Broadband Internet Portal Strategy Analysis for Telecom Company

by

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ABSTRACT

This paper analyzes the changes in the Internet portal business strategy for telecom and other Internet access service providers (ISPs) because broadband Internet access is becoming the standard due to the rapid technology development and growth of Internet access needs and services.

I provide some viable strategies for telecom companies that compete with successful Internet portals such as Yahoo. Based on my survey results, I propose the following three workable strategies. The first is outsourcing excellent modules to web sites at both large corporations and individual sites. The second strategy is providing specialized information management services for individual activities in order to retain loyal users, and the third strategy is making this service available for brand building by providing solid security/privacy policies at portals available only at telecom companies.

Also, I identified the following four issues that telecom companies need to address to implement the above strategies. First, to introduce modularized services to large-scale competitors, I encourage protocol interoperability on both sides until substantial results and benefits have been realized. Next, telecom companies need to prepare to provide services that 1st-tier portals are unable to introduce, e.g., schemes that do not require visitors to be led to telecom companies sites. Third, to establish a solid reputation and public trust in the security/privacy services, telecom companies need to prepare a long-term strategic business plan to reach the goal. Last, viable business model is not only advertisement but also marketplace model. Selling security function as an option is also effective.

Thesis Supervisor: Henry Birdseye Weil
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1. Introduction

On April 26, 2004, United States President George W. Bush predicted that broadband technology would reach "every corner of our country by the year 2007 with competition shortly thereafter" [Bush 04]. Actually, broadband Internet is emerging today and not only will leading early adapters but also early majority people will begin to have a broadband Internet. While the Internet bubble has burst [Perk 99], nonetheless many high tech and Internet companies are still trying to enter the Internet market, and moreover, many companies are surviving. One of the big waves in the Internet has been the "portal," which is basically a directory service that gives Internet users directions. Because Yahoo, a leading Internet portal, has been surprisingly profitable recently, some analysts believe that it will be difficult for competitors to compete with Yahoo. However, other types of companies, such as Amazon.com, Google, and eBay, can take over Yahoo's leading position in Internet.

This paper describes how the Internet portal by a telecom company has changed the broadband Internet environment and presents technology strategies that are necessary for broadband Internet portals to survive and compete. Many telecom companies are also providing Internet portals individually, but they are struggling with competing with Yahoo or other types of web sites to be profitable.

In Chapter 1, I introduce the issue of the severe competition in terms of Internet portals by telecom companies.

In Chapter 2, I describe the history of Internet portals and the business model of Internet service providers. I then describe the emergence of broadband Internet and three

characteristics of these changes — beginning with narrowband dialup. I also detail several typical applications for broadband Internet.

In Chapter 3, I present several business frameworks that can be used to analyze the changes ushered in by broadband Internet.

In Chapter 4, I scrutinize the business dynamics of Internet portals by examining several crucial parameters to understand the strength of 1st-tier portals. We also examine the threat to portals, which may negate the portal's advantage in time.

In Chapter 5, I analyze the dynamics of diffusion of broadband Internet, and present two models for the shift to broadband Internet. Next, according to the two models, I propose three technology strategies for portals driven by a leading telecom company, such as AT&T or NTT.

Chapter 6 examines the implementation of these three technology strategies in deploying the business and service to the market via complementary theoretical approaches.

In Chapter 7, the conclusion, I review my findings and present directions for future research.

2. Trends of broadband Internet services and portals

This chapter describes the background and trends of broadband Internet in the United States and Japan. First, I review the history of Internet services and portals and then briefly describe the traditional business model for Internet services. Third, I present the emergence of broadband Internet and its characteristics to examine the changes from narrowband dialup access to broadband. Last, I examine applications that have been impacted by broadband Internet.

2.1. A brief history of Internet portals

From the origin of the Internet with ARPANET as a DARPA project in 1968, one of the most important innovations has been the world-wide web (WWW) created by Tim Berners-Lee and his colleagues at CERN in Geneva in 1990 [Lee 99] [ISOC 00] [W3C 00]. During the rapid expansion of the world-wide web (the WWW or Web), many start-up and existing companies entered and left the market of the Web [Perk 99], but one of the most interesting web sites from a business perspective emerged: the 'Internet Portal'.

The Internet portal was originally a directory service for web sites. Because so many web sites exist across the world many users feel they need some recommendation when searching for something they want. Among the thousands of Internet portals in the 1990's, Yahoo gained the leading position in the portal competition by collecting many useful web sites and annotating them carefully.

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Yahoo was launched by two Stanford University students, Jerry Yang and David Filo in 1994. One year before, in 1993, a famous web site browser, Netscape Navigator, created by Jim Clark and Marc Andreessen, was released by Netscape Communications. The Mosaic browser, the basis of the Netscape Navigator, had already been used by millions in academia and business, users who wanted and needed good Internet portals [Angel 2002].

In the early 1990's, before the emergence of the Internet, major personal communication services were server-centric message transfer portals such as America Online (AOL) and CompuServe. Microsoft, the Windows operating-system company, also provided its own communication service, called Microsoft Network (MSN). However, Bill Gates, CEO of Microsoft, changed its strategy to focus on the Internet in 1995 and released its free web site browser, Internet Explorer in 1996 [Cusu 98].   Microsoft soon repositioned MSN as an Internet portal and preset MSN as the default web page called Internet Explorer. So users of Internet Explorer generally see the MSN web page when they first enter the web and continue to see it unless they change their default home page. Through this clever tactic (which as since been challenged in the courts) Microsoft was able to capture users more easily than other portals. Microsoft has become one of the most popular portals today.

AOL also adapted WWW capability for its traditional communications service. AOL created its unique browser from Microsoft Internet Explorer and allowed AOL's customers to access web sites as well as AOL's private services with the same browser, and consequently, AOL still retains a millions of customers [Kwok 04].

Three more major players in the e-commerce web field are not exactly portals, but

close to them: Amazon.com, eBay, and Google.

Amazon.com is the most popular e-commerce web site in the world. When Amazon CEO Jeff Bezos launched Amazon.com in 1996, only books were sold on the website, but over time, Amazon.com added many categories such as electronics and music CDs to its showcase and became one of the largest e-commerce web sites worldwide [Saun 99] [Spec 00] . Amazon.com's approach is not only simply selling items, but also creating community and a marketplace, and selling its technology to other manufacturers, such as Target and Toys'R'Us [Busi 03].

eBay, one of the most popular person-to-person trading web sites in the Unites States, was founded in 1995 by Pierre Omidyar as a pet project [Cohe 02], and has been profitable since 1999. In the United States, eBay has established its position as the 1st auction web site. However, interestingly, eBay was unable to enter the Japanese market because Yahoo Japan already had a large number of users and eBay Japan had trouble attracting many customers [eBay 02]. eBay bought PayPal in 2002, the largest online payment support company in the United States [eBay 04].

Google is one of the most notable Internet success stories. Google was founded by two Stanford students, Larry Page and Sergey Brin in 1998 and soon developed into an excellent search engine. It was so excellent that Yahoo and other portals changed its search engine technology match Google's. Google made huge profits by licensing its search engine technology, which used text keyword-based advertisements, called Google Adwords. This advertising method was so successful that soon, many companies realized it is more effective than online banner- and email-based advertisement. Yahoo started to use Google in 2000, but in February 2004, discontinued its use, because it had bought both Inktomi, a

profitable search engine technology company and Overture, a text keyword-based advertising enterprise [Goog 04a] [Wire 04].

2.2. Business models for Internet service providers

As I described in a previous section, numerous companies provide a variety of goods and services on the Internet. This section describes four typical revenue models for Internet service companies (Figure 2-1) and three key players who purchase services from the web site or service provider: Advertisers, Information Sources, and End Users.

In the first Internet-based business model, the advertiser, typically the main player, pays a fee to an Internet service providers (ISP) to insert their advertisements on the ISP's web sites. In this model, called the "advertisement model," end users see the ads when they visit the site or open their home page; thus end users do not have to pay to see the information. For example, DoubleClick provides banner-based advertisement to large companies' web site and get revenue as an advertisement agency.

In the next model, called 'hosting model', information sources, such as large companies which want to inform their company information, must pay to upload information to the web site to let end users see the information. End users do not have to pay money to see the information.

The third model requires end users to pay an information source to use the web site to get information. This is called 'subscription model'. Some of subscription fee goes to Information Source and the rest goes to the Internet service company. For example, a premium news clipping service gets money and pays part of revenue to the news source.
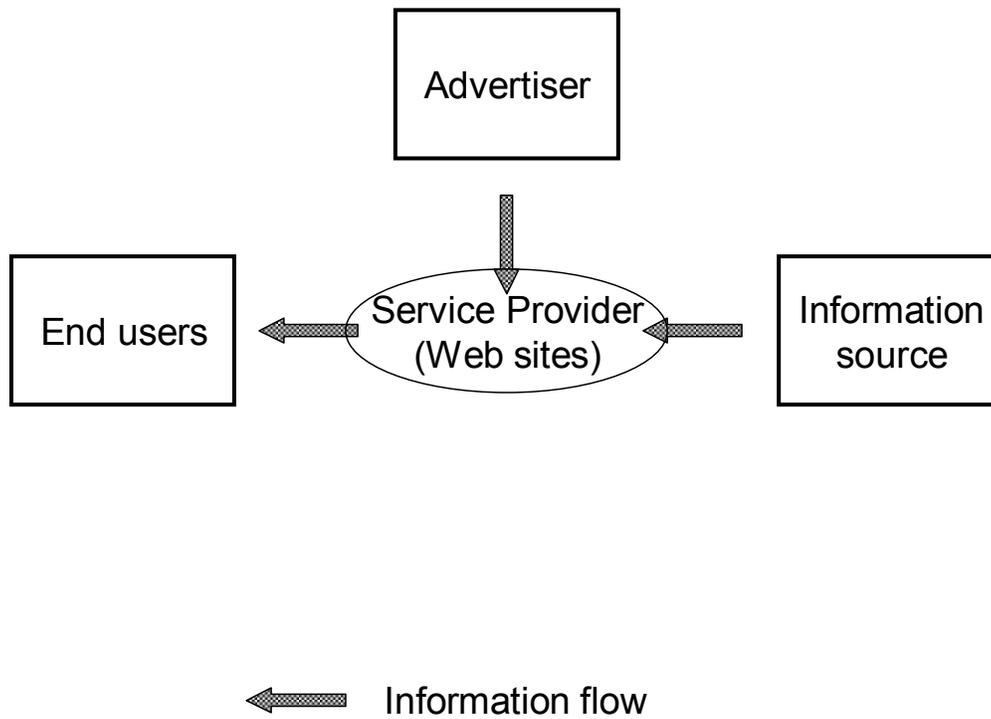
Figure 2-1 Business players in the internet

The fourth major internet-based business model is called 'marketplace model', in which the web site receives revenue from both the information sources and end users and provides opportunities for both to find business partners or customers. An example of a "marketplace model" is eBay. eBay's business model was purely transaction based, and had no advertisement revenues. Sellers pay eBay a nominal fee and some more fees for options.

Sometimes, the web site represents and information source or advertiser, and in an e-commerce service, not only is information exchanged (bought and sold) but also items such as books, tickets, and digital pictures are also exchanged.

The payment type for the advertisement model is usually yield-based, in other words, the advertiser pays fees based on the number of advertisements displayed, and the yield depends on either the number of views or the number of clicks. The hosting model has a variety of rules and conditions, such as the amount of disk space used, functions, network speed, and so on. The payment is a contract-based or one-time fee. The subscription model also has a similar payment type and the subscription is also either a contract-based fee, such as a monthly or yearly fee, or a one-time fee.

2.3. The emergence of broadband Internet

In the late 1990's, Internet access service providers (ISPs) started offering broadband Internet access service to subscribers. Currently, there are four major methods for accessing broadband Internet: CATV with coax cable, DSL with traditional copper phone lines, FTTH with optical fiber, and wireless. CATV and ADSL are the most popular

broadband Internet access methods [Hill 01].

The speed of traditional dialup narrow-band dialup Internet access is 56 Kbps (kilobits per second). The download stream speed (the speed from a network to a client computer of broadband Internet access service) is typically more than 1 Mbps (megabits per second) and the upload stream speed (the network speed from client computer to network) is more than 256 Kbps. Both the number of broadband Internet users and the speed of broadband Internet are increasing rapidly. For example, the number of broadband Internet users worldwide today (2004) is more than 100 million (Figure 2-2) [eMak 04], and in Japan some ISPs provide 40 Mbps download stream ADSL service (Figure 2-3) [Yaho 04].

