Do U.S. Firms' Differences in Resource Allocation Pattern Affect their Strategic Choice?: Diversification Mode in the Broadband Television Industry

Jae-Won Kang
(Assistant Professor, Department of Communication Studies, Dongguk University)

Abstract: This study investigates how the resource allocation patterns of U.S. firms have an impact on their strategic choice between merger/acquisition and alliance in the telecommunication industry. The study applies the resource-based view and transaction cost theory to the diversification mode of cable and telephone firms after the 1996 Telecommunication Act in the context of the broadband television market. The broadband television market is here defined as an existing and potential market providing all types of digitized video, audio, and data content, with which an integrated broadband system interconnected with the Internet backbone can serve TV households. The primary finding suggests that a firm is more likely to choose an alliance mode when it has an incentive to complement the lack of its knowledge-based resources such as R&D skills, technological know-how etc. However, multi-level determinants should be examined simultaneously with resource's effects in the future study.

Key words: Broadband, Diversification Mode, Strategic Choice Introduction

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Ⅰ. Introduction

The broadband television industry seems to be a dynamic and uncertain one where the past, present and future exist mixed together. Almost one decade ago, through its cable operating system, Time Warner gave the market trial for the interactive cable television service called Warner Amex Qube. At that time, Time Warner had to postpone launching its interactive television nationwide due to its technological limitations and the lukewarm viewers'demand for it. Not long after that, new types of broadband service (e.g., digital television, near video-on-demand, IP or Web telephony, etc.) were developed for cable television viewers. Now, a few newly emerged interactive or enhanced television systems such as AOL TV, Web TV, and ITV, are served on television sets and computer monitors. Several formatted digital contents will be introduced in the broadband television market, and they will probably complicate the market, leading to a vortex of "creative destruction."

In this evolving industry, the most visible players are the distributors such as multiple system operators (MSOs), telephone companies (telcos), and access service providers (Chan-Olmsted & Kang, 2003). Cable firms and telcos, especially, are two key players because they have their own closed network of upgraded conduit (cable and telephone line) that is definitely necessary for interactive television services. These cable and telephone companies, built upon their broadband infrastructure, have been deploying their strategies for product-expansion into the broadband television market.

For instance, Time Warner Cable started to offer interactive television service such as AOLTV through its merger with AOL. AT&T Corporation also merged with TCI and MediaOne for establishing its own stable distribution broadband channel. At a later

time, as a unit of AT&T Corp., AT&T Broadband & Internet Service began to provide its high-speed Internet access via cable modem and then interactive television service brought by a few of enhanced-TV such as Web TV. On the other hand, some telcos set up their broadband service through digital subscriber line (DSL) internally and then initiated Intercast service programming by their licensing agreement with ITV and Intel, which is viewed as low level alliance.

As indicated above, cable firms and telcos made different decisions about their growth or diversification strategies. Some firms adopted either merger/acquisition or alliance[1], and others did both of them as a diversification mode. Although the two key players started with disparate bases upon their diversification strategies, there might exist something in common with regard to factors influencing the choice of diversification strategy.

This study suggests that one factor may be "resource allocation pattern," i.e., how each firm allocates its own resources at a given time. A firm's resource allocation pattern is expected to affect its choice of diversification mode (i.e., merger/acquisition or alliance) into the broadband television market. This idea comes from the fact that diverse telecommunication firms in very different situations can often make decisions to diversify into new businesses in the same way. This study can be a starting point for an integrated model to predict the strategic activities of tele-

1. "Strategic alliance" generally includes merger & acquisition along with strategic partnerships, which should entail at least agreements where two or more entities have combined resources to form a new, mutually advantageous business arrangement to achieve predetermined objectives (Kang, 2004). Hence, the "alliance" word selected for this article means not strategic alliance but strategic partnershipslike joint ventures, research and development agreements, sales and marketing agreements, manufacturing agreements, supply/procurement agreements, licensing, service and distribution pacts.

communication firms in the broadband television industry.

Therefore, this study will investigate how the resource allocation patterns of firms have an impact on their strategic choice between merger/acquisition and alliance in the telecommunication industry. To do so, this study applies the resource-based view and transaction cost theory to the diversification mode of cable and telephone firms after the 1996 Telecommunication Act in the context of the broadband television market. The following section, prior to the application of these two theories, describes the conceptual backgrounds upon which a set of propositions is based.

Ⅱ. Environmental Forces and Diversification Modes

Technological convergence is providing incumbent cable companies and telcos with a wide range of new business opportunities to pursue corporate diversification. The term "convergence" is most frequently used in connection with computers and television (Stipp, 1999). The converged or digitized type makes it easier for MSOs, cable networks, and telcos to expand into a new product area when they already have their existing broadband infrastructure or programs. Especially MSOs have only to utilize their established cable line for new broadband services such as high speed Internet access and enhanced television, and likewise telcos also use their upgraded telephone line (DSL or Asymmetry Digital Subscriber Line) for those new services. Along with this technological convergence, the 1996 Telecommunication Act has been one of stimulus for the expansion into the newly emerging market. The Act creates new opportunities for telephone companies to provide cable television services by largely eliminating cross-ownership restrictions in the same area. Telcos could jump into interactive television product market since the 1996 Telecommunication Act.

