Innovation through External Sourcing Activities: An Overview of Major Trends and Patterns of Telecommunications Service Providers Industry

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Abstract

Deregulation, technological innovation and the convergence of media, entertainment, information, and consumer electronics industries have changed the telecommunications landscape into a turbulent environment. Telecommunications service providers operating in this environment have to make adequate adaptations to these fast moving changes and respond quickly to create or to sustain their competitive advantage. These companies have substantially increased their external sourcing activities in new markets and new businesses, emphasizing that they are actively involved in becoming major players in the relevant markets. This study gives insight into the most important external sourcing activity trends and patterns of firms in the telecommunications providers sector since the eighties. We analyze the general growth patterns in inter-firm partnerships and M&As in the period 1986-2000. The data on external sourcing activity of telecommunications service providers show an overall increasing growth pattern since the mid 1980s. We find a rather steep increase in both the number of M&A deals with targets outside the telecommunications service provider sector and the number of inter-firm partnerships outside this sector. By Using country-level data, we also show the growth pattern in the number of M&A deals and inter-firm partnerships and the role that different international economic and trading blocks play in all this. We witness the dominance of North

American companies in these external sourcing activities, although the number of external sourcing activities between non-North American companies has increased.

1. Introduction

Due to technological innovations, the previous distinct industries of telecommunications, information, media, entertainment, consumer electronics have converged to the so called information multimedia industry. The new integrated industry provides products that match or even mix the products from the traditional telephone, mass media (print, broadcast and cable), customer electronics and computing industries. Firms operating in these convergent industries need to obtain, integrate, and reconfigure resources and capabilities in order to adjust to the new environment (Kranenburg and Hagedoorn, 2007). They are generally confronted with the fact that existing resources and capabilities are no longer sufficient to deal with the new demands and requirements (Oh, 1996). In addition, firms operating in the fast changing telecommunications network environment need also to build a large user base or new activities and new businesses as quickly as possible to create or to sustain competitive advantages. They become more attractive to customers and businesses when they are able to deliver a critical mass of connected customers and content providers (Chan-Olmsted and Jamison, 2001; Pennings, Kranenburg, and Hagedoorn, 2005).

Firms can develop internally or acquire the desired capabilities, resources, new activities and businesses. Due to the fact that internal development tends to be slow and generally a risky strategy, firms generally prefer the external sourcing activities to adapt to the new requirements and demands (Capron and Mitchell, 2004, Kranenburg and Hagedoorn, 2007). To address the customers' needs and to sustain their competitive advantages, these companies have started to collaborate with or acquire competitors, other companies from integrated information multimedia industry, and companies from unrelated industries for strategic reasons, such as to expand markets or to position themselves for future markets or to acquire the needed capabilities and resources (Oh, 1996; Jamison, 1998). These external sourcing activities provide opportunities for firms to get access to and to develop a range of new resources, capabilities, and new products that they need to further develop both core activities and complementary activities.

In this study, we will attempt to contribute to the understanding of external sourcing activities in the integrated information multimedia industry. We focus on the external sourcing activities of one particular group of companies, the telecommunications service providers. In particular, these companies have to deal with several changes in their business environment since the eighties. For example, the privatization and deregulation of the telecommunications markets, ongoing regional economic integration, the change in world capital markets, significant changes in technologies, and convergence of previously distinct industries, forced these companies to engage in a search process for additional resources, capabilities and other activities in an attempt to survive in the new competitive environment. External sourcing activities such as inter-firm partnerships, mergers and acquisitions, have been an important element in the overall strategy of these companies to deal with the new requirements and demands. This study gives insight into the most important external sourcing activity trends and patterns of firms in the telecommunications providers sector since the eighties. We show the general growth patterns in inter-firm partnerships and M&As, focusing on the underlying motives and major developments in their specific organizational settings over time. Using country-level data, we also analyze the growth pattern in the number of M&A deals and inter-firm partnerships and the role that different international economic and trading blocks play in all this. Besides, an international expansion in external sourcing activities, we discuss the general and sectoral developments in the direction of these activities in terms of sectoral-markets. We have chosen the period from 1986 to 2000, because this period is expected to encompass the effects of the shifts in the business environment. This period also covers the years in which external sourcing activity of telecommunications service providers has risen rapidly.

In the next section, we briefly present the main external sourcing modes, mergers and acquisitions (M&As) and inter-firm partnerships, and their main rationales to understand the phenomenon that is actually being studied. In the following section, we analyze the general patterns in M&A activity of telecommunications service providers over the period 1986-2000, as they appeared in the Securities Data database. This database contains also data about inter-firm partnership activities of firms. The inter-firm partnership data are analyzed in the following section. It presents and explains the general patterns of the inter-firm partnership activity of telecommunications service providers. The closing section presents some conclusions that can be drawn from this contribution.

2. External Sourcing Activities: their rationale and some definitions

2.1 External Sourcing Options

An interesting phenomenon of the telecommunications service provider industry is the existence of network externalities. Network externalities exist if the utility that a consumer derives from purchasing a product or a service, increases or decreases with the number of other consumers and businesses that also use this product. As a consequence, the size of the user base affects the perceived quality and legitimacy for a product or group of products that are based on the same underlying technology or design. These network externalities also play an important role in the formation of de facto standards (Katz and Shapiro, 1985). Hence, the existence of these externalities influences the strategic behavior of the companies operating in the telecommunications service provider industry. An interesting example is the third Generation (3G) of mobile communications systems that was presented as a vision of ultimate convergence in Europe. This 3G system has been built on the Universal Mobile Telecommunications Systems (UMTS). This technology standard has required companies to develop or acquire complementary technologies and infrastructure networks. Another important characteristic of the telecommunications service provider industry is that this industry has been characterized for many decades as a stable market. This relatively stable environment encouraged firms to develop a fixed set of routines to deal with their environment (Duysters and Hagedoorn, 1999). Due to deregulations, globalization, and new technologies, however, the routinized behavior of companies does not seem sufficient anymore to deal with the new demands and requirements. Customers, in particular multinational companies operating across national frontiers, require services in the form of one-stop-shopping. One-stop-shopping allows customers to contact only one incumbent to order and manage all links leased through the network (Pennings, Kranenburg and Hagedoorn, 2005). A new development is that customers require all networks involved operate as if they belong to the same overarching network. Customers are also beginning to demand not only telecommunications services, but also information, entertainment and media services in the form of one-stop-shopping. Suppliers are, therefore, forced to engage in a search process for additional resources, capabilities and other activities in an attempt to improve their ‘fit’ with these new business requirements.