Broadband Subscribers* Worldwide, 1996-2003 (in millions)

Year	Subscribers
1996	0.1
1997	0.6
1998	1.6
1999	4.2
2000	13.1
2001	35.3
2002	63.0
2003	98.8
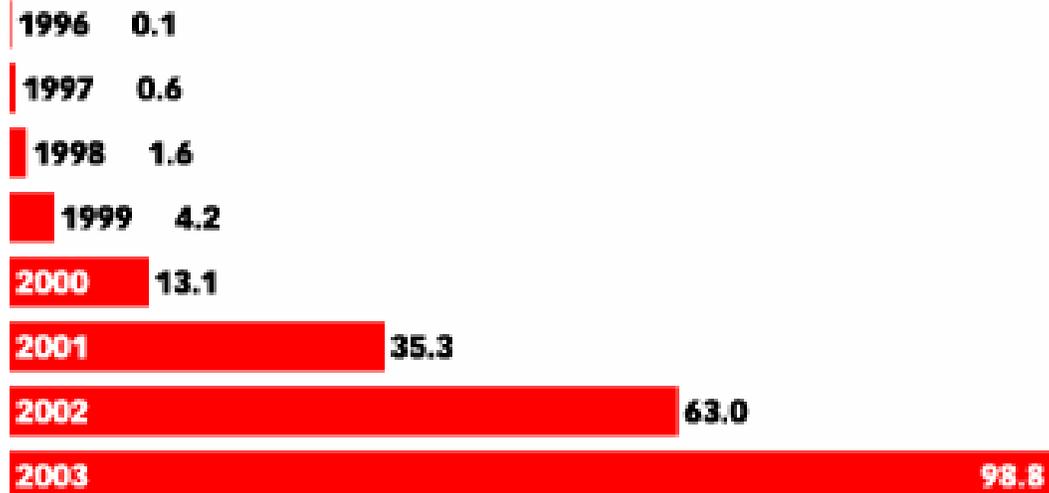
Note: *includes all residential and business subscribers but does not include wireless LAN, Bluetooth or 3G mobile broadband subscribers
Source: eMarketer, March 2004

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Figure 2-2 The number of broadband internet users
in the world *(Source: eMarketer Inc.)*
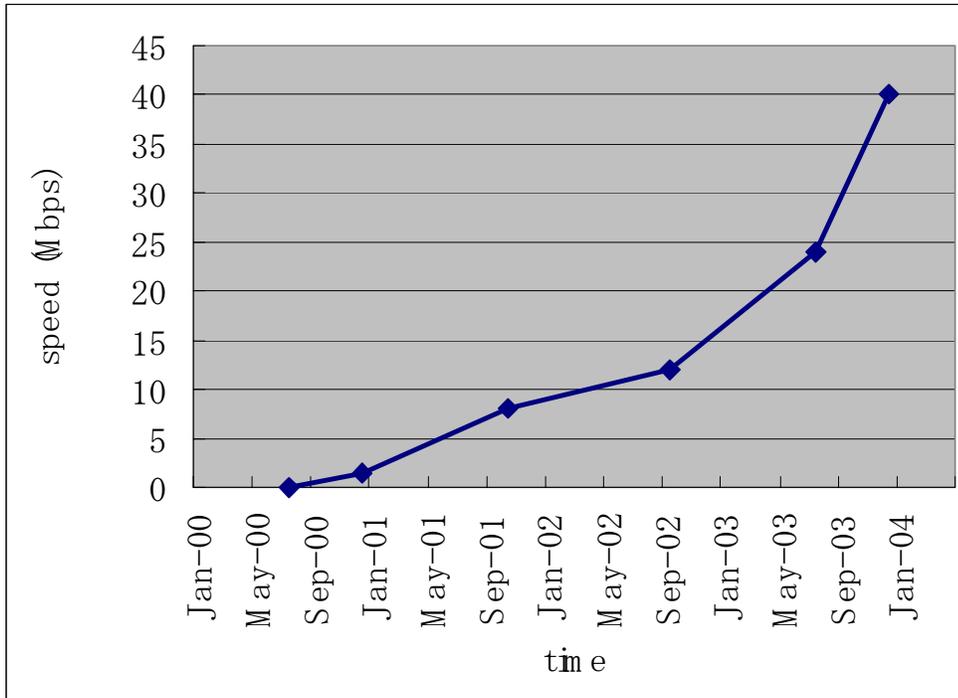
Figure 2-3: Yahoo BB Japan's ADSL downlink speed
(Source: Yahoo BB press release)

2.4. Characteristics of broadband Internet

In this section, I compare broadband Internet access service with narrowband dialup service in terms of three characteristics: fees, maximum speeds and average speeds. Broadband Internet access service has:

- No marginal fee and always connecting

- Higher maximum speeds

- Higher average speeds

The first typical characteristic of broadband Internet access service is no marginal fee and always connecting. In other words, users can use the Internet at a fixed rate and do not have to connect every time they want to use Internet.

Since users can start easily and pay less attention to how much time they spend for Internet access, there are three crucial changes in terms of use:

- users use broadband Internet more often

- users are more patient with slower responding services

- users view more information which they had given up before

One of the issues facing broadband Internet environment is the security of information and for online computers. As more computers are always online without protection against virus attacks, computer viruses can attack the online computers easily and infect computers very quickly.

The maximum speed is the speed between a computer and network through a contracted ISP. The official speed of ISPs is the theoretical speed, but actual speed is usually lower because the speed is mainly affected by user's network environment. There are two maximum speeds, download stream and upload stream. The download stream speed is from 256 Kbps to 100 Mbps depending on which broadband network technology one is using. The upload stream speed is between 128 Kbps to 10 Mbps. When the maximum bandwidth increases, the service is richer.

The average speed of broadband internet is the total average performance for downloading and uploading. When the average speed is increased, real-time communication and services are more stable and rich. Financial services and network games are typical examples affected by the average bandwidth because getting information quickly and continuously is important for these services. Voice communication, video communication, and broadcasting are also emerging broadband services because broadband provides faster, richer communication services than narrowband dialup.

Use intermittent or real-time-based service more

Because there is no marginal fee and always connecting for Internet access, people can use online services more easily and more often than before. In other words, in the past, people used client-based software, such as email software, without connecting to a network during creating data to transfer, but now, people can do the same thing with an online web site service, such as online email service. For example, up until now, the process of creating web pages has been to write web pages on the computer, to connect a network,

and upload the file to the server. But now, because people can access internet without dialup, people can feel easy to write the HTML files directly on the web site with the http posting method. Just after writing and saving the HTML code, the web pages will appear immediately. This change lets people upload more information. This change also encourages service creators to provide more interactive services, such as online games, quizzes, and chat rooms.

Some applications such as voice transfer services, stock trading services and presence services require or prefer that users transfer information very frequently or in real time. People are encouraged to use these types of services due to the benefit of not having to pay a marginal fee as well as using other essential service they need to use.

Broadband users show more patience for slower responses

Next, users tend to be more patient with the delayed responses from online services. When users use a service that responds very slowly and they are paying a marginal fee, they worry about not only wasting their time but also their money. With no marginal fee, at least they do not have to worry about their money being spent.

This means service providers can offer more complex services that take a little bit more time. Of course, the service response time, the seconds the web site has sent information for reply, should be kept to the minimum to improve user satisfaction.

Users surf for the web more for less significant information

Today, users are surfing and surveying more web sites which they had given up accessing before. That means that companies have more opportunities to promote their services on their web sites because people try to find better web sites. In narrowband dialup service, users are forced to view web sites very quickly and some users buy personal web crawling software that continually checks certain web sites. However, in this situation, users can not afford to view many web sites. The effect of no marginal fee, always connecting, and get information faster, allows users to view yet another web site that they never see before.

2.5. Broadband Internet applications

This section briefly describes the applications for which typical individuals and businesses use broadband Internet: sending and receiving information; downloading music, movies, and software; and customizing web pages, files and server information. More recently, voice-over IP, (a telephone service on the Internet), video communication and broadcasting have also become common uses.

2.5.1. Information service

With large bandwidth, users can more quickly and affordably download larger amounts of information. Consequently, web site information has become richer and contains many more pictures and interactive modules that use Flash and Java. Also, users can download larger of PDF files, such as company profiles and annual reports and they

can more readily receive and download larger email attachments. One of the latest "hot" news items is that Google's email service now has 1 GB storage for each user [Goog 04b].

2.5.2. Downloading music and movie content

Early on in the Internet era, the typical applications for broadband Internet were for downloading rich media content, such as music, pictures, and movies. Downloaded data comes from two main sources: servers — both official web sites and unofficial personal web sites — and from other users' computers — called P2P (peer-to-peer) software. From official web sites, users can buy music or movies. With [what other way??], people do not always have to pay money for downloading content. Thus, the issue of copying music or software irregularly has emerged and a prominent P2P software company, Napster, was sued by artists whose work was being distributed for free using this software [Menn 03].

Now, the most popular music download service is iPod and iTune Music store from Apple. One music file is selling for 99 cents, and now many people use this profitable service and equipment. Today, the music business is now one of the most profitable and impressive services made possible by broadband Internet. Downloading or streaming movies is emerging as the broadband Internet becomes more widely used and technologically sophisticated.

2.5.3. Downloading software

Downloading software also become very popular as broadband Internet use has

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increased and as technology evolves. Users can now download software so easily that they are moving away from buying the actual software discs at stores and are buying it more often online. Some of this software, called shareware, is limited to let people use it free for only the first several weeks after installation. So most users use it before paying fees and thus only satisfied people buy it. With the increased speed that broadband offers, it is easier for people do download music and software.

Another benefit of broadband Internet for the software industry is that it allows users to fix software bugs and update software more quickly and efficiently. Since people can easily download large update files on broadband, software companies can provide updates online, saving mailing costs for sending software update CDs to customers.

2.5.4. Uploading files

Broadband's large upload stream bandwidth is also useful for many applications such as file uploading services. Online storage and online photo albums are major applications as file uploading services. People use online storage services to save, backup or share large files. Sharing files is useful when sending large files because some mailboxes cannot store large email files. Backup service is also used as a substitute for backup equipment, such as DAT, DVD, or HDD, because it is easy to save data without additional peripherals.

Online photo albums were originally used by photo printing service. The photos taken by digital cameras are usually not printed but the need for photo printing has been emerging so traditional photo companies for example, have started online photo printing

service that allows people to print the photos at home. These companies (and their clients) also can save in mailing costs.   However, without printing, online photo albums are useful for just managing photos and sharing photos with other people.

2.5.5. Uploading personal content interactively

Compared large file uploading, interactive content uploading services such as email, bulletin board, diaries known as 'blogs', and groupware, need relatively lower bandwidth. However, to maintain quick response speed and efficient usability, the higher maximum bandwidth brings more convenience and better look and feel for users and service providers are using more pictures and complex functions.

Now, online email and bulletin board services are very common, and blog are quickly emerging. Groupware, such as schedulers and event calendars also have become common, especially in the corporate world. Another typical service is online bookmark services. Users can list their own bookmarks in the web site so they can see the bookmark even at the time they do not use their own computer.

2.5.6. Voice over IP (VoIP)

The most common voice communication service on the Internet is Voice over IP (VoIP). VoIP provides the same telephone service as traditional telephone system but sends voice information in digital form in discrete packets rather than in the traditional circuit-committed protocols.   Internet users can make calls with usual telephone number

with using VoIP. Some of VoIP services use the Internet only for long distance connections and use traditional telephone system for local connections. But others use only the Internet for connections. The cost of transferring voice is lower than traditional phone connections because the size of voice data is relatively smaller than the bandwidth in broadband Internet.

To increase the use of VoIP, VoIP should have the same usability as traditional telephone systems. To get the same level of usability, VoIP service providers had to address three issues: number portability, connectivity to traditional telephone users and VoIP users, and compatibility between VoIP router systems and traditional telephone equipment. But now these issues have been solved and VoIP is ready to emerge.

2.5.7. Video Communication

Video communication provides face-to-face conversations using cameras and phones. There are three types of video communication tools, computer-to-computer based video chat, traditional one-to-one video phones, and traditional multi-user video conferencing. Broadband Internet provides a significant cost saving for video conferencing networks, so the video communication application is one of the greatest advantages that broadband Internet service provides. However, video communication service for consumers is not emerging as quickly as other applications, because computer cameras have not yet become common, and users can not realize the benefits without a camera.

2.5.8. Radio/TV broadcasting/streaming

Broadcasting services, provided by streaming companies such as Real Networks, is emerging in broadband Internet due to the fact that there are no marginal fees and broadband's high average bandwidth. Not only traditional broadcasting companies are providing traditional radio/TV broadcasting, but also other companies are providing their company information such as general shareholders' meetings via web casts. Personal use will become common in the future.

3. Theories and frameworks

This section discusses several theories and frameworks for applying broadband Internet. Later, I use these to analyze and discuss ways to expand the emerging broadband Internet industry.

3.1. Vertical integration and horizontal modularity

Vertical integration and horizontal modularity are concepts of business dynamics. Fine explains this basic idea in [Fine 98] by describing business dynamics with a double helix (Figure 3-1). According to Fine, "When the industry structure is vertical and the product architecture is integral, the forces of disintegration push toward a horizontal and modular configuration."