In fact, cable and telephone companies'diversification decision

to enter a new market are one of three modes: internal development, merger/acquisition, and alliance. Diversification is operationally defined as the entry of a firm into new lines of activity, either by merger/acquisition or alliances, excluding processes of internal business development. This study is more concerned with the interrelationship among firms deploying their diversification strategies through merger/acquisition or alliance, rather than through internal development.

For example, ViaGate Technologies Inc., a leading supplier of advanced multimedia access solutions, and Artel Video Systems, a video networking system provider, made a co-marketing agreement that allows service providers to deliver video broadband solutions to consumers (Business Wire, 2001). The incumbent local exchange carriers (ILECs) attempted to fill gaps in their product line by incorporating the video component. For this matter, this partnership induced those ILECs to form a service agreement with the suppliers or system providers, leading to offering bundled voice, video, and data products to their customers.

The Walt Disney and News Corporation signed a new service pact for a new broadband entertainment service that would deliver video-on-demand movies via cable and the Internet in the near future (Multichannel News, 2001). Paramount Pictures, Sony Pictures Entertainment, Universal Studios and Warner Brothers also announced a joint venture to create an on-demand movie service for broadband Internet users (Multichannel News, 2001). By connecting directly to operators, the studios could conceivably avoid using VOD content distributor. Such current series of joint ventures directly or indirectly stimulated cable and telephone companies to diversify into new business activities, i.e., broadband television services.

Ⅲ. Literature Review & Research uestion/ Testable Propositions

External and Internal Factors

Most strategic management research contends that the diversification decision is contingent upon complicated sets of external factors, ranging from regulatory forces and market structure to competitors'strategic positioning (Chan-Olmsted & Li, 2001; Chen, 1996; Kashlak & Joshi, 1994; Kashlak & Sherman, 1998; Richard & Mick, 1986; Stewart, et. al., 1984). In other words, many scholars argue that firms may choose the diversification strategy that is most appropriate for their surroundings or contingencies.

For instance, the product/market-portfolio models (e.g., the Boston Consulting Group model) put their priority on the overall economic characteristics of a company's portfolio of business. The most critical parameter of the diversification decision in this model is which product or market can generate the highest profit. A firm's decision to enter a new market is a function of the degree of market attractiveness (Li, 2001). Porter (1985) also stresses that the diversification decision is dependent upon whether or not a firm is in related markets, this decision as a means of gaining competitive advantage. Especially regarding merger/acquisition diversification strategies, the past studies reveal that the degree of similarities between the acquiring and target firms is positively related to better performance in the newly made firm (Akhavein, et. al, 1997; Shelton, 1988).

Considering the two variables of "attractiveness" and "similarities (relatedness)" mentioned above, it is easily estimated that a firm's decision about how to enter a new market is associated with the highest profit created by the interrelationship between the firms of interest. In other words, the diversification

strategies a firm conducts are determined by its expected performance within the market structure and its relationship with other firms.

By contrast, some research suggests that firms make diversifying decisions depending on their internal factors (e.g., own excess resources, capabilities, and core competencies) (Collis & Montgomery, 1995; Peteraf, 1993; Silverman, 1999). The resource-based model starts with the perspective that a firm's internal environment, that is to say, its resources and capabilities, is more crucial to the selection of strategic actions than is the external environment (Hitt, et. al., 2001). The chosen strategy should enable the firm to have its core competencies that are needed to go through challenging opportunities in the external environment. A model, focusing on resource integration, also argues that a firm's unique combination of resources can be achieved regardless of "relatedness" (Hennart & Reddy, 1997).

As a matter of fact, the association of diversification with internal factors such as resources has been rarely discussed in the telecommunication field. In other words, there is little literature to explore how a firm's resources affect its patterns of diversifying activities. A large body of research has only dealt with resources or capabilities as an intermediating factor in explaining the profitability or competitiveness in the market (Miller & Shamise, 1996; Montgomery & Singh, 1984).