In this network, environment companies must adapt quickly to new technologies, products, markets, production methods, regulations and competitive strategies to create or sustain the competitive advantages. Due to the increasing competitive environment, the companies’ effort to develop desired capabilities and resources and to create new businesses or to adapt to existing businesses and emerging markets through internal growth would be a risky strategy. Companies may lack the time, the needed knowledge, the resources, and the capabilities to create the necessary internal growth. Furthermore, previous research on expansion showed that new markets might be difficult to penetrate because a lack of market presence and information on customers’ needs, local operating conditions and government regulations (see e.g. Kranenburg, Cloodt and Hagedoorn, 2001). Therefore, external sourcing options such as market exchange, acquisitions of local companies and cooperation with partners may provide an established market position, and contact with expertise from other related and unrelated markets. Also, these external sourcing forms give companies access to a range of capabilities and resources that the companies need to further develop both core activities and complementary activities.

The current understanding of external sourcing activities of firms suggests, among other things, that a rational strategy for incumbent companies in a dynamic environment would be to use all these “vehicles” to adapt to the new demands and requirements (Chakrabarti, Hauschildt and Sueverkruep, 1994; Hitt, Hoskisson, Johnson and Moesel, 1996; Williamson, 1996). This holds in particular if these external sourcing forms are applied to increase innovative capabilities and build a substantially enlarged user base for new activities and promising businesses. The external sourcing choice for a company may range from market exchange transaction or a simple non-equity agreement - a cooperative partnership - to a partly or even fully equity transaction such as a joint venture, acquisition or merger.

2.2 Market Exchange

Market exchange is defined as an entire complex of institutions which people buy and sell and hire and are hired and borrow and lend and trade and contract and shop around to find bargains (Schelling, 1978). Firms may be reluctant to undertake market exchanges because there exist limited opportunities to learn the intangible aspects of the technology, customers, markets or the firm may become too dependent on the resources and capabilities of the external party (Capron and Mitchell, 2004). In general, market exchanges are not appropriate when a firm considers the needed capabilities as strategically important to create sustainable competitive advantage. More integrative modes, such as an acquisition and a partnership, may help the firm to develop the needed future capabilities in a dynamic environment. They provide stronger opportunities for a firm to get access to and develop a range of capabilities that a firm needs to develop further both core capabilities and activities and complementary activities.

2.3 Mergers and Acquisitions

Mergers and acquisitions provide a viable vehicle when the firm needs to make extensive changes. These actions give firms immediately access to the needed capabilities, including resources, technologies, mindsets, and future streams of innovations, and may build the needed market credibility (Gaughan, 1991). Acquisitions enable firms to adapt rapidly to shifts in the landscape and to survive. The different forms of mergers and acquisition have been extensively described and discussed in the literature (see e.g. Jarell, Brickley, and Netter, 1988; Jensen 1984). In general, a merger is defined as a transaction whereby two or more equally valued firms become one. This transaction is negotiated with the target’s management and, when approved by its board of directors, the terms of the offer are submitted to a vote of the shareholder. However, not all transactions between firms are negotiated with and approved by the target firm’s management, in particular by transactions in which a dominant firm acquires the assets of the less dominant target firms. This type of transaction is known as acquisition. In reality most mergers are in fact acquisitions, with one company controlling the other (World Investment Report, 2000), therefore we will use the terms mergers and acquisitions (M&As) interchangeably.

In general, M&As can be classified in terms of their product-markets involvement, in terms of international nature, and in terms of technological fields involved (Hitt, Hoskisson, and Kim, 1997; Hay and Morris, 1991; Hagedoorn and Duysters, 2002). Empirical evidence shows that M&As are a viable mode to provide a quick and seemingly easy route to achieving product-market objectives (Data, 1991). With respect to the product-markets involved in an M&A transaction, we can make a distinction between a horizontal M&A, a vertical M&A, and an unrelated M&A. A horizontal M&A is one in which a firm acquires another firm in the same product-market. When firms operating in a different stage of the value chain within a particular market, are joined, the

M&A is called a vertical one. Finally, unrelated M&As are transactions between firms where there is no horizontal or vertical relationship (Hay and Morris, 1991).

Another motive for firms to undertake M&As is to enter new technological fields and to gain access to new technology and technological knowledge capabilities (Hitt et al., 1997; Hagedoorn, Cloodt and Kranenburg, 2006). Hagedoorn and Duysters (2002) defined an M&A transaction as a technological transaction when the transaction enables the acquiring firm to access relatively broad categories of technological disciplines and capabilities. However, an important development in the business environment is the accelerated technological convergence on the product-market level. In general, in this environment the product-market and technological motives for undertaking M&As are at work simultaneously (Scherer and Ross, 1990). Due to the fact that it is difficult to make a clear distinction between technological M&As and product-market M&As, we will combine these M&As in the so-called sectoral M&As.

Nowadays, many leading firms are expanding internationally by means of M&As to obtain the desired capabilities and resources and to enter previously unrelated-sectoral markets (Kranenburg, Cloodt and Hagedoorn, 2001). Globalization, new technologies, policies such as the liberalization of foreign direct investments, discriminatory regional agreements, privatization, and deregulations of industries are stimuli for firms to undertake international M&As by opening markets and regions and increasing the availability of favorable M&A targets (Kang and Johansson, 2000). For that reason, it also seems important to look at the international development and nature of M&As.