In his book, Fine borrows an example from the computer industry. Between 1975 and 1985, computer companies such as IBM and DEC created all components separately which translated into a vertical industry structure with integral product architecture. However, between 1985 and 1995, the industry changed its structure to a horizontal one, and its products became modularized. For example, Intel acts as a microprocessor modular company, and Microsoft acts as an operating system and application software modular company. HP acts as a peripherals, network services, and assembled hardware modular company, so HP still maintains some characteristics of vertical integration, but these components are exchangeable.
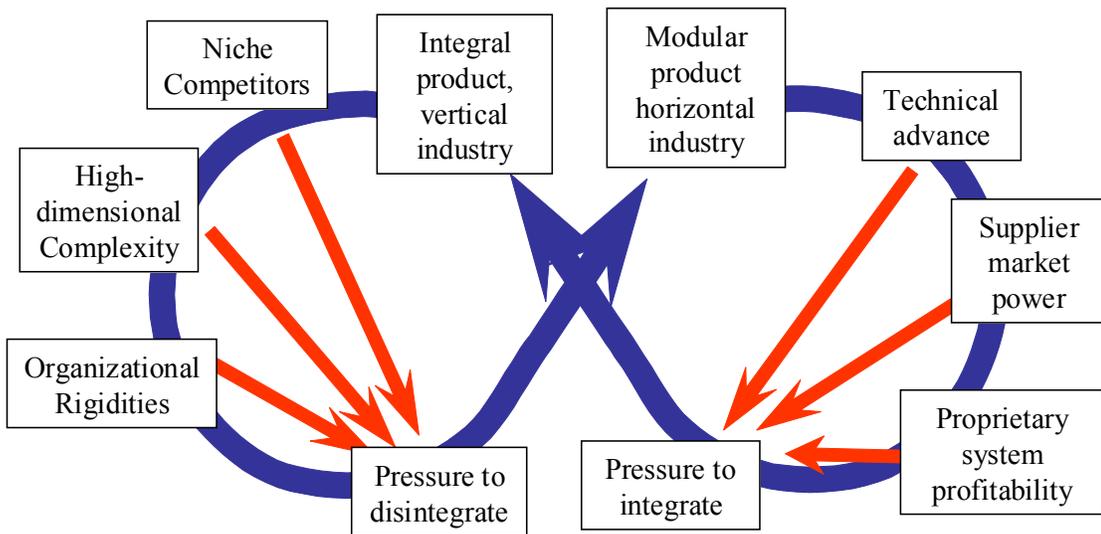
Figure 3-1 The Double Helix, Illustrating How
Industry/Product Structure Evolve from Vertical/Integral to
Horizontal/Modular, and Back
(Source: Fine: Clockspeed p49)

In the Internet industry, Internet portals firms have been trying to integrate their services and tightly connect with other services. This approach is similar to vertical integration. On the contrary, Inktomi and Google are the best examples of horizontal modularity, because these companies provide search engine technology to many portals including Yahoo. So, in the Internet industry both vertical integration companies and horizontal modularity companies compete with each other.

The difference between the computer industry and the Internet services industry is that Internet portals with vertical integration are not mandatory for users, because users can use only one portal's services, such as for searching web site, buying goods, or chatting. Thus, Internet services have already been modularized and vertical integration is not required to satisfy users. However, vertical integration can provide some strength for Internet portal services, soI will discuss this idea in the next chapter.

One more important issue that flows from Fine's theory is the emergence of niche competitors. Various firms have developed niche portals to compete with Yahoo and other general portals. Amazon.com is a good example because it provides an e-commerce portal. Financial, entertainment and other functional niche portals also compete in this arena.

Other type of niche portal is the demographics-oriented portal, such as women's issues and American African portals. Some demographic focused portal are sustainable because they provide detailed and customized services to users and users tend to be satisfied with this niche portals which provides valuable information not available from large general portals.

3.2. Disruptive Innovation

Disruptive innovation is a key concept explained by Christensen in his eminent book, Innovator's Dilemma, [Chri 97]. Disruptive innovation means that a firm can produce an innovative product that has lower product margins and lower quality, but special desirable characteristics. The firm can thus take customers from other major product categories because of the specialness of its product, and then improve the quality of the product and further expand the product's market share to take even more major customers (Figure 3-2).

In the Internet industry, Internet online service was a disruptive innovation that impacted the computer software industry. For example, people now use online email service, online games, and online dictionaries without having to buy software. Online digital photo printing is another example that is now threatening the traditional film-based camera. At first, these services were relatively poor quality and high cost, but over time, they improved. The far-reaching diffusion of broadband Internet also improving the quality of Internet services and is hastening the impact of this disruptive innovation. I will discuss this idea in next chapter.

Christensen also discusses the impacts of vertical integration or horizontal modularity in his latest book [Chri 03]. His theorizes that when a product is of poor quality, product development tends to be integrated vertically. On the contrary, when a product is of good quality, horizontal modularity components will emerge and these excellent components will lead the market. Horizontal modularity occurs when a product is commoditized and then companies producing that product try to differentiate themselves with excellent modular-able components, so the business with modular-able components

emerge and are profitable. According to the value chain theory, the value has moved from

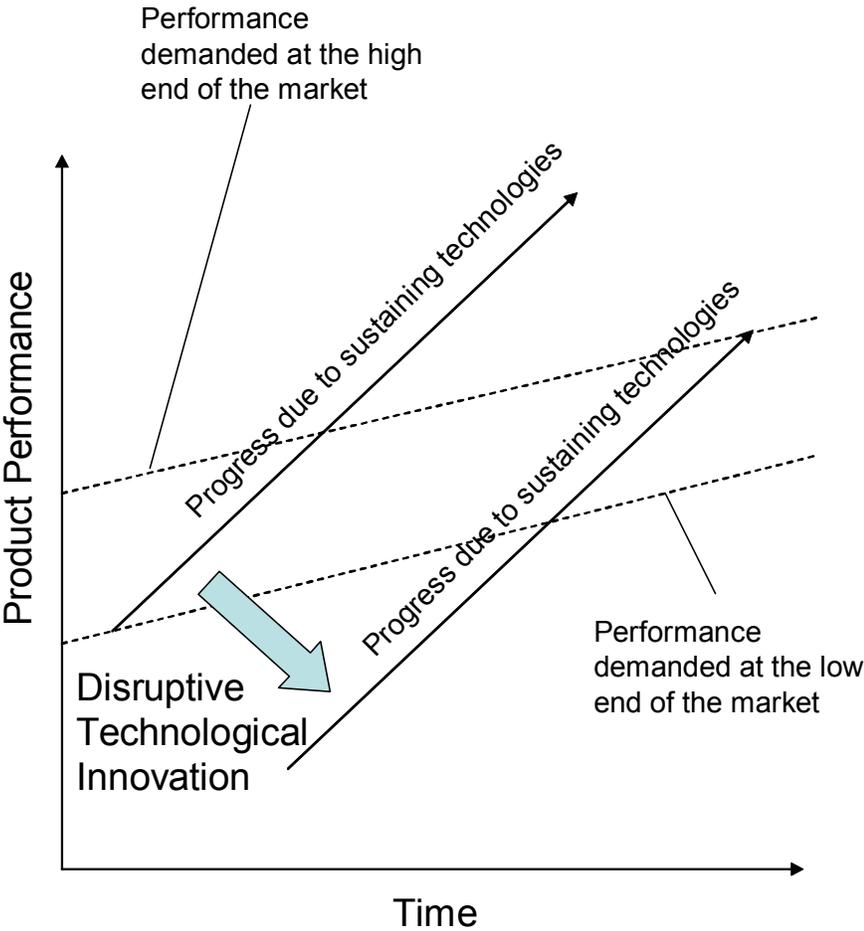system integration to each component.

Figure 3-2 The Impact of Sustaining and Disruptive Technological
Change *(Source: Christensen: Innovator's Dilemma, p.xix)*

As I discussed in the previous section, today's Internet services are rather modularized and portals are trying to create value to connect services with single user accounts. So, the Internet industry does not fit Christensen's theory on vertical integration and horizontal modularity. However, understanding the Internet industry's movement from vertical integration to horizontal modularity is important. Viewing portals as one product, the quality of each component of portals becomes very important because people leave the portals when they realize that the quality is not enough. Thus each portal needs to create, lease or partner to offer better quality components. Google is a good example — it successfully sold its search engine technology to portals and ISPs. I will discuss this in greater detail later.

3.3. System dynamics

Systems dynamics is a tool that allows us to model business systems for today's complex global market [Ster 00]. Using this tool we can figure out which parameters affect a system's behavior and we can predict results when we input the parameter values and functions.

The typical notion for system dynamics modeling uses two types of loops, reinforcing loop and balancing. The reinforcing loop, as the notion of 'R' with an arrow loop, means the loop increased or decreased the parameters. On the contrary, the Balancing loop, as the notion of 'B' with arrow loop, means the loop limits the change in parameters. So, we can understand which parameter affects the other parameter and how the parameter move.
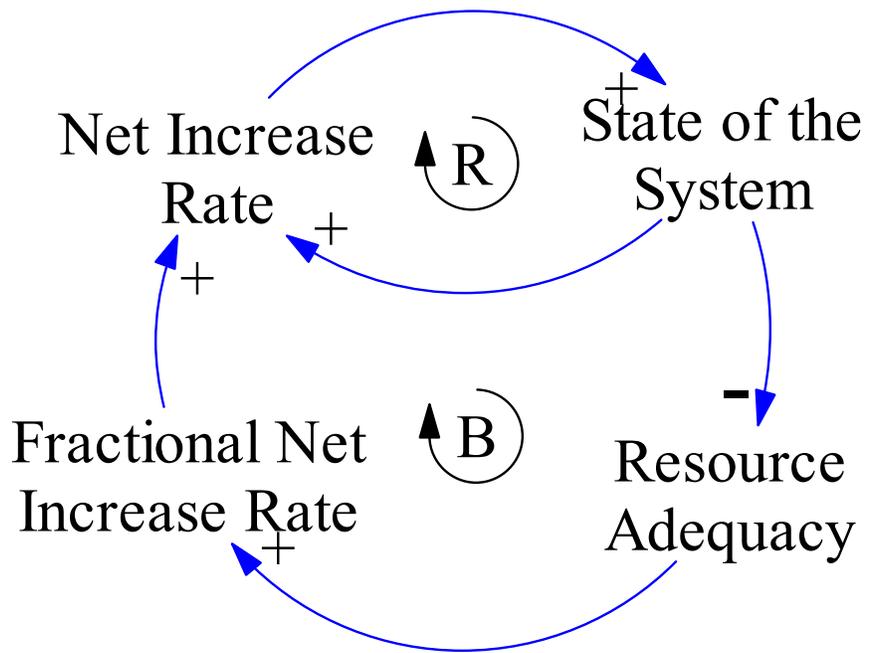
**Figure 3-3 Business Dynamics for S-shaped Growth
structure and behavior
(Source: Sterman: Business Dynamics, p.118)**

In developing a business strategy, we can use this model to decide which parameter or loop to focus on. For example, in Figure 3-3, when we want to increase the number of State of the System, we can strengthen the reinforcing loop or weaken the balancing loop, or both. So we can theoretically operationalize our strategy using this model.

3.4. Network effects, viral marketing, and switching cost

Network effects (Network Externalities) entails understanding diffusion that is based on users' relationships [Shap 98]. For example, the success of a telephone service depends in part on its number of clients because prospective customers assess the effectiveness of telephone service based on how many of their friends or business partners are using the phone service. If none of their friends or associates uses it, they see no benefit to having it. The concept of network effects is based on the benefits of a number of users more than simple economies of scale [Mait 94].

In the Internet service industry, auctions are a good example to demonstrate network effect because that more users who participate in the auctions the more items and buyers there are. I discuss an auction service's network effect in the next chapter.

In Internet service industry, 'viral marketing', or word of mouth, is an effective technique for the marketing and diffusing the service. Because it is very easy to send information to one's friends and associates, web sites have added the function of sending web page information immediately [Godi 00].

Some services have more effective ways to use viral marketing. Online email services can include their own registration information at the end of each email, so the

person who receives the email can easily recognize where and how to register with the email service.

3.5. System lock-in and switching costs

System lock-in service makes it difficult for users to change from product or service to another. Hax describes three business strategic options — best product, total customers satisfaction, and system lock-in (Figure 3-4) [Hax 01]. System lock-in is a strong position of a business strategy. For example, Microsoft Office has a system lock-in position due to the format of each office product. People have to use Mircrosoft's Office Suite because all others use it. Users generally need to modify documents created by others using Microsoft office.

Switching cost makes it difficult for users to change their current service. For example, when a user has software based on a middleware or dependent operating system, the difficulty of changing to another middleware or operating system increases.

Switching products or services occurs in most industries. Internet services usually have very small switching costs for users because they can try and switch to another service easily and quickly. However, most web sites including portals try to lock users into their services by providing affinity, attractiveness, and a positive customer experience.

