on-line games and numerology. It will also keep expanding bandwidth domestically and abroad while developing wireless communication and broadband network. Chunghwa Telecom Co. is not just a circuit lessor, its HiNet branch also runs communication service and is a provider as well as a competitor of private ISPs. Therefore, balance between customer service and technology units on development of markets always requires communication and coordination.

Besides that, it is also the channel between enterprises and customers for information and capital. For example, on-line gamers only need to buy HiNet points (monthly payments or coupons) to shop on-line. This exclusive design by HiNet of micropayment mechanism (HiNetAAA) is a standard

platform in combination of authentication, authorization and accounting to save cost of stores on Internet and dissolve customer anxiety when shopping on-line with credit cards, providing a solution of capital for firms using Internet.

5.3.3 Business model—transaction governance

Under deregulation of telecom markets, three new fixed network firms, with their advantages of backbone, introduced ISP businesses. Reinventing to develop valued added services becomes key to survive for ISPs in this dynamic new environment. HiNet, therefore, moves upward to IDC and ASP services. Thanks to its goodwill from the past and trust from customers on the stable quality, most enterprises and portals (PChome and Yahoo, etc) are hosted by HiNet. Many ICPs or ASPs request cooperation with HiNet because of its bandwidth, large number of users and high market share. Such cooperation is based on complementary resources for co-promotion on Internet.

5.3.4 Revenue model

By mid 2003, ADSL subscribers of HiNet have reached 2 million meaning a market share of more than 80%. HiNet is far ahead either in total revenue or subscribers than other competitors. In the economy of scale at high market share, unit cost of bandwidth decreases progressively while bandwidth utilization increases. At the same time, main operation cost of other private ISPs is lease fees of bandwidth. This especially shows the advantages of HiNet. Current revenue ration between bandwidth lease and value added service is 8:2 while that from enterprises and consumers is 4:6. HiNetAAA mechanism contributes transaction fees for around 7% of HiNet's revenue.

5.4 *104 Job Bank(104.com.tw)*

104 Job Bank was formally launched from February 1996 along with 104.com.tw. The website boasts more than 800 thousand registered personal resumes, far beyond the total number of the competitors. It is the largest human resources website in Taiwan.

5.4.1 Business model—transaction content

Services mainly include the matching for full time, part time, high ranking and disabled jobs and human resources. In addition to classifying job opportunities by regions, types and industries to maximize matching, 104.com.tw further introduces contents of training, working right protection, access to information for further study, assisting job applicants find their ways and channels for interchange between employees. It provides multi-channel information regarding career for job applicants and employers, making it the largest job seeking website and advanced education in Taiwan. For a human resource firm, rich database content and classification search technology are key factors to success. The website has currently 38,000 employers registered with constant 55,000 job opportunities. For applicants, there are 71,000 available. Such high supply and demand brings

core resources of 104.com.tw.

5.4.2 Business model—transaction structure

The firm is customer-centric. To protect applicants, they can set e-mail address for themselves to contact in emergencies when they are to be interviewed. Besides, matching of job applicants and employers, the firm protects privacy and ensures contents employers post on-line are genuine and employers shall not use applications information in other commercial purposes.

Customer service staff is more than one third in the 200 employees of the firm. They try to understand current employment situation and future needs of each employer and conduct customer satisfaction survey each month by phone calls and e-mails. At the same time, customer service staff has to fully communicate with web planners and marketers to maximize the firm's overall performance.

5.4.3 Business model—transaction governance

Without its own products, 104.com.tw is an intermediary, focusing on understanding the needs and interest of employers and presenting them suitable applicants while protecting privacy of applicants. This is a business of pure customer relationship. Thanks to user-friendly matching channel, outstanding data analysis and real time information on supply/demand of human resources in the markets to employers as well as general public plus excellent customer relationship management, the firm enjoys a rate of contract extension as high as 60%—70%.