2.3 Inter-Firm Partnerships

Inter-firm partnerships have also become an important aspect of firms' behavior in fast changing industries to acquire the desired capabilities and resources that far exceed those that are internally possessed by most firms. These inter-firm partnerships play a particularly important role in rapidly changing industries where learning, sharing costs and flexibility form the basis of competition (Daussauge and Garrette, 1999; Gomes-Casseres, 1996, March, 1991; Eisenhardt and Schoonhoven, 1996). Particularly, in the most recent decades, there has been an unprecedented growth in inter-firm partnerships by means of a variety of forms. In fact, many different forms of cooperation have arisen, such as licensing agreement, customer-supplier relationships, research contracts, partnerships between rival firms. In this study, we distinguish between a group of equity based partnerships, especially joint ventures, and a group of non-equity agreements, such as joint R&D agreements, marketing and supply agreements. As these two groups of partnerships will feature so prominently in the following analysis, we will briefly discuss these groups further.

Traditionally, equity based partnerships, in particular joint ventures, accounted for the majority of partnerships in many industries (Hagedoorn and Kranenburg, 2003). In a joint venture, two or more separate firms agree to combine their resources and capabilities in a distinct organizational entity characterized by shared equity ownership. For example, this entity can have shared R&D as a firm specific objective as well as production, marketing, sales. Whereas equity based partnerships are often established in order to raise mutual dependence, an increasing number of firms prefers a more flexible relationship with other firms. A non-equity partnership is more flexible and needs lower investment costs than the equity-based partnership. The non-equity partnership is any contractual agreement between two or more firms in which none of the firms have a degree of ownership. It is generally believed that this type of partnership has a relative short-term focus. This type of partnerships is particularly suited to monitor technological developments, new opportunities, and new product-markets at relative low costs. In addition, the inter-firm partnership is often the only viable strategy for firms to enter an emerging product-market or industry (Chacko and Mitchell, 1998). Recent studies have established that non-equity based partnerships have become more preferred than equity based partnerships as their numbers and share in the total of partnerships has far exceeded that of equity based partnerships (Hagedoorn and Kranenburg, 2003). Following the literature, partnerships can also be classified into horizontal partnership, a vertical partnership and an unrelated partnership. When partners are operating in the same product-market, are allied, we classify the partnership as a horizontal one. A vertical relationship is defined as an agreement between firms operating in a different stage of the value chain within a particular market. Finally, an unrelated partnership is an agreement between firms with no vertical or horizontal relationship (Gomes-Casseres, 1996; Daussauge and Garette, 1999).

Contributions by amongst others Contractor and Lorange (1988) and Hagedoorn (2002) show that international inter-firm partnerships are also considered as an important element in the international strategies of a growing number of firms. An increase in international competition has led many firms to follow also a strategy of internationalization. Through these international strategies, firms do not only seek foreign market entry, but they also seek foreign resources and capabilities and build international inter-firm partnerships for international source of R&D and production. Hence, in the context of the overall importance of internationalization to firms, it also seems important to look at the international development and nature of partnerships.

3. Patterns in M&A activities during the period 1986-2000

3.1 General Patterns in the number of M&A deals

In order to access the importance and magnitude of M&A activities in the rapidly changing telecommunications service provider industry, we examined the number of M&A deals of telecommunications service providers as they appear in the Securities Data database. Within the database there is information on the year the M&A got established and company information on the acquirer, the target, the parent acquirer and the parent target firm. The industry information is given by SIC codes of acquirer and target firm and a detailed business description of the companies. Overall, the period 1986-2000 showed a relatively large increase in the number of M&A deals. During this period, the total number of annually newly M&A deals of which the telecommunications providers were the acquirers increased from a few deals in 1986 to around 800 deals in 2000. Figure 1 shows the growth patterns of total number of annually, newly M&A deals of telecommunications service providers and the growth pattern of number of annually newly (horizontal) M&A deals between telecommunications service providers for the period 1986-2000. During the second half of the 1980s and the 1990s, the number of horizontal M&A deals of telecommunications service providers within their own industry rose from around 15 new deals in 1986 to around 350 new deals in 2000. We also looked at the trend in the M&As deals undertaken by telecommunications service providers outside their own industry. This M&A activity followed more or less the same pattern as the M&A activity undertaken by the telecommunications service providers within their traditional core industry. During the second half of the 1980s, the number of M&A deals with companies outside the telecommunications industry was slightly higher than the number of deals within the industry. However, at the end of the 1990s the annually newly M&A deals with companies from other industries showed a substantial higher increase than the number of horizontal M&A activities within the traditional industry.

---insert figure 1 about here-----

All with all, the historical data on M&A deals of telecommunications service providers reveal, despite some irregularities, an overall growth pattern in the number of annually new M&A deals since the mid 1980s. This particular, seemingly, exponential growth pattern is quite identical to the pattern found for other industries (see e.g. Chan-Olmsted, 1998; Cloodt, 2005).

The explanation of this overall growth pattern in M&A deals is related to the motives that stimulate companies to undertake M&A activities. In the last two decades, new technologies introduced new activities and businesses, leading to convergence of traditional distinct industries, and leading to an increased complexity of projects, increasing costs of projects, and shorter innovation cycles (World Investment Report, 2000; Cloodt, 2005). Other important changes in the environment were the deregulation of the telecommunications service provider industry, liberalization of foreign direct investments, and the ongoing regional economic integration (World Investment Report, 2000; Kashlak and Joshi, 1994; Pennings et al., 2005). Consequently, these developments stimulated the opening of telecommunications service provider markets and directly raise the possibility of a large increase in the number of M&As. Another important factor that affected the increase in the number of M&A deals is the change in the world capital markets and globalization (World Investment Report, 2000). Opening of the world capital market made it easier for companies to borrow loans and credits to undertake M&A deals.