Competition based upon
system economics:
Complementor lock-in,
competitor lock-out,
proprietary standard

⇧

System Lock-in

Total Customer Solutions   Best Product

⇩   ⇩

Competition based upon   Competiton based upon
customer economics: product economics:
Reducing customer costs   Low cost or
or increasing their profits   Differenciation
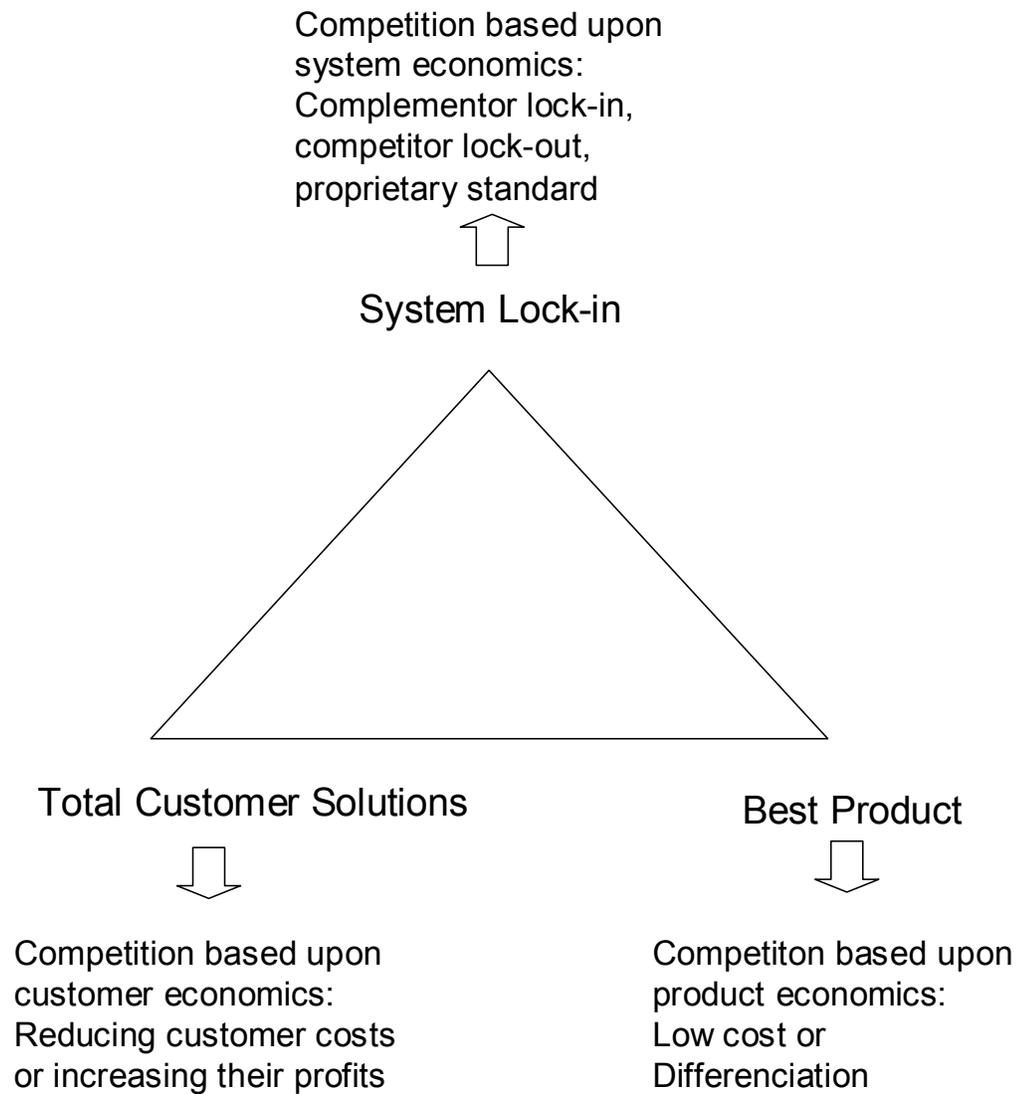
Figure 3-4 Business model: three distinct strategic options,
(Source: Hax: The Delta Project, p10)

4. The dynamics of Internet portals

This chapter describes the business dynamics of Internet portals, especially parameters and structures.   First, I describe six major characteristics of business dynamics. Next, I detail the structure and parameters of the dynamics. Last, I discuss about threat of Internet portals.

4.1. Six business characteristics of Internet portals

This section describes six major characteristics of Internet portals:

- Price
- Quality of Service
- Quantity of Service
- Number of Customers
- Brand Awareness
- Portal stickiness

I detail each of them later in this section.

4.1.1. Price

Price entails a variety of payment schemes for a service. For a portal, there are admission fees, one-shot use fees, and a monthly or annual fee. Discounts also affect price

– discounts include temporary, personalized, coupons, and bundling. Price obviously directly affects a portal's revenue.

4.1.2. Quality of Service

The quality of an Internet portal service means the attractiveness of each service offered by a portal. The major parameters of quality of service are function and content.

Function is the variety of commands which people can use. Customers tend to want to have a variety of functions. For example, online email service has basic functions, such as sending and receiving emails. Moreover, they have online/offline uses, filtering, spam blocking, volume of storage, original domain name forwarding, multi-language functions. The importance of each function changes over time. Today, SPAM blocking total storage space is valued. In adding functions, ease of use should be considered to attract customers.

Content also affects quality. The attractiveness and availability of music and movie content is directly connected to the quality of service. The number of music and movies also affects the quality of service but having major, valued content, such as Beatles and Disney, is more important for improving the quality of service. That means, however, that major content creators and providers hold power as suppliers so that content is rarely profitable for Internet portals. Profitability depends on the balance of power between the Internet portal and content creators/providers.

Other types of content and databases, such as newspaper database or company information databases, are also important things as contents. Many news and financial information services are not free, and neither are most database search engines. Some

companies actually charge for online news feeds, such as news on famous sports players and PDF-formatted books that customers can download.

4.1.3. Quantity of Service

Quantity of service is simply the number of services an Internet portal offers. The more services which are known by people, the more customers will use them. A combination of services will allow customers to access more services easily. Examples of the services are searching, email, shopping, auctions, news, and blogs.

To let customers use more services easily, portals can provide options for additional related information or services. Showing related information or services provides convenience and utility. For example, when a customer tries to find map directions, the portal offers not only maps but also weather, rent-a-car and hotel information for which the portal charges commission fees. Local shopping advertisement is also a common option.

The combination of services makes additional revenue because it provides many benefits to customers — additional information that suits their purposes and it saves customers time and offers enjoyment.

4.1.4. The number of customers

The number of customers is the total amount of customers of the Internet portal. However, there are several types of customers, such as no registration, registration without bank or charge accounts, registration with bank/charge accounts but requires no spending

of money, and registration that requires customers to spend money. Ideally, as the number of customers increases, the ratio of money-spending customers should also increase.

The number of customers as well as brand awareness and attractiveness of the portal affects a portal's revenue. When the network effect is taken into consideration, the increase in customers will attract yet more customers to the portal.

4.1.5. Brand Awareness

Brand Awareness is the ratio of customers who are aware of the portal. Typically, brand awareness itself enables customers to access the Internet portal when they want information or some service particularly when they do not know where else to find it. For example, when a customer wants weather information, he/she may access Yahoo rather than the popular weather site, weather.com, because he/she is aware of Yahoo's broad range of offerings or he/she might remember the weather information link from when he/she last accessed Yahoo.

Generally, people do not remember many sites, so they tend to remember only a few portal sites that solve all their issues. Thus, the brand awareness of a portal depends on how well the portal markets itself and enables customers to remember or access it easily. Thus, each portal tends to spend money for advertisements or provide better services to prompt customers to remember its value as a portal.

One more point we should consider is the low switching cost of ISPs. With broadband Internet, customers tend to spend much time finding the best services or more information, and that means customers' switching cost becomes lower. Thus, an Internet

portal should provide many top-quality services to discourage customers from switching out of their portal site.

4.1.6. Portal stickiness

The switching cost of Internet services tends to be low, but two characteristics of specific service providers are keys to retaining clients. One is trust, and the other is familiarity. When a person uses the same service provider over a period of time, the service provider creates a sense of trustworthy for the service. Establishing loyalty along with customer trust are keys to retaining users. Also a customer who is familiar with the service provider helps his/her friends understand the service itself. So, the friends become to know the service quickly and tend to feel familiar with the service provider as well as their friend.

Weil proposed the power of positive thinking [Weil 99]. Figure 4-1 shows the simple diagram of explaining the building relationship between customer and merchant. When a customer learns more about a merchant, and the merchant also provides more personalized service to the customer, the customer begins to trust the merchant and the merchant add values more. This is the one typical process of how to get trust from customers, and getting trust makes strong stickiness between the service provider and customers.
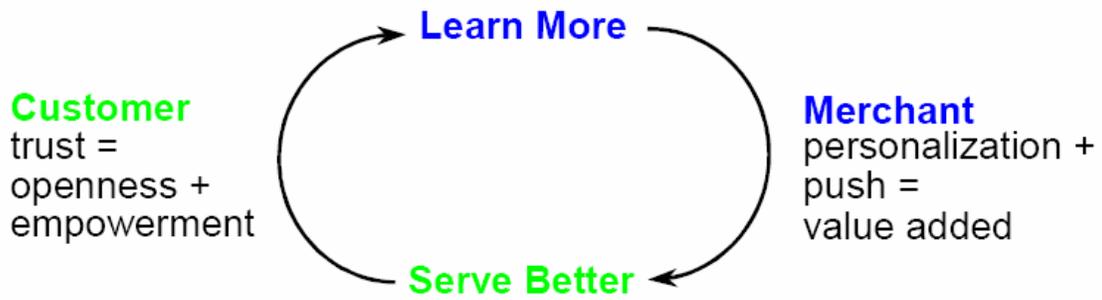
Figure 4-1 The power of positive thinking *(Source: Weil, The Road From Dependency to Empowerment, p9)*

4.2. The business dynamics of Internet portals

In previous section, I describe six key parameters for Internet portals. In this section, I show the business dynamics of Internet portals with system dynamics with those key parameters (Figure 4-2). According to this model, all loops are reinforcing loops and this means portals revenues are theoretically increased. Here are the several important relationships between parameters.

● Network effect of Internet portal: Attractiveness (Brand Awareness) will increase the number of users (network effect), and the number of users in turn increases attractiveness or brand (credibility).

● Economy of Scale: The greater a portal's number of users the more price discounts a portal can offer, which in turn affects attractiveness.

● Bundling: Quantity of service increases not only attractiveness but also price discounts.

● Excellence of service: Increasing quality of service also increases attractiveness.

These characteristics are tightly connected. I now examine these relationships that significantly affect the dynamics.

● Relation between Quality of Service and Number of Customers

● Relation between Quantity of Services and Brand Awareness

● Relation between Quantity of Services and Price (Bundling)

Figure 4-2 Business dynamics of internet portal
(Source: Motohashi)

The quality and quantity of services also affect a service's value to its customers. Once customers realize the value of the service, they tend to trust and stick to the service. This kind of stickiness is important in the broadband Internet environment. I discuss this theme in the next chapter.

4.2.1. Relation between Quality of Service and Number of Customers

When the number of customers increases, the quality of service increases, because of the increased feedback — more feedback and more bug reports mean that the portal can improve its service more quickly. The increase in the number of customers will increase the money the firm spends for servers, network, and human resources, but the cost should be minimized because of economy of scale.

'User to user' communication services have an actual network effect and the number of customers significantly affects the quality of service. One typical example is the auction service. The more customers there are the more items the service provider can sell. Customers realize that the number of customers is very important because the more customers that view an item, the higher the price can go, or with more customers, the more likely a customer can find an item (because there will be more items). Users can buy items at much lower prices because many people often are selling the same items. The economics of auctions works well with a significantly large number of customers.

Another example is actual communication service, such as instant messenger (IM) and voice over IP (VoIP). Actually, these represent a fight of IM protocol. Each of the major IM companies, Yahoo, Microsoft, and AOL, does not provide interoperability to

other IMs because they want to protect their customer base; in other words, they want to lock in their customers. However, they are now discussing interoperability issues as they see its advantages [Zdne 03]. IETF is now working to define a standard IM protocol [IETF 04]

One of the strategies to retain VoIP customers is to offer the service at a low price. Yahoo BB Japan is now providing its VoIP phone, which is free between Yahoo BB VoIP customers. This disruptive pricing practice has attracted customers whose friends or families are using the service [Soft 03].

4.2.2. Relation between Quantity of Service and Brand Awareness

If a portal offers many services, then customers will feel that the portal has everything and will return to the portal whenever they need to start searching for something new. On the other hand, if an e-commerce web site for books has branded itself as a 'books' portal, it is often difficult for the web site to let customers know the web site has another type of product. Amazon.com planed to sell everything they could. So neither its name nor brand is associated with 'books' [Spec 00].

To change the customer recognition, it costs much to develop and market a corporate identity. However, when customers realize that a portal as a web site has 'everything', they will access the portal even though it spends less on advertisements. This is also an advantage of Internet portals.

However, when customers realize they cannot get what they want from a portal, they search for another portal or web site. As I explained before, switching cost is low in

Internet, so only small complaint by users would make them go other web sites.

4.2.3. Relation between Quantity of Service and Price

The common strategy of providing many services at a lower price to offer bundled pricing. The bundled pricing scheme offers one price for various (bundled) services. This means, customers pay the same amount of money regardless of whether they use only one or several services.