5.4.4 Revenue model

Revenue mainly comes from fees of employers posting job vacancies with Internet commercial and education information fees next. To meet requirements of employers, 104.com.tw charges by months, quarters, six months and annually. Each employer is able to pick the most suitable one to save cost with best result. Current paid customers of the firm is over 5,000, the firm reaches economy of scale, breaks even and starts to make profits.

6. Emerging research propositions

Proposition 1: *Owing to different business and revenue models, Internet service industry can be divided into value chain, value shop and value network after corresponding value configuration.*

Upon interviewing ChinaTimes.com, Trade-Van, HiNet, and 104.com.tw, there are differences as well as similarities in business model (transaction content, structure, and governance) and revenue model. We will be further illustrated in following four sub propositions.

Proposition 1-1: *Owing to different transaction contents of business model, Internet service*

industry can be divided into value chain, value shop and value network after corresponding value configuration.

After in-depth comparisons, ChinaTimes.com belongs to value chain for its real time (novel) news content, search of historic information with postproduction of designers by professional sorting and editors. Trade-Van is of value shop because of its total solution of on-line customs clearance, tracking and security control. On the other hand, possessing both broadband channels and rich customer data, HiNet and 104.com.tw are aligned with value network. However, HiNet tends to be value shop in products and services. According to the managers of the firm, to meet the tendency of telecom deregulation, the firm has strategically switched surplus resources to applied value added services to broaden the operation scope while still focusing on circuit lease.

Proposition 1-2: *Owing to different transaction structures of business model, Internet service industry can be divided into value chain, value shop and value network after corresponding value configuration.*

There are internal and external transaction structures. Of internal structure, transaction structure of ChinaTimes.com is value chain and has measures of virtual value chain (Rayport, 1995). Example is handling medium such as financial news by editors searching and categorizing information on-line. Transaction structure of Trade-Van meets criteria of value shop—intensive and revolving measures to solve specific customer's goods customs clearance problems with three levels of interdependence within the firm. Similarly, transaction structure of HiNet and 104.com.tw is in value network forms, focusing on on-line promotions, contract management and services while close interactions and coordination frequent in the firms.

Regarding external transaction structure, from the case studies, exchange mechanisms for enabling transactions will distinguish the three types clearly. However, it will not be precisely classified because of innovative ideas of parties link and exchange ways under constant evolution environment, or measures imitating successful enterprises. Due to limited staff, ChinaTimes.com has not yet established communities (members take part in discussion or vote on specific issues for more interactions) and has no novel ways of links. As for HiNet, its innovative micropayment mechanism of HiNetAAA solves cash circulation problems for service providers and customers. It also contributes 7% of revenues for HiNet. Trade-Van helps large firms (Formosa Plastics Group) build on-line e-procurement system and dramatically lowers the time and cost of information exchange by electronic links with results as mentioned by Tang, Shee, & Tang (2001). Both Trade-Van and 104.com.tw adopt complementary measures of on-line and off-line, providing more opportunities to link customers. Generally speaking, three value configurations can still be classified.

Proposition 1-3: *Owing to different transaction governance of business model, Internet service industry can be divided into value chain, value shop and value network after corresponding value configuration.*

Backed up by powerful China Times Group (newspaper agency, TV channels and magazine) with special product, vertical integration will be the best resource governance strategy. The nature of control mechanism contains traditional brand image along with attraction of colorful video news, to be categorized into value chain. Trade-Van belongs to value shop because it provides customs brokers on-line integration of clearance documents, exchange of information with a long-term relationship with customers while they trust the service quality of the firm. Obviously, the transaction governance distinguishes between HiNet and 104.com.tw. Products of HiNet are standard goods and cost will be minimized through market competitions. (Willison,1979) A clear proof is the promotion of mobile phones bundled with mobile phone numbers. As for 104.com.tw, due to lower frequency of recruit of employers and uneconomical to recruit by themselves, there exists trilateral governance. Clearly, HiNet is in infrastructure management business and should separate themselves from customer relationship management business. This is also suggested by Hagel(1999,ch9). Moreover, Trust of elements of control mechanism between two firms is different as well. HiNet focuses on trust on quality from customers while 104.com.tw concerns trust of customers on privacy protection. In spite of these differences, both firms differ more in value chain and value shop. Therefore, they both belong to value network. Li & Whalley (2002) also believe telecom business should be in value network model.