3.2 Trends in the number of sectoral M&A deals

The period 1986-2000 has not only seen an explosion in M&A activity of telecommunications service providers within the telecommunications industry, but also a large increase in the number of M&A deals outside their traditional industry. As mentioned before, convergence of traditional distinct industries and other changes in the business environment intensified pressures and speed became a very important factor for survival. In particular, the boundaries between the traditional telephone, mass media (print, broadcast and cable), customer electronics and computing industries became blurred and this created opportunities for a large continuum of combined products. The literature suggests that firms react to these new opportunities by using M&As as a fast option to enter related and unrelated sectors and deal with the new opportunities created by convergent technologies (Cloodt, 2005). M&As provide quick and seemingly easy route to create competitive advantages. In this context, it is interesting to analyze the number of M&A deals of telecommunications service providers in related and unrelated sectors. We measured the sectoral M&A activities in terms of the (dis)similarity of the SIC code of the sectors of the M&A partners and the business description provided by the Securities Data databank. We have reduced the number of activities to seven sectors: telecommunications service provider; computer, software and Internet; media and entertainment; consumer electronics; developing and manufacturing telecommunications products; other communication services; other business. These seven sectors can be reduced further to three general sectors: telecommunications service provider; convergent sectors; unrelated sectors. (see table 1 for an overview of industries and sectors).

---Insert Table 1 about here----

If we look at the overall pattern of M&A deals during the period 1986-2000, it becomes clear that almost half of the M&A deals of telecommunications service providers were in the traditional telecommunications service provider sector. During the mid 1980s and the beginning of the 1990s, the share of M&A deals in the telecommunications service provider sector gradually increased from around 41 percent in the mid 1980s to more than 52 percent in the first half of the 1990s. This share eroded to less than 48 percent in the final years of the 1990s. Figure 2 shows the general patterns of M&A deals with respect to the seven sectors over the whole period and the sub-periods. The share of M&A deals in the unrelated sector remained stable around 13 percent during the whole period. Of course, the number of M&A deals of telecommunications service providers in the unrelated sectors increased overtime. The shares of M&A deals in the convergent sectors showed more variety between 1986 and 2000. During the second half of the 1980s, around 15 percent of the M&A deals were in the computer, software and Internet sector. This share eroded to around 8 percent during the first half of the 1990s, after which it increased again to around 23 percent in the 1990s. The share of M&A deals in the other communication services sector dropped from around 20 percent in the 1980s to around 14 percent in the early 1990s. This share continued to decline to around 9 percent in the 1990s. The shares of M&A deals of telecommunications service providers undertaken in the media and entertainment sector, and the developing and manufacturing telecommunications products sector, were more or less stable around 6 and 4 percent respectively over the whole period. Interestingly, the share of M&A deals of telecommunications service providers undertaken in the consumer electronics sector was less than 1 percent for the period 1986-2000. The highest share was around 0.5 percent at the end of the 1990s. This indicates a relatively low convergence between these sectors based on the number of M&A deals undertaken by telecommunications service providers in the investigated period.

---Insert Figure 2 about here----

3.3 Trends in the number of regional M&A deals

We also analyze at the role that the different international economic and trading block play in the M&A activity of telecommunications service providers. The period 1986-2000 has not only seen an explosion in M&A deals in general but also a large increase in the number of international M&A deals. As mentioned before, changes in the business environment – such as privatization and deregulation of telecommunications service provider industry, regional integration, and convergence of industries into information multimedia industry- intensified competitive pressures and speed became an important factor for survival. International M&As might provide telecommunications service providers with a fast entrance into new markets, the needed resources and capabilities, and a fast way to react to intensified competition (Capron and Mitchell, 1998). In the following we will differentiate between sectoral M&A deals and companies from Europe, North America (USA and Canada), Asia and all other regions (Africa, Central and South America, New Zealand and Australia). Table 2 presents the distribution of M&A deals per sector and per region. The overall pattern in M&A activity for the period 1986-2000 demonstrates a dominance of the economic regions Europe and North America in the number of M&A deals taking place within or between the regions. In the 1980s, North America clearly dominated the number of M&A deals in all sectors. The dominance of North America reflected the leading role that this continent played in the development of the telecommunications service providers in the eighties. Many of the sectoral M&A deals were between companies from North America in the second half of the 1980s. However, this share declined to under 50 percent in most sectors, except for the sectors consumer electronics and other communication services in the 1990s. The share of North American M&A deals declined to around 51 percent in the other communication services sector, while the consumer electronics sector showed an increase in the M&A deals between North American companies. In the second half of the 1990s, all consumer electronics M&A activities were between companies from North America.

In addition, we witness also that the share of sectoral M&A deals that concerns at least one North American company with a company from another economic trading block is generally larger in the 1980s than in the 1990s, while the share of sectoral M&A activities of European companies increased in the period 1986-2000. In particular, the share of M&A activities between European companies increased in this period. One reason for the fact that the dominance of M&A deals with at least one North American company decreased while the importance of European M&A deals increased, was that in contrast to the USA and Canada, the M&A activities in Europe started in the 1990s, except for the United Kingdom. In the United Kingdom, the M&A activities started in 1984. The privatization and deregulation of the telecommunications service provider markets in the European Union and the opening of the East European markets increased the number of available target companies and boosted the European M&A activities of telecommunications service providers.

Another interesting development was the increasing role that the Asian companies played in the number of M&A deals in which at least one telecommunications service providers was involved. The most of the M&A deals were between companies within Asia. More in particular, the increasing importance of intra-Asian M&As was particularly strong in the developing and manufacturing telecommunications products sector, computer, software and internet sector, media and entertainment sector, and other business sector in the second half of 1990s. Important factors driving the increase in Asian M&As in the 1990s were the pressure of the World Trade Organization on the Asian governments to liberalize their telecommunications industry and the increasing technological contributions of Asian companies (Pennings, et al. 2005). The Asian region generally lagged behind in comparison with Europe or North America. When competition became possible in Asia, it happened only partially for certain regions or certain services (Fink, Mattoo & Rathindran, 2003).