Bundled-service pricing helps to maximize customers' willingness to pay [Bako 99]. Customers tend to believe that bundled pricing is economical because they value the option of using the other bundled services even though they usually use only one service. Bundled pricing is effective when one of the bundled services is highly in demand because customers buy the bundled service for one primary service but start to understand the value of other services so that they pay even though the service they were originally interested in has lost its value.

4.3. Threats facing Internet portals

In the previous section, we described the business dynamics of Internet portals. According to these dynamics, the portal that is in the first position in terms of the number of users (1st-tier portal) such as Yahoo would have ever-increasing power, and other portals (2nd-tier portals) would lose their market share. However, several types of threats will affect the 1st-tier portal more than 2nd-tier portals.

In this section, we describe each of the threats so as to understand the strategies for both the 1st-tier portal and the companies posing as threats. Here are three major types of threats the 1st-tier portal faces:

- The service provider that provides excellent quality of service and easy modularization

  ➢ e.g., Google, Amazon.com, eBay

- The Internet access service provider that has large customer-base

  ➢ e.g., AOL, NIFTY-Serve

- Environment changes

  ➢ Operating Software, mobile, identification hardware

4.3.1. Excellent quality of service and easy modularization

Google, Amazon.com, and eBay pose a threat to the 1st-tier portal, Yahoo. They pose a threat not only due to their excellent service but because they provide some of their services to other web sites, and even to the 1st-tier portals.

These companies' services are far better than 1st-tier portals' equivalent service, so comparatively, 1st-tier portals' quality of service is reduced. As we discussed before, the cost to switch service provider, or web site, is very low, so people tend to change their favorite web site if the new web site is really better for them.

A 1st-tier portal could try to retain existing customers by providing attractive options or offers. Because a 1st-tier portal has more services, it has more freedom to offer bundled pricing. But, this is not always effective because bundled pricing does not prevent

customers from creating an account on a new web site. Improving quality of services would be one of the crucial tactics to compete with companies that offer specific excellent serviced.

A customer who switches from a 1st-tier portal to another excellent web site would tend to be sensitive to the quality of service. Customers who are not sensitive to it would tend to stay at the 1st-tier portal.

Google, Amazon.com, and eBay have successfully promoted their brand as excellent web sites offering a search engine, e-commerce, and auctions respectively. Moreover, Google and Amazon.com differentiate themselves in terms of the variety of functions, and eBay has far more auctions customers and items than Yahoo.

These companies, named "excellent specific companies" have "horizontal modularity", which Fine described in his book, 'Clockspeed' [Fine 98], and they provide their services not only to Internet portals, but also to other major web sites and even personal web sites. This means, these companies' fields go beyond their primary web site; they extend their service to all over the Internet world. They can provide their services to other web sites, and obtain revenue from those web sites, or create more brand awareness from their services offered on the web sites (Figure 4-3).

According to Fine, a horizontally modular company would have power when a vertically integrated company's strength is not apparent. According to Christensen [Chri 97], when a vertically integrated company's service becomes 'more than good enough', the value chain moves to the modularized components suppliers' companies.

I describe these excellent specific companies' operations in more detail in the following sections.

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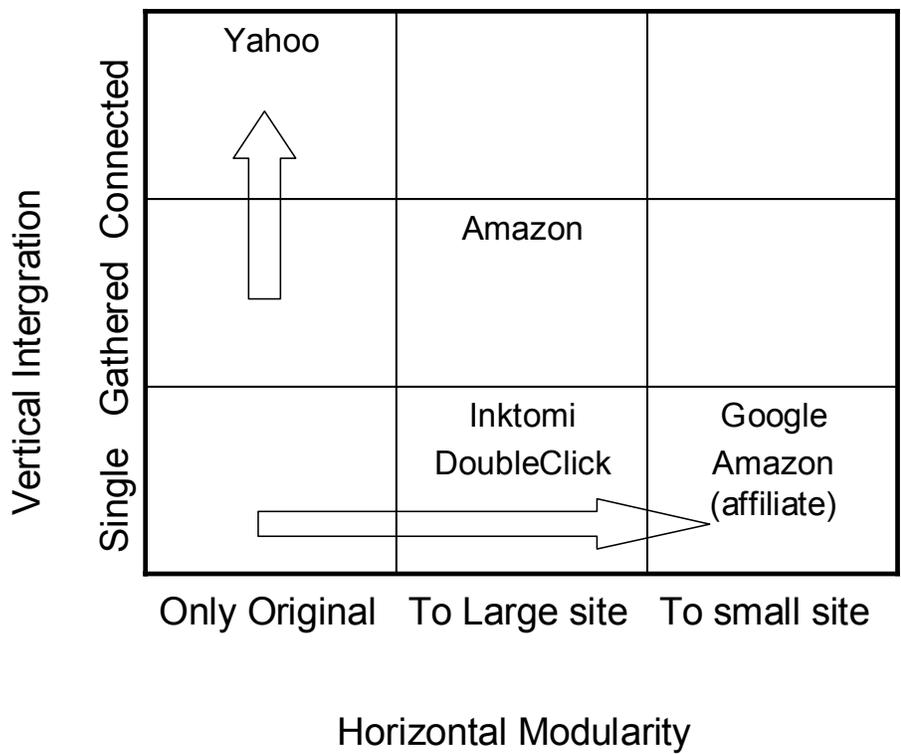
Figure 4-3 two dimensional analysis in Vertical integration and Horizontal modularity for internet web sites *(Source: Motohashi)*

Google

Google basically provides search engine capabilities, and outsources its search function to another company's portal or web site. Search functions used by non-portal web sites usually target their own web sites pages search and let users find information more quickly.

The emergence of Google certainly impacted the search engine and online advertisement industry. Before the emergence of Google, Yahoo and other portals were using Inktomi or their own search engine technology, and online advertisements were mainly banner-based in major companies' web site. Google has provided its excellent search engine technology for free to end users, and is receiving revenue from outsourcing to the other portals or advertising that target the keywords that Google users input. Those two Google's revenue has grown rapidly. The result of Google's emergence prompted Yahoo to buy Inktomi and Overture [Yaho 02] [Yaho 03]. Overture is a major keyword-based ad company, which had bought Altavista and Alltheweb, two major search engine companies. Yahoo no longer uses Google's technology and use its own search engine technology based on Inktomi and Overture, and has strengthened its vertical integration.

Google's search-keyword-based advertisement is for large and small companies. It's easy and cheap to publish. Google also provides advertisements outside of the Google search. Any person with a web page can add Google text advertisements, called Google AdSense, to their web page and get revenue when someone clicks the advertisement on the person's web page. This service is considered as a horizontal modular for individual's web

pages. Google's web site is now, so to speak, the marketplace of search-keyword-based advertising.

Amazon.com

Amazon.com, a top e-commerce web site, started to sell books at first, but over time, it expanded its products to a variety of items, and now, it started to sell its technology itself and provide a marketplace for each item.

Amazon Services is an Amazon.com subsidiary that provides outsourcing services with Amazon.com technology. Toys'R'Us, a toy company, is a typical customer of Amazon.com. Toys'R'Us sells its products through Amazon.com technology. Thus, Amazon.com's technology has become modularized, and is provided to other companies via a horizontally modular company [Amaz 03]. This modularity also virtually integrates Amazon.com and companies' web sites, which use outsourced Amazon.com technology; thus, Amazon.com has even more power and presence in the e-commerce industry. Amazon.com is also one of the threats against portals that also provide e-commerce functions.

Amazon.com now provides affiliate functions to other web sites. Any web site can list its favorite books or DVD information using information and links to Amazon.com. The benefit to the web site owner is a reward system. When someone buys a book through the web site, Amazon.com pays money to the web site owner. This type of affiliate function is the same as Google's advertisement, horizontal modular for individual's web pages.

Amazon.com also provides a marketplace for other item providers, such as

second-hand booksellers or personnel and placement firms. Amazon.com sells its item stock but customers also can see other sellers' prices at the same time. Thus, customers compare prices and conditions, and select one of the sellers including Amazon.com, which receives a margin from the sellers [Amaz 01].

Moreover, Amazon.com enables its affiliate function with web services technology and functions so that anyone can integrate Amazon.com into their web site or other applications. One example of this integration is with Microsoft Office [Beck 03]. Amazon.com provides a plug-in module for Microsoft office, and users can buy books or DVDs through MS-Word or other applications. Web services technology is relatively harder to integrate than the affiliate function, but it's powerful and a great example of horizontal modular.

eBay

The strength of eBay is its customer base. The advantage of an auction service, in other words, a person-to-person trading service, is tremendously affected by the number of customers and their network effect. In North America, eBay is much stronger than other auction sites such as Yahoo's auction service in terms of the number of users and items up for sale. On the contrary, Yahoo Japan's auction service is much stronger than other Japanese auction sites. eBay once entered Japan's market but quit after a couple of years [eBay 02]. Yahoo Japan started to charge a monthly fee to auction users, which did not reduce its customer base too much, and Yahoo Japan still holds considerable power in the auction service. The person-to-person trading service creates a huge network effect.

eBay is now providing web service modularization functions that are used by people who have many items to sell or auction, such as car dealers and electronics distributors, to reduce work load uploading items list to eBay [eBay 04]. Small business companies also use it not only for uploading items, but also for showing presence of the company, a kind of advertisement. This web service function is also a horizontal modular.

4.3.2. Internet access service provider that has large customer-base

Another threat is Internet access service providers (ISPs) whose advantage is their strong customer-base and the fact that they have each user's account associated with a monthly ISP fee payments. Credibility and ease of use with service convergence are ISP's advantages.

Yahoo also has a partnership with SBC in the United States, and Yahoo Japan has its own broadband Internet access service, Yahoo BB. But, traditional ISPs are still strong because of credibility.

I describe two typical ISPs, one is AOL in the United States and the other is NIFTY-Serve in Japan later in this section.

AOL

AOL is the most famous ISP in North America. AOL is continually making decisions regarding new services, technology and marketing partnership with excellent companies. AOL has had partnerships with eBay, Amazon.com, and Google to provide the

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best services to its customers. This means, AOL does not care who owns each technology, but does care how to provide the best services its customers. Thus, AOL is a great partner for companies that have a strategy of horizontal modularity to attract new customers quickly. That's AOL's advantage.

NIFTY-Serve (Japan)

NIFTY-Serve, one of the major ISPs in Japan, has been providing online services long before the Internet became popular, and is the No. 1 ISP in terms of its customer base. One piece of evidence that highlights NIFTY-Serve's strength is the report on blog service users in Japan provided by NetRatings Japan [Netr 04]. This report shows that NIFTY-Serve acquired its weblog service users much faster than others. NIFTY-Serve is not a leading blog service provider, but has grown very rapidly after deciding to start this new service.

4.3.3. Environment changes

The Internet industry is also related to the computer software and hardware industry. The computer software industry includes operating systems and the computer hardware industry includes mobile and devices such as identification hardware. Related technology innovation would affect the Internet industry so we should look at it carefully.

Operating systems

Microsoft is one of the most important players in the Internet industry. Microsoft undoubtedly holds much power in the Internet industry and also has its own major portal. Moreover, it own much of the industry's key software such as its web browser, media player, and single sign on, email/instant messenger, Internet access service provider, and backend servers. MSN, Microsoft's Internet portal, is actually a 1st-tier portal.

Microsoft says that it is a platform company, but an Internet portal could be a platform, so Microsoft's strategy and movement should be observed carefully. In fact, Microsoft is trying to leverage its search engine technology and is expressly competing with other search engine companies [McCu 04].

Mobile

Mobile Internet access has become popular, and the next generation mobile standard, 3G, has been diffused quickly. 3G mobile phones have higher bandwidth, from 144 Kbps to several mega bps, which suggests that cell phones are becoming a broadband Internet access terminal.

Cell phone technology has been quickly advancing. NTT DoCoMo's 3G cell phone has a capability of video chatting that can connect to Internet video chats. Cell phones with camera capability also allow users to upload photos to the Internet. Consequently, another Internet application is emerging via the cell phone.

Identification hardware

A typical identification hardware is IC card technology. The Japan market has several types of IC card specifications which compete with each other to get market share. Cell phone is another identification hardware which are useful not only for identification but also for payments.

These technologies enable payment method or account service from outside the Internet. Convergence between online account and identification hardware is a possible solution.

5. Broadband Internet portal strategy analysis

This chapter describes the strategy for broadband Internet portals. I have already discussed the strengths of the first position portals (1st-tier portals): quality of services, single account management for a variety of services, sticky service, and brand awareness. Due to the emergence of broadband Internet and its superior speed compared to dialup services, individuals and companies tend to upload information or put their information online to use online services more efficiently, but this tendency increases security and privacy concerns.

In the broadband Internet environment, the strategy for companies competing with 1st portals involves three steps described below.