The internal factors, especially resource-based ones, have now become more crucial in analyzing the choice of diversification mode in the 21st-century competitive landscape. A firm can manage to remain competitive only if it can pursue a diversification strategy that is well suited for its financial resources and core competencies (Hitt, et al., 1999). This is because in this uncertain environment the flexible or nimble operation with organizational resources and capabilities is certainly one of the most important sources to obtain competitive advantages (Hitt, et. al.,

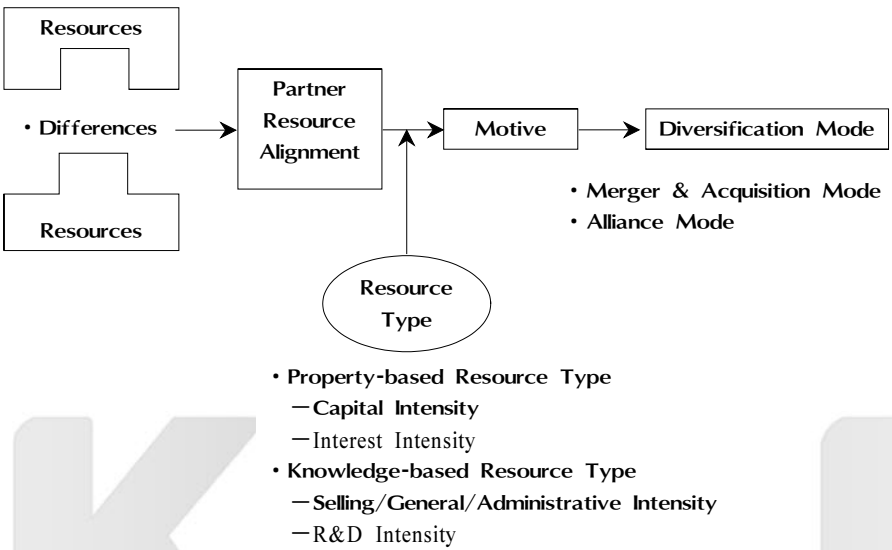
1999; Chen, 1996). Thus, the resource-based view sheds insights to the interrelationship between two or more firms in the broadband television industry.

Resource-based View

The resource-based view (RBV) argues, "what a firm possesses would determine what it accomplishes" (Das & Teng, 2000). It does not only focus on the relationships between firm internal characteristics and performance but also advances two assumptions. First, firms may be heterogeneous in terms of the resources and capabilities on which they base their strategies. Second, these resources and capabilities may not be perfectly mobile across firms, resulting in heterogeneity among firms in a certain industry (Spanos & Lioukas, 2001). These assumptions suggest that firms in the same industry are different from each other, and the different resources or capabilities each firm has would influence its strategy selection. In case of diversification decision, it can be inferred that although a firm may have incentives to diversify, it must have the available resources needed to make feasible diversification strategies. Furthermore, a firm's current strategic decision is constrained by its past resource deployments, that is to say, limited within unique resources different from other firms.

This study proposes a model based on the resource-based view, demonstrating how differences in the resource allocation pattern affect the choice of diversification mode in the broadband television industry.

Figure 1. Complementary Resource Alignment & Diversification Mode



The different resources elicit the partner resource alignment or match-up among two or more firms. A firm's competitive position is attributable to a bundle of unique resources and relationships with others (Rumelt, 1984). Partner resource alignment refers to the pattern whereby the resources of partner firms are matched in a merger or alliance (Beamish, 1987; Lei, 1993). The pattern is viewed as the supplementary or complementary resource-based relationship between partners (Das & Teng, 2000). In many cases of merger and alliances, the relationship between acquiror and acquired firm or partners is considered to be complementary with each other (Harrison, et. al., 1991).

The optimal alignment of partner resources, in turn, may create synergy by exploiting the strengths or distinctive competencies of both firms (Harrison, et al., 1991). With such a synergy motive, they will acquire or make alliances with one another, if the firms cannot gain such core competencies through internal

development or market exchanges. In that sense, the resource-based view considers the diversification mode decision (merger/acquisition or alliance) as a move to access other firm's different resources in order to gain an otherwise unavailable competitive advantage for the firm (Das & Teng, 2000).

In sum, the difference between two firms'resource patterns or profiles is considered as an indicator of what mode of diversification the firm will pursue (Harrison, et al., 1991). In addition, the firms with relatively more or less resource allocations focused on a certain area could produce greater synergy than ones with widely disparate resource allocations (Wernerfelt, 1984). Thus, if a firm has a relatively high difference in a particular resource area between the firm and its partner, the difference can affect the firm's choice of diversification mode to enter the new broadband television market.

Research Question: Do differences in the resource allocation patterns between the firms affect their choice of entry mode into the broadband television industry?

Transaction Cost Economies

According to the transaction cost economies, merger/acquisition or internal development will be chosen when there are high transaction costs and low production costs (i.e., coordinating and learning) (Kogut, 1988). The logic behind the ownership decision is "minimizing the sum of transaction and production costs" (Kogut, 1988) and "controlling transaction cost effectively" (Das & Teng, 2000). Based on this logic, two testable propositions will be presented about the criteria or factors to distinguish between two diversification modes: merger/acquisition and alliance.

During the process of merger/acquisition or alliance, firms are concerned not only with obtaining their partners' valuable resources through the merger or alliance, but also with retaining their own valuable resources (Das & Teng, 2000). Thus, the de-

sired or expected 'resource type'of its prospective partner is critical for a firm to make its decision about the diversification mode with which to enter the new market (see Figure1). It is also important to find out a primary resource type, that is, which types of resources should be devoted to the merger or alliance at a significant level (Das & Teng, 2000).