---Insert Table 2 about here----

4. Patterns in Inter-Firm Partnerships during the period 1986-2000

4.1 General Patterns in the Number of Inter-Firm Partnerships

The continuing popularity of inter-firm partnerships between firms during the 1980s and the 1990s is an indication of the belief that partnerships are a viable external sourcing mode to acquire the desired resources and capabilities and to provide a quick access to potential markets. Although inter-firm partnerships have become an important aspect of company behavior in a large number of industries, inter-firm collaborations play a particularly important role in industries and sectors where learning and flexibility form the basis of competition (Hagedoorn, 2002). Indeed, in most fast changing industries, such as the telecommunications service provider industry, the explosive increase in the number of inter-firm partnerships between firms show the seemingly attractive and viable mode to create or sustain competitive advantage. For instance, in this type of rapidly changing industry, advances in science and technology are widely dispersed and competition is also coming from outside the traditional industry. To create and to sustain a competitive advantage a firm need new and other resources and capabilities that far exceed those that are internally possessed by most companies. Liberalization and technological developments trigger the formation of various types of partnerships, which enable companies to maintain their flexibility, learn from a variety of sources about the many new opportunities available to them and to acquire the desired resources and capabilities (see e.g. Contractor and Lorange, 1988; Gomes-Casseres, 1996, Graack, 1996).

In order to assess the importance and magnitude of inter firm partnership activity of telecommunications service providers, we examine the number of newly established partnerships in which at least one telecommunications service provider was involved as they appeared in the Securities Data databank. Within the databank there is information on the year the inter-firm partnership was formed and information on the partners, and their parent companies. The industry information is identified as SIC codes of partners and a detailed description of the partnership. Overall, the period 1986-2000 showed a relatively large increase in the number of newly made inter-firm partnerships by telecommunications service providers. During this period the total number of annually newly established inter-firm partnerships involving at least one telecommunications service provider increased from 11 partnerships in 1986 to around 528 partnerships in 2000. Figure 3 shows the total number of annually, newly established partnerships involving at least one telecommunications service provider, the number of annually formed joint ventures involving at least one telecommunications service provider, and the number of annually newly established (horizontal) partnerships between telecommunications service providers for the period 1986-2000.

----Insert Figure 3 about here----

Traditionally, the joint ventures accounted for the majority of inter-firm partnerships in many industries (Hagedoorn, 2002; Hagedoorn and Kranenburg, 2003). Firms may prefer equity partnerships in the beginning because they need adequate legal, economic and ownership safeguards to prevent partners from abusing the possibilities for opportunistic and purely self-interested behavior. Recent studies have established that joint ventures have become less popular if compared to non-equity partnerships as the number of non-equity forms of inter-firm collaborations has exceeded the numbers and share of equity forms of collaborations (Narula and Hagedoorn, 1999). This decreasing popularity is probably due to the organizational costs of joint ventures in combination with their high failure rate (Kogut, 1988). The number of joint ventures involving at least one telecommunications service provider also showed a declining trend (see figure 3). During the 1980s and the first half of the 1990s, the increase in the number of newly established joint ventures showed a similar pattern as the development of the total number of newly established inter-firm partnerships. The number of joint ventures involving at least one telecommunications service provider increased from 8 newly established joint ventures in 1986 to 268 newly made joint ventures in 1995. However, the number of newly established joint ventures started to decline in the second half of the 1990s to 131 newly established joint ventures in 2000. These particular growth patterns in inter-firm partnerships are generally similar to the patterns found for other industries (see Hagedoorn, 2002; Hagedoorn and Kranenburg, 2003).

In the further analysis, we will not make a distinction between equity and non-equity inter-firm partnership. In the following, we examine the development of partnerships between only telecommunications service providers, the so-called horizontal inter-firm partnerships (see also figure 3). During the second half of the 1980s the number of annually newly established horizontal partnerships with other telecommunications service providers was less than 5. However, the beginning of the 1990s witnessed a rather sudden increase in the number of new partnerships as nearly 20 horizontal partnerships were established in 1990. This particular growth pattern continued into the first half of the 1990s. Apart from a small drop in 1992, those years marked a rather steep increase in the number of annually newly formed partnerships from about 80 in 1991 to more than 180 new horizontal partnerships in 1995. In 1996, we witnessed a significant drop to 93 newly made horizontal partnerships but a year later the number of new horizontal partnerships slowly increased to a number of 101. Ignoring some small irregularities, the number of newly formed horizontal partnerships further increased to 141 in 2000. Important factors driving the increase in number of horizontal inter-firm partnerships were the ‘Liberalization Directives’ under Article 90 of the Treaty of Rome that launched the deregulation of telecommunications market in the European Union in 1985 and the

GATS agreement at the Uruguay Round in 1994. The latter agreement forced the governments to liberalize their telecommunications service provider sector, although the starting point of liberalization differs between countries. (Fink, Mattoo and Rathindran, 2003). Telecommunications service providers have to react on these developments to sustain their competitive advantage. Inter-firm partnerships give firms the opportunity to explore new markets more freely and access knowledge more quickly (Grant and Baden-Fuller, 2004).