- To provide modularized services, particularly account management, to reduce the advantage of 1st-tier portals that vertically integrate with single accounts
- To leverage individual activity information management service to provide sticky service that will increase the customer base
- To enhance security/privacy and high speed upload stream broadband Internet to enhance leverage on people's increased use of online services

The following sections describe in more detail each idea. First, I examine the user behavior dynamics of broadband Internet, and we show the current trends, which include the decentralization of web site accessing and increasing security issues. Next, according to

these trends, I analyze each broadband Internet portal strategy, and describe why creating and providing excellent modular services and modularized single sign-on account management are important steps according to the framework. Also, I describe the current trend of personal-activity information management services that are still being developed and I discuss a broadband Internet strategy of for telecom companies to enhance upload stream broadband speed and security.

5.1. The dynamics of broadband Internet

This section describes the changes in user behaviors from narrowband dialup Internet access to broadband Internet access. This dynamic shows a decentralization of user access web sites and the importance of security.

Figure 5-1 shows how decentralization of user access in broadband Internet works. The diffusion of broadband Internet services had prompted individuals and corporations to use online services more and to try to ignore how much hours they spend online. So, people tend to find more services just because they can do so more easily. This has led to decentralization and lower switching costs.

However, when this decentralization occurs and people try to use several services, they soon realize it is too complicated to use all the services frequently because they need to remember the URLs, their user ID and password, and click on too many links. They may also try to go back and forth, to compare the information or copy some sentences or links. Thus, this kind of time-consuming process suppresses the decentralization.

Diffusion of
broadband internet

+

Easiness of trial for
other providers'
services

+

Competition of
service quality

+

R

Average number of
service providers people
used

−

+

B

Difficulty of managing
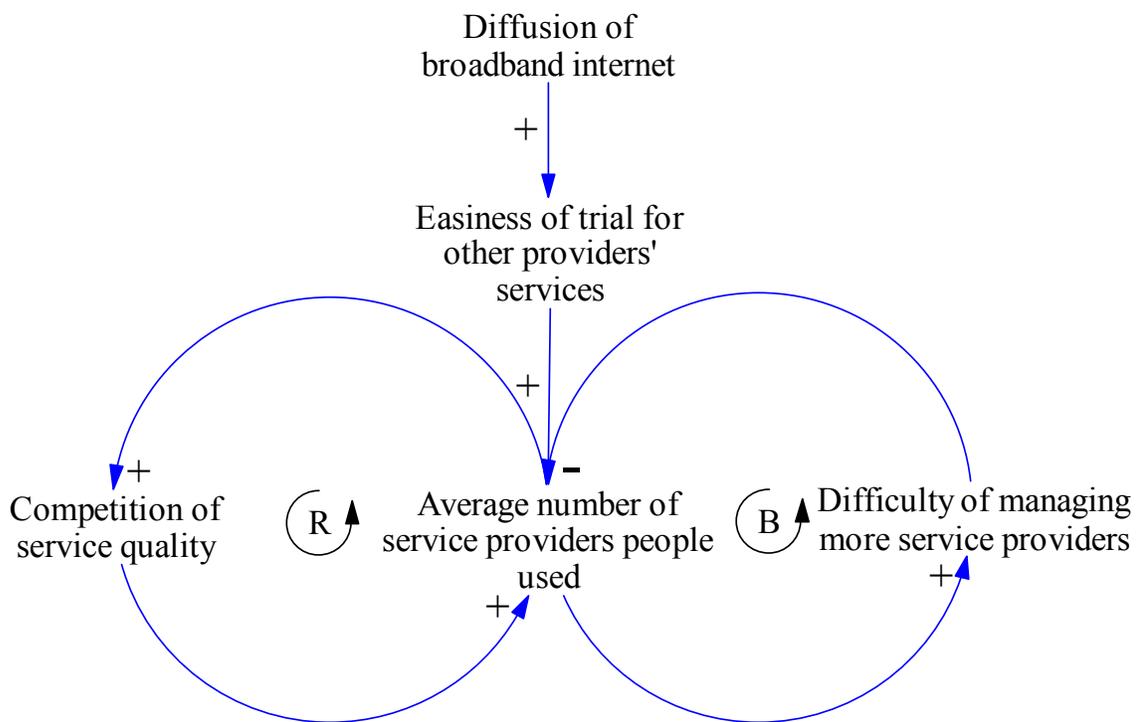more service providers

+

+

Figure 5-1 The dynamics of broadband internet portal:
Decentralization *(Source: Motohashi)*

In conclusion, Figure 5-1 shows how broadband Internet services are decentralized in terms of Internet services. Traditional portals are literally gathering and aggregating services on their web sites. So theoretically, this balancing loop shows portals' strengths, but the competition among each service provider results in decentralization.

Figure 5-2 shows increasing online service use and concerns for security/privacy. With broadband Internet, there is no barrier between the client-side and network-side, which means that people have started to use interactive online services frequently and have begun uploading their own content to use the network-side functions. Another driver that encourages uploading content is the ability to share uploaded files with others. Thus, more content will be uploaded and stored on the network-side. But, there is a concern about security and privacy for individuals' own content. So, the security issue suppresses uploading more content.

When more content are uploaded, service providers try to improve their own service to get more customers. Improving services also increases the number of customers because improved service quality attracts more people to use the services. So, this is a reinforcing loop for uploading content.

It appears that online services are a low-end disruption type (Figure 5-3). Early on, without any online services, people used their computers with software. Software has helped people to create and maintain their own content. To adapt to customers' needs, that software has been progressively improved. The value chain is basically helping to sell software at high prices.
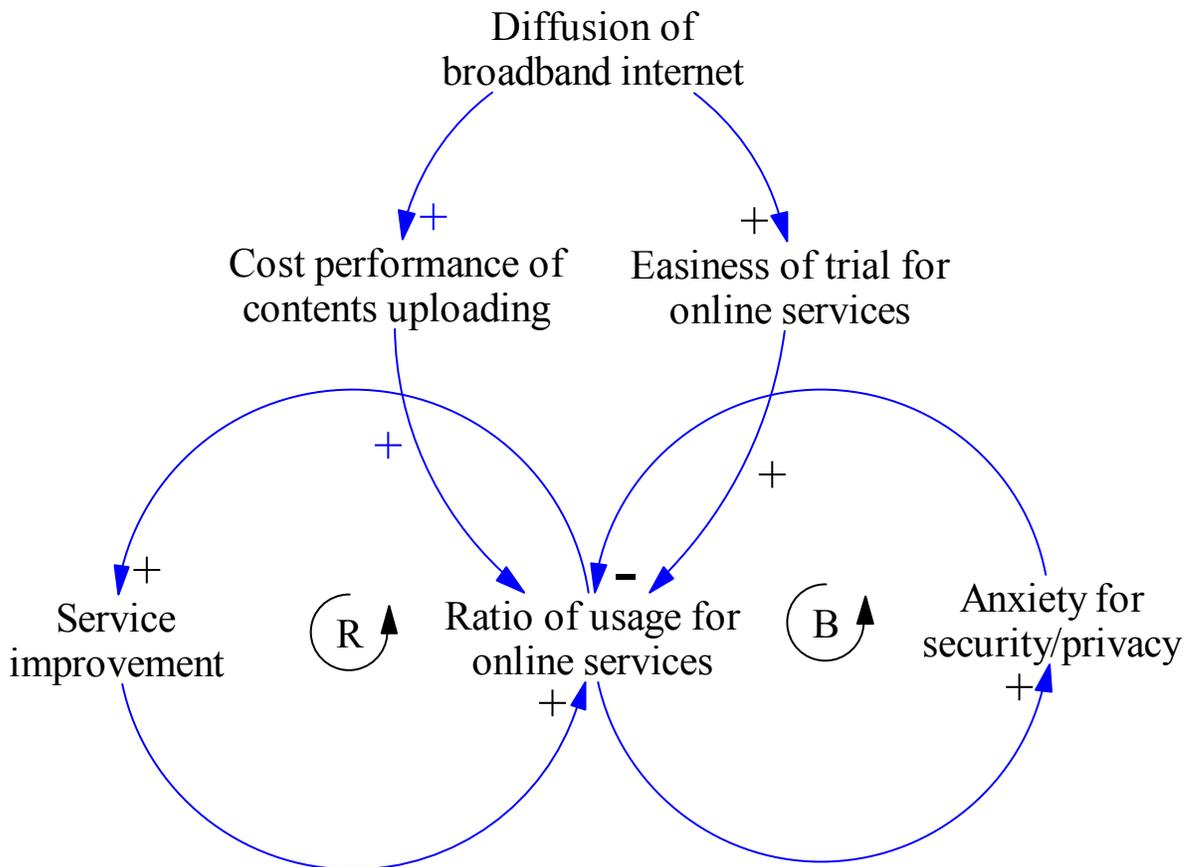
Figure 5-2: The dynamics of broadband internet portal:
Security/Privacy issue *(Source: Motohashi)*

Over the past five years, broadband Internet emerged and some service providers have started providing services similar to the software, such as email, that people have been using. Those services tend to be of poorer quality, but much cheaper than the traditional software. So, people who did not care about the comparative quality of online services started using these services because they were cheap — they had no uploading costs and a lower service price. Later on, the increase in the number of customers helped to improve those services due to competition, and they will have become adequate or satisfactory. As broadband Internet has emerged, the traditional software business has shrunk.
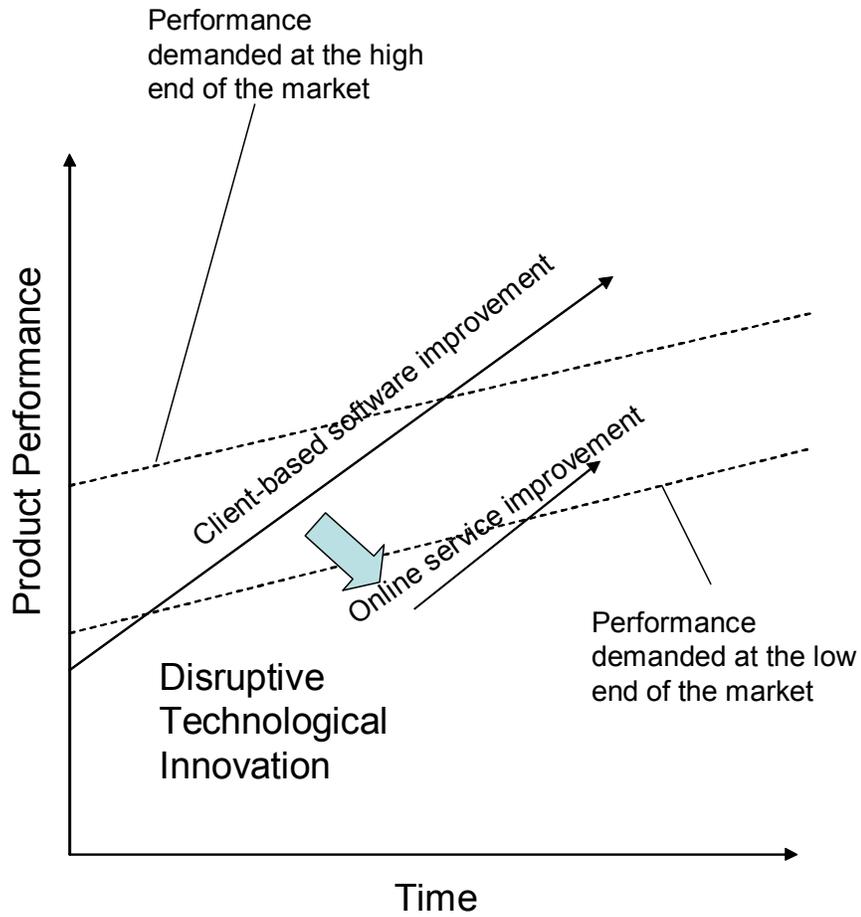
Figure 5-3 The impact of online service industry against client-based software *(Source: Christensen: Innovator's Dilemma, p.xix, modified by Motohashi)*

5.2. Strategy #1: Creating and providing modularized account management service

As described in the previous section, under the broadband Internet environment, the service provider switching cost has become lower. Thus, when new excellent service has come out in broadband Internet, people have been able to switch to the service more easily. However, people have been frustrated by the complicated steps they have needed to access various service web sites. This complication counters the low switching cost. This is a balancing loop.

Thus, one of the strategies 2nd-tier portals can take is not only to provide better service, but also to weaken the balancing loop. 2nd-tier portals should reduce the difficult process of managing many web site accounts. To figure out what to do, first, we must examine in greater detail why people change their service providers and then describe a strategy to weaken the balancing loop.

There are three reasons why users switch service providers. The first is because the current service may not be "top of the line"; the second is because users happeningly realize there is a much better service, the third reason is because the switching cost is relatively small and the new service promises to be far superior.

When people feel a service is not good enough for their needs after scrutinizing the service, they look for another option. This is reasonable and easy to understand or observe. However, when some new and excellent service that is much more useful or efficient than a current service emerges, people usually learn about the new service from friends or news reports, and some of them try to use the service and eventually switch to the service. A

network effect occurs when many people think a service is good because they enthusiastically tell their friends about it. Also, If the cost of learning a new service is relatively high and customers spend much time trying to figure out how to use a service, users tend to want to stick with their current service provider because they are deterred by the time and effort required to learn a new service.