A primary resource can be defined as the most highly allocated resource that is either property-based or knowledge-based, as shown in Figure 1. Property-based resources are tangible properties such as cash or debt, patents, contracts, infrastructure, etc. If the primary type of a firm's desired resource is property-based, a firm tends to select merger/acquisition mode (Das & Teng, 2000). This is because it can obtain "valuable resources from another party without losing control of one's own resources" (Das & Teng, 2000) through that choice, due to the "specificity" that is a nature of property-based resources.

In the broadband television industry, cable system operators or telephone access providers began to play a leading role in distributing broadband services (Hyman, et. al., 2000). According to the structure of the broadband television industry (see Appendix Figure 2), the distributors provide a broadband infrastructure for the delivery of information and entertainment contents and manage the access to these contents/services, as well. In this sense, their core competencies are probably access to a mass consumer base for scale and scope economies, relationships with the navigating/interfacing facilitators, and the ability to provide seamless, efficient network/infrastructure (Chan-Olmsted & Kang, 2003).

If a firm were to have its core competences as a distributor in the new broadband industry, the primary desired or expected resource type of its prospective target firm must be property-based. The firm may attempt to merge with a firm that has such a strong property-based resource, as indicated above. The difference in resource allocation patterns between two firms may

cause the firm to pursue core competencies in a particular area of the other's (Harrison, et. al., 1991). Therefore, in the broadband television market, the differences in property-based resource allocation patterns between the firms may engage in the mode of merger.

Proposition 1: The level of difference in property-based resource allocation patterns is positively related to the probability of choosing a merger/acquisition mode in the broadband television industry.

Balakrishnan and Koza (1993) argue that alliances are seen as a mechanism to reduce the transaction costs incurred when acquiring other firms. Alliances will be preferred when the potential target and the acquirer belong to different industries, because in this case the transaction costs are high (Balakrishnan & Koza, 1993). Another researcher also suggests that alliances are used when the transaction costs are not high enough to justify vertical integration (Gulati, 1995). Specially, in new product development, alliances are used to reduce the transaction cost by pooling the technological know-how and expertise of different firms (Leonad-Barton, 1992; Teece, 1992).

According to transaction cost economies, alliances are viewed as a means by which firms learn or seek to retain their know-how capabilities or skills as knowledge-based resources. Through alliances, firms tend to exchange know-how and skills because knowledge is tacit, and hence its purchase in disembodied form is subjective to high transaction costs (Hennart, 1988). Also, since knowledge-based resources are vulnerable to unintended transfers owing to its nature of "ambiguity" (Black & Boal, 1994; Hall, 1992), firms who would gain this primary resource type are more likely to choose alliances (see Figure1). Through this choice, firms can effectively control the transaction cost incurred by the ambiguous resources.

A firm in the broadband television market can be one of content aggregators such as cable programming networks and television stations, which can be defined as packagers in the broadband television industry (see Appendix Figure 2). Their core activities are to assemble contents into packages that appeal to different segments of customers (Chan-Olmsted & Kang, 2003). Their core competencies are technological know-how to tune their packages into distributors, R&D skills to develop interactive contents, and expertise in areas of marketing, brand management, and publicity. There might be a firm who would obtain new valuable knowledge-based resources from others in the broadband television industry. The firm may seek its partner with strong knowledge-based resources in order to gain its otherwise unavailable competencies. Therefore, the differences in the knowledge-based resource allocation patterns of the firm and its prospective partner may be related to the alliance mode.

Proposition 2: The level of difference in knowledge-based resource allocation patterns is positively related to the probability of choosing an alliance mode in the broadband television industry.

Ⅳ. Research Setting

The broadband television industry has been considered as a converged type of Internet business and multi-channel media industry. This industry is expected to create a new world of hybrid media content encompassing e-commerce, information, games, music, movies, and advertising (Arlen, 2000; Baldwin, McVoy, & Steinfeld, 1996). Sometimes, interactive or enhanced television features to improve the viewing experience of TV viewers have been cited as the future direction of television (Kontzer, 2001; Ha & Chan-Olmsted, 2001).

The broadband television industry can be defined as an exist-

ing and potential market providing all types of digitized video, audio, and data content, with which an integrated broadband system interconnected with the Internet backbone can serve TV households(Kang, 2004). Thus, the term "broadband television" here represents an integrated service including the existing broadband services as well as interactive or enhanced television service. "Broadband" describes the bandwidth of a transmitted communication signal. Broad or higher bandwidths lead to faster transmission speeds and larger amount of data at extraordinarily rapid rates (Brennan, 1999). Recently, broadband access tends to be provided through multiple technologies including DSL, cable, fiber, satellite, and fixed wireless (Rao, 2000).