4.2 Trends in the number of sectoral inter-firm partnerships

Another interesting pattern is the number of newly established vertical and unrelated inter-firm partnerships of telecommunications service providers. This pattern is more or less similar as the annually newly formed horizontal partnerships, although the magnitude is larger. During this period, the number of annually newly established non-horizontal inter-firm partnerships increased from 8 partnerships in 1986 to around 390 partnerships in 2000. The trend shows that unrelated and vertical inter-firm partnerships became more and more important in terms of their contribution to the total number of inter-firm partnerships involving at least one telecommunications service provider. The end of the 1980s witnessed a rather sudden increase in the number of annually newly made unrelated and vertical inter-firm partnerships. This particular accelerated growth pattern continued into the 1990s, with a significant drop in non-horizontal inter-firm partnership activity in 1996. The increasing importance of non-horizontal inter-firm partnerships indicates that this kind of partnerships was an attractive and fast option for telecommunications service providers to enter another stage of the value chain, to deal with the opportunities created by convergent technologies, or monitor opportunities in seemingly unrelated markets and businesses. As mentioned before, changes in the business environment intensified competitive pressure and speed became an important factor for survival. Vertical and unrelated inter-firm partnerships may provide telecommunications service providers with a fast entrance into new markets and a fast way to react to intensified competition (Chacko and Mitchell, 1998). Furthermore, these partnerships may provide companies with the needed knowledge, resources and capabilities to create or sustain their competitive advantage in the fast changing industry (Daussage and Garrette, 1999; Gomes-Casseres, 1996; Chan-Olmsted and Jamison, 2001). For a further analysis of patterns of inter-firm partnerships of telecommunications service providers, we also looked at the trends in the share of individual sectors (see table 1 for an overview of sectors). Figure 4 shows the general trends of annually newly established inter-firm partnerships involving at least one telecommunications service provider with respect to the seven sectors over the whole period and sub-periods. If we look at the patterns of annually newly founded inter-firm partnerships, we observe the dominance of the telecommunications service provider sector and the computer, software and internet sector. During the mid 1980s and the beginning of the 1990s, the share of inter-firm partnerships within the traditional telecommunications service provider sector increased from around 20 percent to around 32 percent. The share eroded to 28 percent in the second half of the 1990s. The share of inter-firm partnerships within the computer, software and internet sector started with 24 percent in the 1980s and slightly declined to 21 percent in the first half of the 1990s. This share significantly increased to 33 percent in the second half of the same decade. Interesting to see is the continuing decline of the share of inter-firm partnerships within the developing and manufacturing telecommunications products sector. This share declined from 22 percent to 6 percent in the period 1986-2000. The share of inter-firm partnerships within the communication services sector showed a similar declining trend. The share declined from 19 percent to 7 percent over the whole period. The shares of inter-firm partnerships within the other convergent sectors showed less variety between 1986 and 2000. The shares of inter-firm partnerships within the media and entertainment sector and the consumer electronics sector remained stable around 4 and 0 percent respectively. The share of inter-firm partnerships within the unrelated sector was stable around 16 percent in the 1980 and the first half of the 1990s and increased to 22 percent in the second half of the 1990s.

-----Insert Figure 4 about here----

4.3 Trends in the number of regional inter-firm partnerships

The period 1986-2000 not only showed an explosion in inter-firm partnership activity in general but also a large increase in the number of international inter-firm partnerships. The total number of annually newly founded international inter-firm partnerships involving at least one telecommunications service provider increased rapidly during the period from 10 inter-firm partnerships in 1986 to 310 inter-firm partnerships in 2000. For a further analysis, we take a closer look at the role that the different international economic and trading blocks played in the annually newly founded inter-firm partnerships. Again, we differentiate between sectoral inter-firm partnerships and companies from Europe, North America, Asia and all other regions. Table 3 shows the distribution of the share of inter-firm partnerships involving at least one telecommunications service provider per sector and per region. The overall pattern in regional inter-firm partnership activity for the period 1986-2000 demonstrates a dominance of the economic regions Europe and North America with respect to the number of inter-firm partnerships made between companies within or between these regions. In general, companies from North America clearly dominated the number of sectoral inter-firm partnerships. The dominance of North America reflects again the leading role that this continent played in the development of the telecommunications service providers. The majority of the sectoral inter-firm partnerships, as found in the Securities Data database, for the past one and a half decades had at least one North American partner. During the mid-1980s and the 1990s, the share of inter-firm partnerships involving at least one North American partner gradually declined in all sectors. This share of inter-firm partnerships within the telecommunications service provider sector eroded from 76 percent in second half of the 1980s to 53 percent in the 1990s. In the same period, the share of inter-firm partnership involving at least one North American partner in the unrelated sector declined from 91 percent to 58 percent. A similar declining trend can be observed for share of inter-firm partnerships within the convergent sectors. The inter-firm partnerships within North America were the most forthcoming inter-firm partnerships involving at least one telecommunications service provider in all periods. Further analysis of this intra-North American share showed different trends in the individual sectors. The telecommunications service provider sector, and the media and entertainment sector experienced an overall declining trend, while the developing and manufacturing telecommunications products sector, the consumer electronics sector and the unrelated sector showed an overall increasing trend between 1986 and 2000. The share of intra-North American partnerships within the computer, software and internet sector and the other communication services sector experienced an inversed u-shape trend in the identical period.

---Insert table 3 about here----

The share of inter-firm partnerships involving at least one European partner was also substantial. The share of this kind of inter-firm partnership eroded in the most sectors from between 40 and 50 percent in the mid-1980s to less than 35 percent in the 1990s. However, this share increased in the media and entertainment sector and in the consumer electronics sector in the identical period, while this share followed an inversed u-shaped trend in the computer, software and internet sector between 1986 and 2000. Interestingly, the majority of international inter-firm partnerships involving at least one telecommunications service provider were between European companies and North American companies. This suggests that North America was an interesting region for European companies in the period 1986-2000.

It is also interesting to look at the role that the continent Asia played in the forming of inter-firm partnerships of which at least one telecommunications service provider was a partner in the identified seven sectors since 1986. During the period 1986 and 2000, the share of inter-firm partnerships involving at least one Asian company increased from between 0 and 18 percent in 1986 to between 23 and 35 percent in 2000 in the telecommunications service provider sector, the computer, software and internet sector, the media and entertainment sector, and the other communication services sector. This share declined in the developing and manufacturing telecommunications products sector, the consumer electronics sector, and the unrelated sector from 28, 100 and 36 percent in 1986 to 19, 64 and 29 percent in 2000 respectively. In the second half of the 1980s, the only inter-firm partnerships in the consumer electronics sector were between Asian companies and North American companies. Although the contribution of Asian companies in the newly established partnerships in the consumer electronics sector eroded, they were still involved in the majority of inter-firm partnerships in this sector during the period 1986-2000. Furthermore, in the mid 1980s Asian companies allied mainly with partners from Asia and North America. In the 1990s, they were also more inclined to ally with European companies, although the share of inter-firm partnerships between Asian companies and European companies in the identified sectors remained relatively low.