For 1st-tier portals, this kind of new service is a threat and they need to spend more money to improve their service to compete with the new service. If the customers of a 1st-tier portal continue to be satisfied with the service, they rarely want to switch to other services. That is because people want to spend time more efficiently, so they concentrate on fulfilling their needs with ease of use. Thus, a 1st-tier portal could implement a strategy of vertical integration. Moreover, 1st-tier portals should not only improve their services but also watch potential competitors carefully to react to the emergence of new and improved services.

2nd-tier portals generally have a smaller customer base than 1st-tier portals, and the brand awareness of 1st-tier portals generally is so good that 2nd-tier portal's basic strategy should not be whole vertical integration. Actually, one of the strategies for 2nd-tier portals is creating excellent services. Contracting for a horizontal modular service may be acceptable, but, horizontally modular companies, such as Google, Amazon.com, and eBay, also pose threats for portals. So, 2nd-tier portals should have their own unique strengths.

According to the analysis of business dynamics of internet portal, the strengths of 1st-tier portals are quality of price, services, quantity of services, customer base, and brand awareness. A 2nd-tier portal should attack all of these strengths to compete with 1st-tier portals. One of the key technologies in 1st-tier portals is account management which

increases switching costs and bundling pricing with quantity of service. 2nd-tier portals may be able to have almost the same amount of services compared to 1st-tier portals, but they would not be in a strong position, just a comparable one. We need to find a differentiator.

I have already examined horizontal modularity which is a key strategy for Internet portals. Applying this strategy to account management service is the best way to execute horizontal modularity strategy. The strength of 1st-tier portals is vertical integration and the key technology of vertical integration is account management. As I have already discussed regarding the decentralization of services in web sites, people visit more web sites when they start using broadband Internet. When a 2nd-tier portal provides account management outsourcing services, people feel it is easier to access several web sites with one account. That means this account management service binds not only own web site but also all other web site if the web sites accept to use the account management service.

In conclusion, to compete with 1st-tier portals, 2nd-tier portals should not only improve the quality of their services and brand awareness, but should also "create, provide, and outsource" modularized services, and one of the most important modularized services that 2nd-tier portals must create is an account management service.

5.3. Strategy #2: Providing individual activity information management services

As I described in Section 5-1, online services are the low end disruption of client software. When online services emerged with broadband Internet, people tried to upload their content to process and manage their content using service functions. This trend has continued as broadband Internet penetration has increased.

Another approach that can enable 2nd-tier portals to compete with 1st-tier portals is to create sticky services. Usually of community services customers are very loyal to their portals. As we described earlier, auction and bulletin board services are typical examples of sticky services. If a 2nd-tier portal can provide a new type of sticky service, such as new community services, this service will aggregate and retain customers.

This section describes a service that can manage personal content or information as one of the best possible sticky services. I call this an 'individual activity information management' service, one that allows customers to upload and manage a variety of content. I see that this service is emerging in tandem to the diffusion of broadband Internet.

To describe why I chose this service, I prepared a model to explain the transition of the content management process for broadband Internet. Figure 5-4 shows the five-stage model of online content management function.   At the beginning of Internet era, Internet users were sending and receiving information via a network to store and treat the information at client computers, because the network had very low bandwidth, so users could not access and control the network servers easily. That is why information was sent

and received on the client computers, and this is the first stage of online service (shown in the top of the figure) (no online services). For example, people read and wrote email on their own computer and connected the computer to a network only when these messages were transferred.

The next stage shows the emergence of broadband Internet, after which people could receive much more information than in previous stage. Because much more information could be stored and saved on the network due to its larger bandwidth, people began not to worry whether information could be stored in their own computers. So, they had been using the information without storing it — they used information and discarded it. An example is online email service. People read and write emails online and they store the email or attached file only when they need to.

At the next stage, service providers started to enable the information management function on the service because there is so much information and users began to feel more comfortable with the service. For example, email service now has functions such as filtering, forwarding, SPAM blocking.

The fourth stage is the customization of several services. This is a kind of personalized web page that includes various services such as email, blogs, news, and shops. People can pick up any service for each own web page, with a customized service level. For example, people can read headline news, email headers, and online buddy lists from instant messengers all at one time. Actually, the My Yahoo service offers personalized news clippings that include local weather, local news, and flight ticket information.
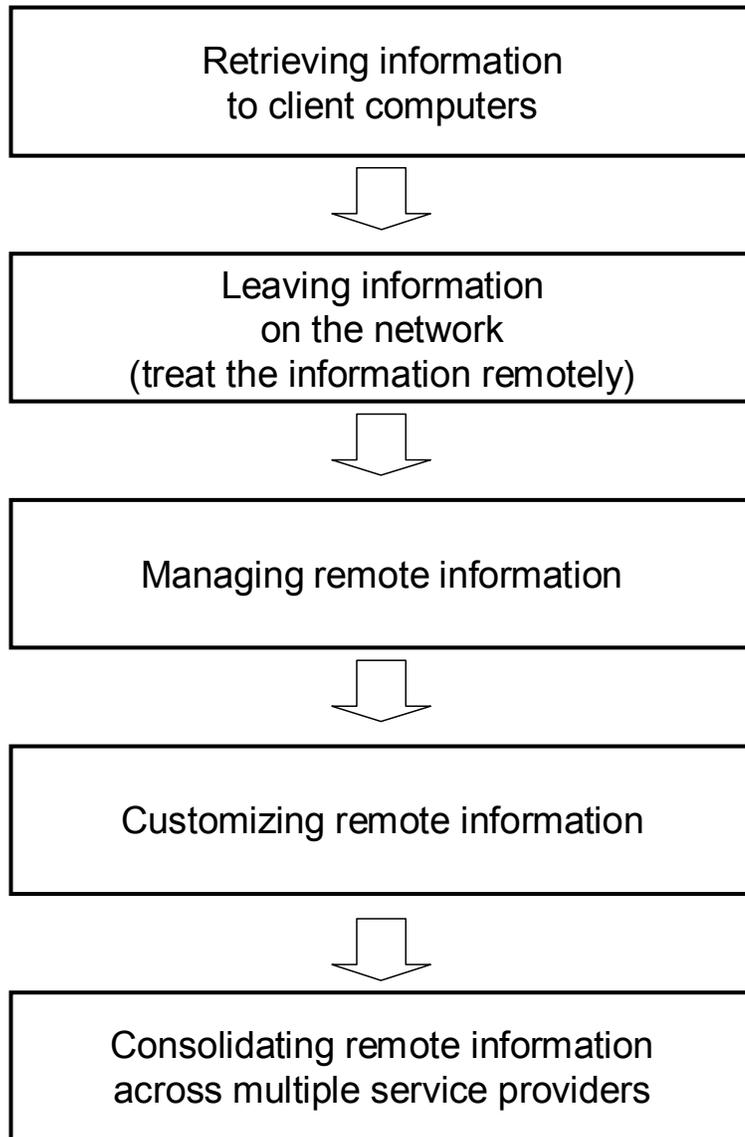
Figure 5-4 Five-stage model for transformation of internet application services *(Source: Motohashi)*

The last stage, service consolidation, occurs across service providers. For example, a Japanese company, Hatena, provides a service that retrieves updates of web sites that each user has registered. So, the users can readily know which web sites have been updated [Hate 02].

We presume this transition occurs not only for general information on the whole Internet, but also for individual activity information management services. As broadband Internet has improved, not only has download stream bandwidth increased, but also upload stream bandwidth has increased. So far, several services treat users' uploaded information, such as online storage, online photo album, web email, web chat, blog, and friend or buddy lists.

Customizing Individual activity information is a current trend. Hatena also provides a blog service and customizing aside information with a watch bookmark list. So, when people see their own blog service, they can also see the updated notice of bookmarked web sites. Another example is a Japanese social networking service called Gree [Gree 04] that consolidates blog news updates titles into the user's profile so that other users can recognize a profile and blog update simultaneously.

There are two more examples related to an individual activity information management service. One is Amazon's subsidiary company, A9's search engine, which remembers what a user's search keywords were, and what the user clicked so that he/she can customize and reuse the information and easily reuse keywords or revisit URLs [Batt 04]. The other is Google's Gmail, which gives users 1 GB mail storage. Google is thinking of providing personalized advertisements using the email that users are storing

[Goog 04]. Users will not have to delete emails because the size of email storage is so huge. Thus, both services are providing individual activity information storage. Interestingly, both have a privacy issue. I will discuss this in the next section.

Individual activity information management service is sticky is because personal information is heavily 'stuck' to the person. People never find their own emails on another service except for its original mail server. It is hard to move their own blog service because the data is only on the blog server. There is no other substitute of personal data. Treating individual date very wisely is one of the best ways to retain users.

In conclusion, individual activity information management service is one of the most sticky services, and blog, social networking, and groupware service adds more stickiness to the service because it becomes "the owner's community".

5.4. Strategy #3:   Enhancing upload stream and security/privacy

When 2nd-tier portals have ISPs, they can take two more steps to compete with 1st portals. One is preparing high-speed upload stream broadband Internet access, and the other is improving security and privacy services. According to Figure 5-2, treating security and privacy issues carefully is very important. When a portal makes it clear that they have firm security and privacy protection, customers will prefer the portal with high security and privacy services. This suggests that we try to weaken the balancing loop in Figure 5-2.

As we described before, broadband Internet has two categories of bandwidth, download stream and upload stream. ADSL has much faster download stream than upload stream. For example, in a typical ADSL service, the download stream speed is 1.5 Mbps,

but the upload stream speed is only 144 Kbps.

When ISPs prepare high speed upload stream broadband Internet access, users will start to feel there is no border between the inside and outside networks, which means they will want to use online data storage as a personal use. Actually, there are many services that offer online data storage, such as online file sharing, online photo albums, blogs, and email. Many service providers had introduced their services with the benefit of 'sharing with others', but many of users used these services for personal use.

Consequently, more people began uploading much personal information on the net. The most important issue has been security. Many people worry about security when they upload their information. So, if an ISP can provide good security protection services, the ISP can gain customers' confidence. Because protecting security becomes harder when the service provider people use is far from them, ISPs could provide more secure service to their customers than others so that ISPs are the most close to the customers.

To improve people's impression of ISPs' security quality, there are two approaches, brand credibility and continuous commitment. Promoting brand credibility is a good way for ISPs to help customers understand and select the service. It takes a long time to build brand credibility, but traditional telecom companies tend to have credibility, so they have an advantage today. Offering continuous commitment to quality security is also good way to promote the company's performance, but it tends to be difficult for companies to convey to customers the quality of their security because what is best for customers is when 'nothing seems to happen' and so they cannot distinguish how good this security is because when it is good, simply nothing happens. Even though offering continuous commitment is a good tactic, it still takes a long time to build credibility and customer confidence in a

firm's quality of security.

Thus, promoting improvements in security is most suitable for traditional telecom companies because they have already had a brand name and credibility. So, traditional telecom companies should use their own assets to address these important concerns. As traditional telecom companies tend to offer higher prices and less customer support, they especially should address these weak points as well as provide new services.

In conclusion, telecom companies have two advantages over 1st-tier portals — improving upload stream broadband Internet bandwidth and leveraging security oriented approach.

6. Concerns in implementing this strategy

We have presented three analyses for broadband Internet portal strategy — modularized and outsourced account management service, sticky services based on individual activity information, and improvement of security/privacy and upload stream speed. This section discusses issues that need to be addressed for the implementation these strategies. Several questions must be addressed:

● Who uses this service, as a web site to view and as a customer?

● How will competitors react to these strategies, especially 1st-tier portals?

● How can a firm promote the quality of security/privacy to their customers?

● How can a firm, in promoting its services, differentiate its service from others?

● What are effective marketing strategies?

● What is the business model? Who pays for the services according to the strategies?

● What should be the first thing to do?

6.1. Partnership with other players

When a player starts a modularized service and says, "We are ready to serve," what do other companies think? Usually, they will refuse it at first. They may already have the technology, service, and customers related to the modularized service. Based on the case of Google and Yahoo as we have described, even an excellent service takes a long time to outsource it to others, and sometimes, competitors decide to compete with the excellent

modularized service.

Thus, firms must consider how to have a relationship with other service providers and think of service improvement, technological familiarity and a long-term strategy at the same time. These affect customer satisfaction, cost, and sustainability respectively. There are three types of relationship with others, licensing, interoperable partnership, and going your own way (Figure 6-1).

Licensing means that other players buy the entire service from the modularized service player. When other players do not have a similar service or if their service is not competitive, the players will buy the service. It is an easy way to improve service, but the issue of this model is the cost of service integration to maintain high-quality usability of the player's service. They should consider not only how much to pay for the license fee, but also how easy it is to incorporate and maintain the service because the costs and quality of a service affect the decision to buy it. They also should think of a long-term strategy, because when their customers become heavily dependent on the service, this will make it difficult to discontinue the service. Actually, the case of Google and Yahoo tells us that the idea of outsourcing is sometimes risky, because the small outsourcing company becomes big through its contracts. Google's successful lock-in strategy was to provide the excellent service that many users wanted to use immediately and frequently, and other players soon realized that the customers really wanted to use a better service. To satisfy customer needs, the other players reluctantly switched their service to the better one regardless of whether they had their own technology or not. Google is now going to expand its services to be yet another portal and it will pose a real threat to the other portals.