It is imperative to draw a structure of the broadband television industry in identifying how these broadband television services materialize. According to a strategic architecture (Chan-Olmsted & Kang, 2003), the broadband television markets split into two different infrastructures, the telephone (wire-line or wireless) and multichannel system (wire-line or wireless). The architecture points out that telcos has a tendency to be associated with PC-based needs and exhibits more core competencies in providing the communication and information functions. Its cable counterpart, on the other hand, is likely to be associated with television-based needs and to continue to provide and enhance the entertainment experience of its customers. (see Appendix Figure 2). The strategic architecture of broadband television can shape firms' behavior space in carrying out their strategic objectives inthis industry. Thus, it can help to figure out why and how they make the decision to diversify into the broadband television industry.

This study is concerned with the factors that affect the choice of diversification mode to enter the emerging market, i.e., broadband television industry. But among several factors affecting the entry mode, only financial characteristics of each firm are compared and contrasted as its resource in this study. As is common

with other authors, "resource" is here used to include competencies and strategic assets, which are assets that underpin a firm's cost or differentiation advantage in a particular market (e.g., Barney, 1986, 1991; Peteraf, 1993). It is certain that resource, especially the financial profile, may not be the only factor that can explain the choice of entry mode to the market. Therefore, this empirical study strives to control for the other two important factors, i.e., relatedness and sales growth.

"Relatedness" is one factor to distinguish the type of diversification mode (Hitt, et. al., 2001). If the firms belong to the same dominant SIC 2-digit industry, they are considered related. SIC (Standard Industry Classification) is the way to classify several hundred different basic types of industries with four-digit codes assigned by some analysts. The relatedness should be associated with a resource or its specificity within a certain industry (Montgomery & Wernerfelt, 1988). Thus, the relatedness is manipulated prior to the sampling (see Table 2 in the Methodology section), so that this study can control the industry effect on the firms included there. The difference in the firm's sales growth between the potential firms, which may also impact their diversification strategies (MacDonald, 1985), is used as a covariate in this study.

The study deals with resource allocation patterns in four areas: capital, interest, selling/general and administrative (SGA), and R&D intensity (see Figure1). Previous empirical studies have found statistical association between diversification and those allocation patterns (Amit, et. al., 1989; Hitt et al., 1990; Kerr & Slocum, 1987; Montgomery & Hariharan, 1991). The relatively high degree of intensity in a specific resource area is used as proxy for the existence of unique or inimitable resource flows in that area (Harrison et. al., 1991). To put it another way, a highly allocated resource area in firms reflects their competencies upon which they may capitalize to create their unique value in a competitive environment. For instance, a firm's high allocation of cap-

ital reflects its underlying resource base, e.g., a firm with a high R&D/sales ratio is assumed to have unique skills in R&D (Harrison, et. al., 1991).

According to criteria of uniqueness (or inimitability), those four intensity variables are grouped into two categories: property-based and knowledge-based resources. The 'uniqueness' is a function of barriers to imitability against competitors, and a crucial determinant of the choice between merger & acqusition and alliance as well as performance (Barney, 1991; Hitt et. al., 2001). The key difference between property-based and knowledge-based resources comes from the fact that "the protection of knowledge barriers is not perfect" (Das & Teng, 2000).

Property-based resources are referred to as legal properties owned by firms, including financial capital, physical resources, human resources, etc. (Das & Teng, 2000). They apply to a "specific" product or process. Therefore, most competitors may even have the knowledge to imitate these resources, even though they cannot easily be duplicated since they are protected by property rights, such as contracts or patents (Miller & Shamsie, 1996). On the contrary, knowledge-based resources are a firm's intangible know-how and skills. They are not easily imitable because they are ambiguous and dependent on knowledge barriers. For this reason, capital and interest intensity fall in the property-based resources, whereas selling/general and administrative and R&D intensity fall in the knowledge-based resources.

In fact, R&D is a gray area where two categories coexist. An R&D resource can be either in the physical form of a patent, copyright, etc. (Miller & Shamsie, 1996) or in the intangible form of technological know-how or skills derived from R&D expenditure that have been accumulated over time (Hall, 1992). Here, an R&D resource will be used as an indicator in the knowledge-based property due to the availability of data for this study's convenience. This study cannot trace the specific number

of patents or copyrights legally protected from the financial profile database.

Ⅴ. Methodology

Sample and Data Collection

The data source of all mergers and alliances is the SDC Platinum database compiled by *Thompson Financial Securities Data Corporation*. The database covers both private and public corporation transactions, which are associated with at least 5% of the ownership of a firm with transaction valued at $1 million or more. As shown in Table 1, the sample of this study is obtained from all transactions of 2759 mergers and alliances, which were formed by the U.S. cable/pay TV (SIC code 4841) and telephone companies (4813) from 1996 to 2000. The reason for the selection of cable and telephone firms as a target population is that they both are potential leading players in the broadband television market. Moreover, prior to the Telecom Act of 1996, they were maintained to be somewhat homogenous in terms of resources or capabilities for a growth or diversification strategy. Their resources were accumulated under a similar regulatory environment, especially with regards to prohibitions on cross-ownership (Tseng & Litman, 1998). The homogeneity assumption is very important in applying a resource-based view to this diversification decision study (Ingham & Thompson, 1995).