5. Conclusions

The rapid pace of technological change, the liberalization of capital markets, the regional economic integration, and the privatization and deregulation of telecommunications service provider industry augmented competition and forced the telecommunications service providers to develop or to acquire the needed resources and capabilities and to enter new markets to create or sustain their competitive advantages in the last decades. Because internal development of the needed capabilities and resources was a slow and risky strategy, telecommunications service providers were looking for other possibilities to acquire the resources and capabilities and to enter new markets. External sourcing modes such as inter-firm partnerships, mergers and acquisitions were use to help the firms to get access to a range of resources and capabilities that these firms needed to adapt to the new demands and requirements. Major aspects of the external sourcing activity behavior of telecommunications service providers can be explained by the fact that they tried to create an overarching network, immediately access to the needed resources and capabilities, to build the needed market credibility, and to offer information, media and entertainment services.

To provide more insight into the external sourcing activity of telecommunications service providers, this study therefore analyzed the general overview of major trends and patterns of external sourcing activity since 1986. The historical data on annually new M&A deals and annually newly established inter-firm partnerships involving at least one telecommunications service provider revealed, despite some irregularities, an overall increasing growth pattern since the mid-1980s. During the second half of the 1990s, we observed a rather steady increase in both the number M&A deals with targets outside the traditional telecommunications service provider sector and the number of inter-firm partnerships outside this sector. These particular growth patterns are generally similar to the patterns found for other industries (see Cloodt, 2005; Hagedoorn, 2002; Hagedoorn and Kranenburg, 2003). These developments suggest that companies had to make fast adaptations to the shifts in the business environment to create or to sustain their competitive advantage. Furthermore, the external sourcing activity outside the traditional sector indicates that these companies were actively involved in becoming major players in the relevant markets. Another interesting observation was that around 50 percent of the M&A deals were in the telecommunications service provider sector, while less than 30 percent of inter-firm partnerships were formed within this sector during 1986-2000. This can be explained by the fact that, companies prefer inter-firm partnerships to monitor new opportunities and seeking to enter an emerging market at relative low cost (Chacko and Mitchell, 1998). Companies prefer the more expensive external sourcing mode M&As for taking over companies in the same industry.

Another important development was the internationalization strategy of telecommunications service providers. The overall external sourcing activity trends showed that both the total number of annually newly established international inter-firm partnerships that concerned at least one telecommunications service provider and the total number of international M&A deals of which the acquirer was a telecommunications service provider, despite some irregularities, increased over time. We witnessed the dominance of North American companies in these external sourcing activities. However, their contribution was larger in the first period than in the latter period of our analysis, although at least one North American company was still involved in the majority of cases. This illustrates the importance of North America for the development of the telecommunication service providers and the information multimedia industry. One reason for this fact was that the North-American companies created such a comparative advantage in the information multimedia industry that non-North American companies preferred to internationalize through partnerships with North American companies or to undertake an M&A with a North American company to survive in the rapidly changing environment (Kranenburg et al, 2001). However, the number of external sourcing activity of telecommunications service providers between non-North American companies increased in the identified period. Reasons for this development can be found in a later start of deregulation of the telecommunications service provider industry, opening of the Asian and Eastern European market, the establishment of the single European market in 1992, and the technological catching up of the Asian countries.

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Table 1 Definition of sectors	
Traditional sector	
Sectors	***Industries***
Telecommunications Service Provider	Telecommunications Service Provider, Cellular telecommunications services, Long-distance telecommunications services, Provider of fixed-line telephone services
Convergent sectors	
Sectors	***Industries***
Computer, Software and Internet	Computer services; Developing software; Manufacturing computer; Manufacturing semiconductors; Wholesale computer; Internet services; Manufacturing Internet-working systems
Media and Entertainment	Media services; Manufacturing media; Manufacturing audiovisual equipment; Manufacturing entertainment products; Publishing
Consumer electronics	Manufacturing consumer electronics
Developing and Manufacturing Telecommunications Products	Developing telecommunications products; Manufacturing telecommunications products
Other Communication Services	Provider communications systems; Manufacturing data communication equipment; Communication services; Data communication services

Unrelated sectors	
Sectors	***Industries***
Other Business	National telecommunications agency; Wholesale trading company; Electric utility; Government and national agency; Manufacturing unrelated business; Manufacturing electronic equipment; Manufacturing industrial controls

Figure 1.Number of M&A deals of telecommunications service providers during the period 1986-2000

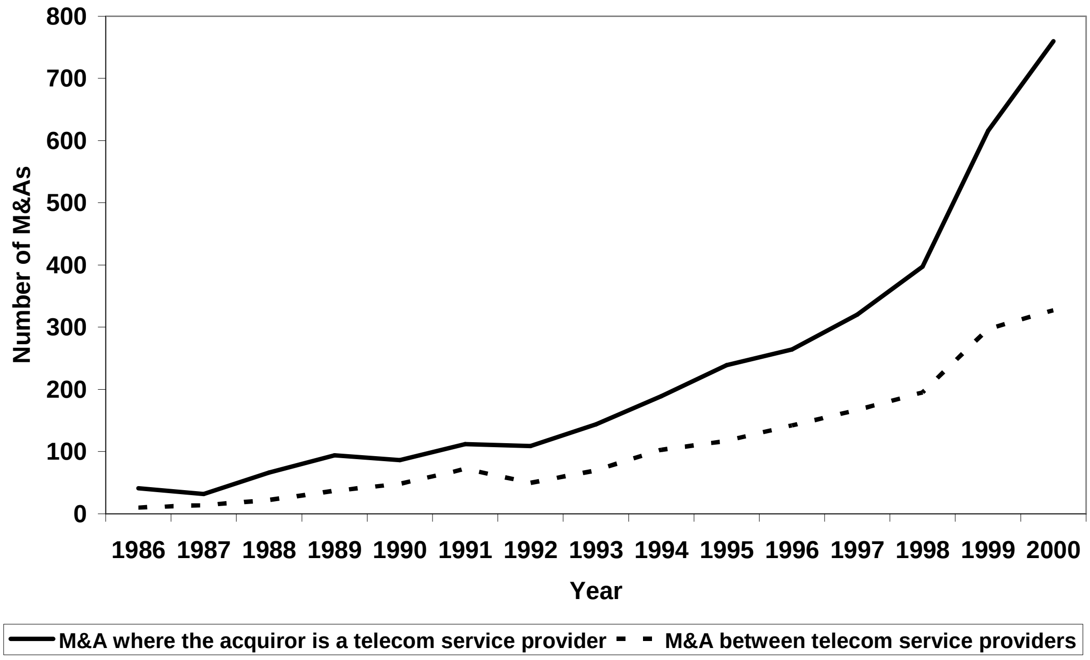

Figure 3 Number of Inter-Firm partnerships involving at least one telecommunications service provider during period 1986-2000.