Proposition 1-4: *Owing to different revenue models, Internet service industry can be divided into value chain, value shop and value network after corresponding value configuration.*

ChinaTimes.com is a vertically integrated business; it is obvious that cost driver is economy of scale. To attract viewers to browse news, page layout is fully arranged to rent to advertisers. This brings juicy profits for ChinaTimes. Equally, on-line game firms' primary profits depend on players scale and their transaction fees. These belong to value chain. Although Trade-Van is best at its one-stop service, it belongs to value shop. Due to limited knowledge of medium/small firms on ASP, most of Trade-Van's revenue comes from transaction transmission service charges; therefore, economy of scale is its consideration in cost saving now. On the other hand, cost drivers of HiNet and 104.com.tw include economy of scale, economy of scope and capacity utilization. HiNet possesses characteristic of positive network externalities, and hence, the surplus bandwidth will exploit fully. Similarly, leveraging of the resources make 104.com.tw become one of the few profitable companies in .com bubble period. Primary source of revenue for both firms depends on members and/or loyal subscribers. The two firms, as a result, belong to value network.

Proposition 2: *The more similarities of business model and revenue model with value chain configuration properties of firms in Internet service industry, the more they are to be bounded to ICPs.*

Based on Afuah & Tucci (2001, Ch. 2), there are only content aggregator and content creator without ICP regarding content industry in value network segment. ICP, according to definition by MOEA, Taiwan, “is the firms operating website content, information database and Internet commerce.” This seems too broad. This study suggests that ICP contain value chain configuration properties and which to be redefined as “having business model of informative, entertaining content and searching service on Internet, interrelations between value chain and virtual value chain activities, characteristics of work priority, seller-centric, unified governance, brand and incentives as their control mechanism with revenue model of economy of scale and capacity utilization for consideration of cost to collect advertising and transaction fees.” This definition also contains both content aggregator and content creator. From proposition 1, we come to know ChinaTimes.com conforms to most characteristics of business model and revenue model in value chain configuration. Practically, ChinaTimes.com positions itself as a content provider of news content and on-line shopping in business model and advertising fees as its revenue model. Based on the firm’s senior supervisors, not only news content, the vision of the firm is to be a content portal. Thus, ChinaTimes.com boasts greater niche in combination of substantial and virtual cross media group to be classified as an ICP.

Proposition 3: *The more similarities of business model and revenue model with value shop configuration properties of firms in Internet service industry, the more they are to be bounded to ASPs.*

According to Kern et al., (2002), ASPs are service firms that provide on a contractual basis, rental based or ‘pay-as-you-use’ access to centrally managed applications made available to multiple users from a shared data center over the Internet or other networks. Responding to this foreign tendency, this study suggests ASP contain value shop configuration properties and which to be redefined as “having business model of operating packaged application software and one-stop service, providing platform technology, conforming to highly specific problem orientation, three interdependence within organization, mutual agreements of buyers/sellers, bilateral governance, goodwill and trust on quality as control mechanism and revenue model of learning experience as cost consideration, collection of software and consultancy fees.” From proposition 1, we are aware that Trade-Van conforms to most characteristics business and revenue models in value shop configuration. Practically, roadmap of Trade-Van stresses on customs clearance. Under the drive of open-end network, Trade-Van has extended its values with remarkable performances on network application system integration and service provision in the past years. It is classified as ASP.