Table 1. Description of Population

	Participant/ Acquirer's primary SIC code		Total
	(4841)	(4813)	
Merger & Acquisition	413	923	1336
Alliance	291	1132	1423
Total	704	2055	2759

According to a proportional sampling, 83 cases are randomly selected, which amount to 3% out of total cases, because it is impossible to use a census of the data as a whole. They are in turn classified into related or unrelated group (see Table 2). This task is for controlling the industry's effect on the firm's choice of strategies. The study screens all financial data of 166 firms for data availability on a basis of the announced date of transaction, using the Standard & Poor's COMPUSTAT database. However, as shown in Table 2, due to lack of information for the independent variables in the database, only 60 cases are included in the study. The reduction in the sample does not give a test much bias because the proportion of strategic alliances in the sample (56%) is comparable to that of the population as a whole (52%).

Table 2. Cross-table of relatedness and strategic choice

	Unrelated	Related	Total
Merger & Acquisition	12	14	26
Alliance	19	15	34
Total	31	29	60

The year prior to merger & acquisition or alliance is the base year used in calculating the four intensity variables (Harrison, et. al., 1991). If several transactions formed by a firm are included in the sample, the earliest transaction during a given period of time is selected for a test of entry mode. This study excludes all international transactions related to U.S. firms because financial data about foreign firms are not available.

Variables and Measurements

The independent variables are four "differences" between firms in resource allocation patterns such as capital, interest (debt), selling/general and administrative, and R&D intensity.

These intensity variables have two characteristics suitable for this study. First, "intensity" represents allocation of resources, which can be affected significantly by strategic managers. Second, each has strategic implications (Harrison, et. al., 1991).

The intensity ratio of firms is measured by dividing the dollar amount of expenditures by total sales, and then a difference score is calculated by taking the absolute value of the difference between two firms (e.g., $|CAPINT_1 - CAPINT_2|$). The main partners in an alliance are here limited to two primary firms for convenience of this study. Difference is operationally defined as the relatively high degree of intensity in a specific resource area, which is used as proxy for the existence of motives to gain a unique or inimitable resource in that area (Das & Teng, 2000; Harrison, et. al., 1991).

The dependent variable is a non-metric diversification mode, that is, merger/acquisition or alliance, which includes joint venture, equity and non-equity alliances. A dummy variable (1 = alliance, 0 = merger & acquisition) is coded for this single dependent variable. The study uses a binominal logistic model. The regression coefficients in this model estimate the impact of the independent variables (including one metric covariate) on the probability of choice of a diversification mode.

Ⅵ. Results

Based on the research setting, this study first runs a logistic model with the "related" group that is 27 out of 60 cases. First of all, an overall model is obtained from an enter method. The overall model is used as a base model with −2 log likelihood (−2LL) of 37.393, as Table 3 shows. This log likelihood value provides a standard for comparison with other models. If a model's −2LL decreases, the model fits well. In other words, smaller values of the

−2LL measure indicate a better model fit (Hair, et. al., 1998). The result of the overall model is statistically significant (see Table 3, variables not in the equation, $p < .05$), which suggests that differences in the resource allocation patterns between the potential firms contribute to their choice of entry mode in the broadband television industry. As a result, the research question is acceptable at the .05 level, indicating that a relatively high difference in a specific resource area between firms affects their strategic choice.

Table 3. An Overall Model

−2 log likelihood (−2LL): 37.393
Variables not in the Equation
Controlling for Relatedness

	Score Statistic	Sig.	Partial Correlation (r)
X1 CAPDIFF	5.747	.017	.504
X2 INTDIFF	4.040	.044	.424
X3 SGADIFF	4.544	.033	.293
X4 RDDIFF	6.700	.010	.389
X5 SLGDIFF	.915	.339	.120

Table 4 demonstrates the results of Step 1 in the binomial logistic regression model using a forward stepwise method. The one-variable model of Step 1 has an overall explanatory power ranging from 40.8% to 57.6%, with −2LL difference of 15.256 (p.001). In Table 6, it is shown that the model correctly classifies 85.2% of the cases, a rate higher than that expected by chance (51.9%). Therefore, the model is selected and used for interpretation. As a matter of fact, the study finds that all of the measures of model fit are improving significantly in the two-variable model of Step 2. But the estimated coefficient of selling/general/administrative intensity difference (SGADIFF) in-

cluded in the two-variable equation is not significant at the .05 level. That means this individual variable should not be interpreted. This is the reason why this study chooses the one-variable model as shown in Table 4.