	Licensing	Interoperable partnership	Going each own way
Service Improvement	Immediately	Gradually	Individually
Technology familiarity	Difficult consolidation	Easy inclusion	Differently
Long term strategy	Hard to replace	Easy to discontinue	Freely

Figure 6-1 Three types of relationship between modularized service player and others

The other main issue is building an interoperable partnership which often means that other players will not want to use the modularized service but will want to use the data or functions of the modularized service. This situation happens when the service of another player works well and it is hard to replace it because it is tightly connected to the whole system. In this situation, the modularized service should have the option to provide its own data according to the standard format. At that time, other players can have a loose dependence on the modularized service, so they can try to use it more easily. However, the other players would need to improve their service by themselves and it might take a long time to do it, which will likely affect customer satisfaction. To facilitate the interoperable partnership, standards are an effective way. For example, RDF or RSS, which uses the XML format, is a good way to provide information to other players, so modularized service providers should consider how to consolidate the standards related to the modularized service [W3C 04].

The last option is going one's own way. The benefit of this approach for other players is to keep their own strategy without any constraints from outsourced companies. The issues are how, when, and how much to create competitive quality of the service. For example, Yahoo's strategy to discontinue its service outsourcing from Google was to compete with Google by trying to create a competitive search engine technology. Yahoo has spent much money and time by buying Inktomi and Overture to make sure its technology is competitive with Google's.

6.2. Competitors' reaction: Barrier to new entrant

When a 2nd portal starts a modularized service, portals or other competitors could do the same thing, and many of them will have advantages such as brand awareness and customer base. So, basically, the barrier for new entrants can be quite low. However, 1st-tier portals may hesitate to provide modularized services for two reasons.

First, their crucial revenue model is based on advertisements on their web site. When 1st-tier portals start a modularized service, they often think they should sell advertisements on the modularized service, or lure the users of modularized services to their web site to let users see the advertisements. So, one of the strategies of 2nd-tier portals starting a new modularized service is offering a "no lure, no advertisement" service that provides excellent service. One of the strategies 2nd-tier portals take should be to do what 1st-tier portals cannot do. A good example of this strategy is Dell. When Dell started their online and telephone based sales, Compaq or HP could not take the same way because their distributors resisted the idea. The distributors worried that the sales and revenue would be reduced when online sales started with cheaper price than ones that the distributors set. 2nd-tier portals should take this example into consideration.

The other reason is that 1st-tier portals need to renegotiate with their users of their existing service to expand the service. It is easier and faster to provide modularized service to customize existing services, but often users get angry when 1st-tier portals start a service without any acknowledgement. Thus, 1st-tier portals need to take care of their existing customers, and that can take considerable time and effort.

In conclusion, the barrier to new entrants is low and 2nd-tier portals should pursue a strategy that proves difficult for a 1st-tier portal. The 2nd-tier portals strategy will be effective if 1st-tier portals cannot do the same thing [Port 85].

6.3. Building trust in Security/Privacy service

As we described earlier, security and privacy are the most important issues in broadband Internet. I discussed the business issue, and now we should discuss how to win customers' trust in security and privacy related service. Building Trust usually takes long time because customers realize a service is worth to trust when the service keeps its quality high. So there is no shortcut to create trustworthy service.

To create trustworthy service, the service provider should care anything customers care. Especially, technology, law, and ethics are crucial issues for getting trust from customers.

Technology improvement is unpredictable, but in terms of security and privacy issue, the users' resistance to storing privacy information on a server might be high. So, it is also a good tactic to create a distributed storage network. In other words, private and privacy information is stored on a local disk and the customer must connect to the network to transfer or communicate privacy data. Looksmart, a major search engine company, provides distributed search engine technology [Grub 03]. Users can download and install the software and it connects to other computers to share the web site update index. This type of service may be preferred by people concerned with security and privacy issues.

Law and ethics are also important. There are so many breaches of confidence and accidents in the Internet world. Also, there is much resistance to change. For instance, Softbank BB's customers' list was stolen [Soft 04], customers have resisted Intel's CPU chip identification [Junk 99] and Google's email service with personalized advertisement

[cnet 04]. Even when firms address these issues, sometimes the problem becomes bigger than expected.

6.4. Differentiation and Lock-in strategy

After getting customers, retaining them is the next step. According to Hax's strategic options [Hax 03], there are three options, best product, total customer solutions, and system lock-in.

Providing best product is a traditional way to get and keep customers. Product differentiation and cost reduction are obviously a good way for providing a service. To achieve creating best products, intellectual property and process innovation should be hold. Total customer solutions are also a great idea. Focusing on niche market or finding customers real demand is also a good way to capture value.

But, in this case, system lock-in is a better way to get revenue. As we described before, providing sticky services is one of the lock-in strategies. When customers understand it is very useful and they already have relationships with their friends using this service, they continue to use it. So, one of the strategies to lock in users is providing a function to gather friends, such as AOL's Buddy List and IM. When many friends use the same service, it is more convenient for the user. A better idea to provide new service is to ensure not only user stickiness r but also stickiness for the user's friends.

6.5. Marketing approach

One of the best online service marketing approaches is viral marketing because it can minimize marketing costs and attract customers quickly. In the Internet bubble era [Perk 99], so many dot com companies spent too much money for advertising and went bankrupt. Of course, brand awareness is also important but it is useless unless the service provides excellent experiences for the people who first visit the web site for the service.

To provide viral marketing, it is a good idea to lead people to the service you prepared almost automatically. As I mentioned before, providing modularized service is also good to provide viral marketing. During providing the service, many people see the service on each web site, so each modularized service should have some link or function to lead users.

To first attract people to use the service, the barriers to usage should be as low as possible. Amazon's famous patent of one-click purchasing facilitates the buying process [Amaz 99]. Ideally, only one-click equivalent online service is suitable for attracting new users quickly. So, it is the best for users to know and use the service with just one click or without click. Also, we should be careful not to do much about this kind of lure because users usually want to use a service only when they really want to use. This approach also conflicts to the idea in section 6-2, so figuring out the customers needs is necessary to provide this kind of service successfully.

6.6. Business Model

The most important business issue is, actually, how to get revenue from this service. Typical business model for online service is advertisement model, but I think there are two other business models. One is providing not only information but also marketplace.

Amazon and eBay's marketplace services are more profitable than retail sales and there is no item for service providers to prepare to sell. So, one of the good strategies for 2nd-tier portals to get revenue is providing marketplace service for users.

The other is charging for providing security and privacy protection options for users. Providing a service for any person with free is really good for people but it is hard for a service provider to get revenue from the users. However, when the service provider prepares options for users to secure their data, some will buy the options. For example, in business use, users have confidential data and files, so users definitely hesitate to upload such confidential information to publicly opened service, so business users are happy to buy the high security enabled intranet version when the option is available.

Another approach is finding users who have not used broadband Internet before. So, targeting not only fixed line users but also cell phone users is a good way to develop a business model. There is a mobile network outsourcing service, MVNO (Mobile Virtual Network Operator), so broadband Internet portals could become MVNOs and provide niche broadband services via 3G cell phones [Dani 04].

6.7. Strategy Execution

To execute this strategy, the question arises as to what 2nd-tier portals should do first. Figures 5-1 and 5-2 show that when higher-speed broadband Internet and security/privacy service improvements are made, it takes more time for people to realize it is really useful, because building infrastructure requires time and resources and convincing people to trust in the security/privacy service also requires effort.

However, service quality competition has become more severe, so telecom companies should not only create online services but also create trustworthy relationships. I think there are three stages for building a new service for broadband Internet users (Figure 6-2). Early in its lifecycle, a company provides basic services with confidence to its users and readily attracts users but without profit. Over time, the number of users will increase and the company should be profitable. Later on, the more users there are, the more value must be added to the service resulting in much more profits. Thus, to optimize this process telecom companies should figure out when each stage starts and ends and how much money is needed to move the company to the next stage until the company becomes profitable.
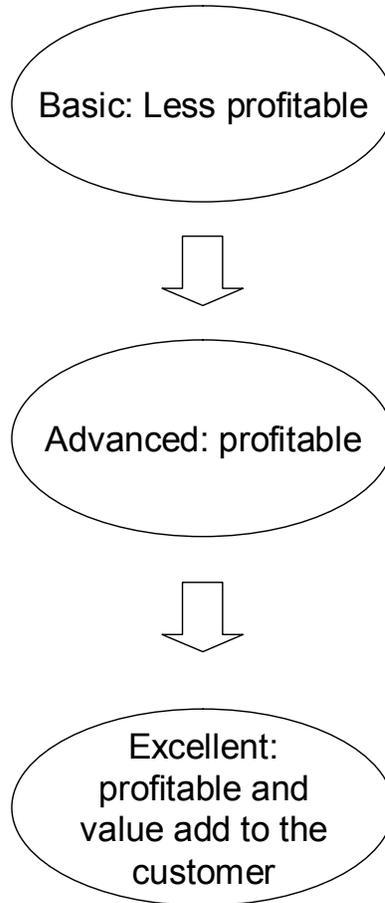
Figure 6-2: Three-stage model for building business model
for broadband internet portals

7. Conclusion

This paper analyzes the changes that Internet portals and other service providers need to make in their strategies based on the diffusion of broadband Internet access service. I first described the trends and characteristics of broadband Internet in Chapter 2 and I highlighted the three crucial characteristics of broadband Internet: no marginal fee and always connecting, higher maximum and higher average speeds, and I described several emerging Internet applications that have been impacted by these characteristics.

In Chapter 3, I presented several frameworks that can be applied to the broadband Internet service industry. I described the transition between vertical integration and horizontal modularity by borrowing from Fine, disruptive innovation from Christensen, system dynamics from Sterman, and I describe some useful concepts, such as system lock-in, network externalities, and standards.

In Chapter 4, first, I examined major parameters that affect Internet portal strategies. The parameters are price, quality of services, quantity of services, the number of customers, brand awareness, and portal stickiness. I see that the dynamics of Internet portals — they have reinforcing loops which tell us that the first mover and grower has the advantage for achieving a major position. We also discuss the threats facing Internet portals such as Amazon.com, eBay, and Google, and various methods to bolster portals' business model.

In Chapter 5, I first described the dynamics operating in the broadband Internet environment. The diffusion of broadband Internet affects two dynamics. The first is the decentralization of services that people use. Broadband Internet lets people try to visit more web sites, but the effort to manage so many web site accounts can become

burdensome, so this impedes the decentralization of web sites that users access. The other dynamic is the emergence of online services because many people feel comfortable enough with online services and that there is no reason to use client-based software. But a security/privacy issues also prevent many people from using online services.

Next, we examined the viable strategies for 2nd tier telecom companies that compete with 1st tier Internet portals. We propose three technology strategies.

The first one is outsourcing a modularized account management service to not only large-company web sites but also small-company and personal web sites. As the 1st-tier portals' strength is its tightly connected and consolidated services and the key driver is the account management function, other companies can integrate not only their own web sites but also other companies' web sites and even their personal web sites with the modularized account management service. This strategy successfully weakens the balancing loop for the dynamics of user access decentralization.

The second strategy is to provide an individual activity information management portal service as a sticky service. Decentralization means that "no one gets all," so the goal is to retain users with a sticky service and an excellent service. One excellent sticky service is the individual activity information service. Due to the vast diffusion of broadband Internet, people now want to use online services more, so many personal activities on their computers will move online, such as large-sized online email box, diary (as known as blog), storage, photo and movie albums, bookmark, keywords, and so on. Individual activities are very sticky for each individual, so people feel they do not want to move to another service provider when they spend much time and effort storing their individual activity information on an online service.

The third strategy is developing high-speed upload stream broadband Internet access service and building a reputation for security/privacy by utilizing telecom companies' advantages. Telecom companies tend to have brand and reputation with a longer history, and have an infrastructure to provide broadband Internet directly to the customers. So, providing high-speed upload stream broadband Internet and high security/privacy service is a viable strategy for telecom companies. Individual activity information service also requires high security/privacy protection functions, and online services are familiar with this strategy.

After presenting three technology strategies for broadband Internet portals, in Chapter 6, I discussed in greater detail ways to implement these strategies and I discussed several approaches. First, it takes a long time to convince large competitors to use the modularized service, so it is important to use protocol interoperability until the service becomes highly developed and widely recognized. Second, when 1st-tier portals provide modularized services, they have an advantage because they are primary portals, so it is essential for 2nd-tier portals to develop a service structure that is difficult if not impossible for 1st-tier portals to replicate or compete with. Last, it also takes a long time for a firm to build a reputation for providing security and privacy advantage, so a long-term business plan should be prepared and it should incorporate lock-in strategies and viral marketing. Finally, in terms of a business model, Not only advertisement model but also marketplace model and selling securitized service are good way to do, and a three-stage business targeting should be used to focus on each stage's objectives and goals.

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