Proposition 4: *The more similarities of business model and revenue model with value network configuration properties of firms in Internet service industry, the more they are to be bounded to Cybermediaries.*

This study proposes the definition of Cybermediary that contains value network configuration properties to be defined as “Providers having business model of telecom application services, privacy protection, file management, maximized services, conforming to characteristics of providing customers requiring mutual communication service, buyer-centric, market or trilateral governance with control mechanism of loyalty, security, privacy and guarantee of refund. The revenue model is economy of scale, economy of scope and capacity utilization as cost considerations, collection of membership fees and profit sharing.” HiNet provides various size channels (e.g., dedicated lines, dial-up, ADSL) to access to the Web as well as functional services (e.g., transit backbone, co-location, web site hosting), a clear similarity with ISPs in the U.S.A. (Gorman & Malecki, 2000) Also mentioned by Li & Whalley (2002), telecom industry plays a linear value chain role, its essence, however, moves towards value network configuration. 104.com.tw is an intermediary without its own products. It provides customer privacy protection and matching between employers and job applicants. This is closer to the essence of value network. Also from proposition 1, we learn that both HiNet and 104.com.tw conform to most characteristics of business and revenue models in value network configuration. They, therefore, belong to Cybermediary.

Proposition 5: *Owing to different e-commerce industry architecture layers and governance forms, Cybermediary can be divided into ISP and MediacySP.*

The above Cybermediary includes HiNet (provider of backbone equipment and transmission media in the bottom of industry architecture) and 104.com.tw (agency of customer relationship). According to Kalakota & Winston (1997), both firms are on different architecture layers. Deregulation of telecom business turns the 3-layer structure into 6-level, expanding market and bringing new partners who would like to participate (Li & Whalley, 2002). It is necessary to distinguish the both from Cybermediary in order to concentrate on certain core procedure to save cost. Hagel (1999) also proposes the same idea. From our study, we find that Cybermediary includes markets and trilateral governance. HiNet depends on free completions on markets while 104.com.tw becomes an agent, as cost of search for both buyers and sellers is too high. These two types are very different and have to be separated. Furthermore, there are cases from both Priceline (www.priceline.com) and Autobytel.com. The former allows buyers to specify product requirements and the amount they are willing to pay and then make corresponding offers to the participating sellers, reversing the traditional functioning of retail markets.(Turban et al., 2000) and the latter

revolutionizes the way to buy and sell automobiles; being an informediary, Autobytel.com overthrows process of buying and owning cars and creates values for both dealers and customers. (Hagel & Singer, 1999) The above instances fully illustrate the new business opportunities in network. Cybermediary in Internet service industry can be further divided into Internet Service Providers, ISPs, providing various bandwidth lines and connection service for customers as well as Mediacy Service Providers, MSPs who focus on customer relationship management, protect privacy and provide custom-made services.

7. Conclusions and further research

Business and revenue models are often discussed but opinions on them are widely divided. This study has tried to propose referable constructs underpinned by theories. What we emphasize, however, is not exhaustive the sub-constructs proposed by exact theories. Instead, we are trying to find a correct value configuration for division of Internet service industry; i.e., there exists value chain, value shop and value network in Internet service industry corresponding to the business types and strategies of ICP, ASP and Cybermediary in terms of transaction content, structure, governance and revenue model. Additionally, Cybermediary can be classified as ISP and MSP, considering their industry architecture layers and governance forms' differences.

Regarding value configuration classification, Thompson (1967, p. 13) suggests technology and environment are the major sources of uncertainty for organizations. Which is to say technological needs are one of the factors affecting organization structure. This will be proved by network topology of different distribution shape and location (e.g. bus, ring and star) which affects organization structure. ICP has same value type of value chain, ASP with value shop and Cybermediary with value network. Differences among such organization structure and network topology are not merely complete but parsimonious categorizations, but also isomorphic ecosystem influenced by environment (DiMaggio & Powell, 1983). Stabell & Fjeldstad (1998) mention that the three value configurations apply in other industries and you can find successful examples. As long as there is sound operation, Internet service industry will reach the same level with same performance if the field is properly divided. However, to expand business scope, Internet service firms will inevitably step into multi-configurations, but there must be one overarching configuration so as to accumulate core resources, save cost and create more values (profits).