Table 4. Step 1: Entry of X4 (R&D Difference) in the Forward Stepwise Logistic Regression Model

One-variable Equation

Variable	B (coefficient)	S.E.	Wald	Sig.	Exp (B)
RDDIFF	4.441	1.747	6.464	.011	.012
Constant	1.974	.815	5.867	.015	7.200

Overall Model Fit

Goodness of Fit Measures	Value	Change in-2LL	Value	Sig.
- 2LL	22.137	From base model	15.256	.000
"Pseudo" R2	.408	From prior step	15.256	.000
Cod and Snell R2	.432			
Nagelkerke R2	.576			

R&D intensity difference (RDDIFF) has a positive association with the dependent variable. Considering a single binary dependent variable (0 = merger and acquisition, 1 = alliance), the coefficient suggests that a firm choosing an alliance mode has a higher difference in the R&D intensity between the firm and its partner. In other words, the higher the difference in the R&D between firms a seeking firm is, the more likely the firm is to choose an alliance other than merger and acquisition. As a result, only the second proposition, not the first one, is partially supported–selling/general and administrative intensity difference cannot be interpreted in this model.

However, there are found some multicollinearity among independent variables, especially between capital and interest in-

tensity difference variables, through the Pearson correlation test (see Table 5). This indicates that it is necessary to be cautious in interpreting the results from the upcoming logistic model. For instance, the capital intensity difference (CAPDIFF) has the highest partial correlation with the independent variable (see Table 5). Nevertheless, it is not included in the one-variable model this study selects. This implies that the multicollinearity with the interest intensity difference might influence the estimate of this CAPDIFF variable, leading to a distorted result.

Table 5. Pearson Correlations of Independent Variables

	X1	X2	X3	X4	X5
X1Capital Intensity Difference	-				
X2 Interest Intensity Difference	.611**	-			
X3 Selling, General & Admin. Intensity Difference	-.092	-.151	-		
X4 R&D Intensity Difference	-.263**	-.154	.136	-	
X5 Sales Growth Difference	.361**	-.042	-.053	-.041	-

** Correlation is significant at the .01 level (2-tailed).

To consolidate the result, this study splits all the cases into two groups according to "relatedness" and separately runs the logit regression method. It is clear that there is a big difference in the hit ratio (85.2% and 77.4%) between two groups (see Table 4). This implies that the "relatedness" factor might influence the prediction of strategic choice up to a certain level. This finding must weaken the appropriateness of the interpretation of the overall model.

Table 6. Classification table

Step 1	Predicted					
	Related Cases			Unrelated Cases		
Observed	Entry Mode		Percentage Correct	Entry Mode		Percentage Correct
	Merger & Acquisition	Strategic Alliance		Merger & Acquisition	Strategic Alliance	
Entry mode: Merger & Acquisition	12	2	85.7	11	1	91.7
Strategic Alliance	2	11	84.6	6	13	68.4
Overall Percentage			85.2			77.4

Ⅶ. Conclusion & Discussion

This study tests whether or not the differences in the resource allocation patterns of firms affect their strategic choice in the telecommunication industry, specifically in the emerging broadband television market. The resource-based view and transaction cost theories are applied to the diversification mode of telephone and cable/broadcasting firms during last five years (from 1996 to 2000). This period of time is in an initial or premature stage of broadband television market. About its future, some say that the broadband television market will stay in a content-oriented competitive situation. Others argue that in this market a technological aspect will be more important in the near future, saying that content is not king (Odlyzko, 2001). It is uncertain whether cable and telephone companies will successfully exploit the touted 'synergies' promised by mergers or alliances. Therefore, from now on, it is meaningful to identify the internal factors that affect the choice of strategic actions. Considering these factors necessitates firms to achieve a "strategic fit" with their external environment.

This study shows that in the emerging broadband television

market it is feasible to say that a firm is more likely to choose an alliance mode when it has an incentive to complement the lack of its knowledge-based resources such as R&D skills, technological know-how etc. Hagedoorn and Sadowski (1999) identify market entry-based and technology-based motives for strategic alliance and corporate diversification. The market-entry incentives are referred to as the effort to create new markets and international expansion, whereas the technology-based motives focus on the need for technological partnership to reduce and share uncertainty in the complexity of new technologies (Li, 2001). They contend that if a firm has technology-based motives, it may seek a partner with strong R&D skills or technological know-how. In a sense, this is consistent with the finding of this study, which suggests that an alliance is more likely to be chosen as a diversification mode when a relatively high difference exists in the R&D area between two firms in the broadband television industry. As a result, it is plausible to expect that U.S. cable and telecommunication firms will actively seek each other as their alliance partners, especially in the developing stage ofa variety of converged services like VoIP (Voice over Internet Protocol) over cable network and IPTV (Internet Protocol Television) over DSL.

However, controlling for other important factors, the result of this study fails to provide the evidence that relatively a high difference in resource allocation patterns affects the choice of strategic actions. It can be inferred that other critical factors (e.g., relatedness, diversification, market competition, etc.) might exist to influence the choice of strategic entry mode. Most recent research (Luo, 2001) proposes that entry mode selection in an emerging economy is affected by situational contingencies at four levels: nation, industry, firm and project. Such multilevel determinants should also be examined simultaneously with resource's effects in the future study.

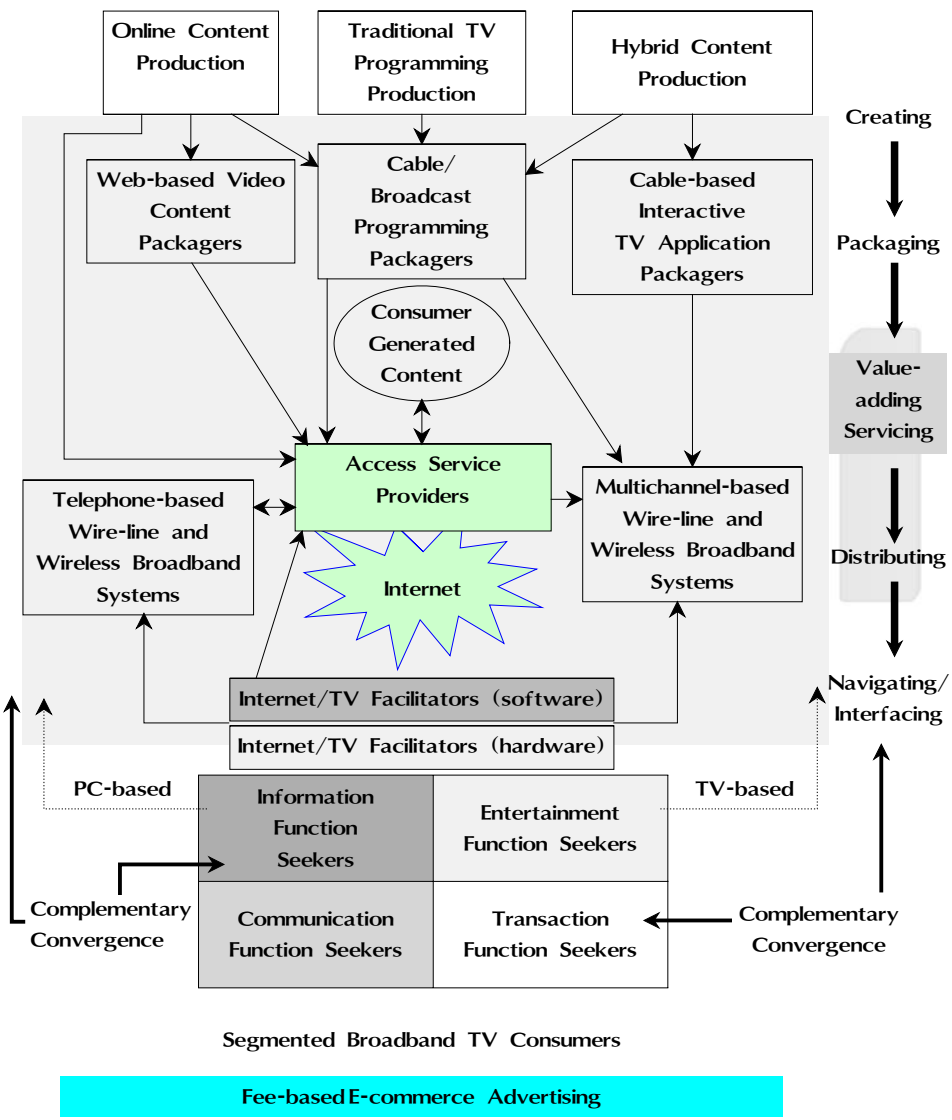
There are several limitations in this study as follows. First,

the study has a small number of sample size (n = 60), so its external validity is suspicious. As a matter of fact, the financial information needed to measure the intensity of each resource area is difficult to identify and collect for any but a very small sample. Second, there is still a problem in setting up this research design, even though it controls for the effects of likely confounding variables on the financial variables of interest. To be more specific, the setting is not allowed to take into account the multicollinearity among differences in resource allocation patterns between two firms. Third, it can be not a reasonable assumption that a firm's relatively high degree of intensity in resource allocation patterns is used for proxy or equivalence to core competencies. Last, due to lack of available data, this study cannot validate this model with holdout samples.

This study can only offer an indication of the expected possibility of a strategic decision. Also, this is at best only a partial answer to the empirical question: how do telecommunication firms sequentially choose the diversification mode in the broadband television industry? Thus, further strategy studies with longitudinal data analysis are imperative. Furthermore, this study confirms that the cable and telephone firms actually continue to supply individual core products, but, through their strategic alliances, their introduction of cable telephony or telephone video-on-demand can add new value to the existing products. Built upon this internal-factor-focused research, the future study will make an integrated strategy choice model in order to expand into a comparative analysis of a single business across two cable and telephone firms.

Ⅷ. Appendix

Figure 2. Strategic Architecture of the Proposed Broadband Television Market



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