Classification based on theories defines the patterns and division of Internet service industry. We propose the division pattern of Internet service industry as dotted square in Fig 2 and the value is expected to be maximized after the division. What we want to discuss is that ASP is not merely outsourcing service (Kern et al., 2002), it further explains the values and legitimacy of the ASP firms. Similarly, MSP starts in a reverse market where its value lies. In addition to current operation model, ICP can consider new ways to create innovative values such as patent collection of intellectual property, data mining and patent maps. ISP does not contact end users directly as its

e-commerce industry structure does not belong to application service layer. Again, because of saturated market, it has to provide more value added services with technological innovation to support ICP, ASP and MSP to obtain competitive advantages.

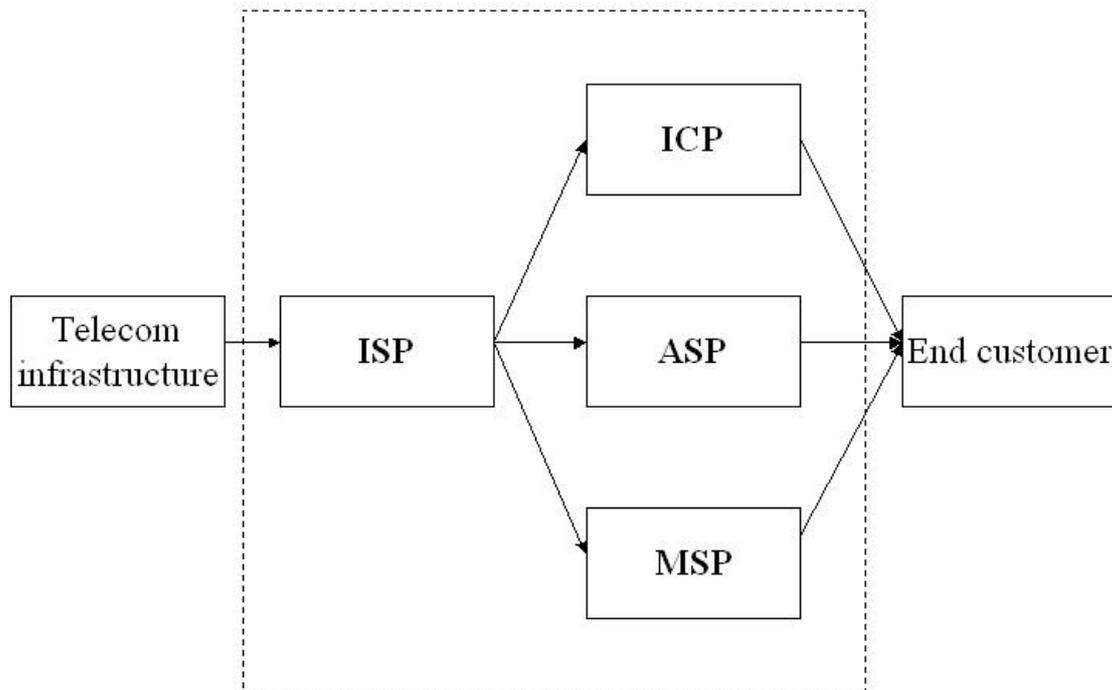


Fig. 2. Value division model of Internet service industry

Advantage of case study is a further probe into unknown phenomena or booming fields while weakness is that it cannot be generalized. This paper is an exploratory study; the multi-cases comparison adopts complicated logics, proving the purpose of multi cases in literal replication and theoretical replication of Yin (1994). HiNet and 104.com.tw belong to value network configuration (a literal replication) while the four firms belong to different configurations (a theoretical replication). The four different firms contain overall Internet service industry; however, it is the limit of this study that no more samples are adopted.

This study will be further evidenced with different samples or questionnaires. It can be induced by two-level confirmatory factors analysis. Additionally, concepts of this study will be the criteria for future evaluation on business models of new network businesses to testify external effectiveness or generalization. Theories of the constructs or connotations require further expansion if empirical results reveal that firms cannot be classified by the construct in this study.

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