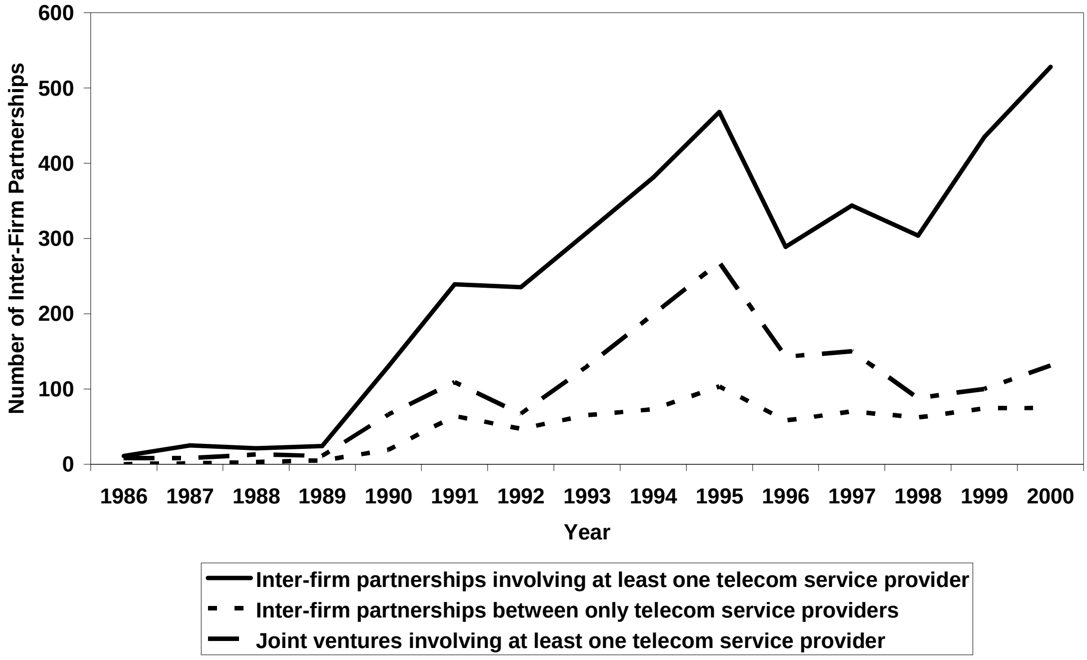

Table 2: Distribution of the share of M&A deals per sector and per region

Sector / Period	Intra-North America	Intra-Europe	Intra-Asia	Europe-North America	North America-Asia	Europe-Asia	Others
Telecommunication service provider 1986-1990	77%	5%	1%	5%	2%	2%	8%
Telecommunication service provider 1991-1995	68%	12%	3%	4%	2%	2%	9%
Telecommunication service provider 1996-2000	37%	25%	10%	5%	2%	3%	18%
Develop and manufacture telecommunications 1986-1990	70%	15%	0%	15%	0%	0%	0%
Develop and manufacture telecommunications 1991-1995	34%	33%	0%	15%	3%	0%	15%
Develop and manufacture telecommunications 1996-2000	33%	28%	25%	7%	0%	0%	7%
Computer, software and internet 1986-1990	60%	13%	0%	17%	4%	2%	4%
Computer, software and internet 1991-1995	43%	35%	3%	10%	2%	0%	7%
Computer, software and internet 1996-2000	32%	39%	6%	6%	3%	1%	13%
Media and entertainment 1986-1990	82%	0%	0%	18%	0%	0%	0%
Media and entertainment 1991-1995	41%	28%	3%	15%	2%	0%	11%
Media and entertainment 1996-2000	37%	34%	10%	5%	2%	0%	12%
Consumer electronics 1986-1990	0%	0%	0%	0%	0%	0%	0%
Consumer electronics 1991-1995	33%	67%	0%	0%	0%	0%	0%
Consumer electronics 1996-2000	100%	0%	0%	0%	0%	0%	0%
Other communication services 1986-1990	85%	2%	2%	11%	0%	0%	0%
Other communication services 1991-1995	76%	10%	2%	6%	1%	2%	3%
Other communication services 1996-2000	51%	25%	5%	7%	1%	1%	10%
Other business 1986-1990	79%	12%	0%	7%	0%	0%	2%
Other business 1991-1995	55%	26%	6%	5%	2%	1%	5%
Other business 1996-2000	42%	31%	10%	6%	1%	1%	9%

Table 3 Distribution of the share of inter-firm partnerships per sector and per region

Sector / Period	Intra-North America	Intra-Europe	Intra-Asia	Europe-North America	North America-Asia	Europe-Asia	Others
Telecommunication service provider 1986-1990	43%	9%	0%	30%	3%	0%	15%
Telecommunication service provider 1991-1995	33%	13%	8%	15%	11%	6%	14%
Telecommunication service provider 1996-2000	31%	14%	11%	10%	12%	6%	16%
Develop and manufacture telecommunications 1986-1990	27%	4%	2%	39%	22%	4%	2%
Develop and manufacture telecommunications 1991-1995	35%	9%	10%	15%	15%	6%	10%
Develop and manufacture telecommunications 1996-2000	42%	10%	5%	15%	7%	7%	14%
Computer, software and internet 1986-1990	45%	2%	0%	31%	16%	2%	4%
Computer, software and internet 1991-1995	56%	5%	3%	17%	11%	3%	5%
Computer, software and internet 1996-2000	36%	11%	11%	17%	13%	3%	9%
Media and entertainment 1986-1990	86%	14%	0%	0%	0%	0%	0%
Media and entertainment 1991-1995	39%	11%	5%	21%	11%	0%	13%
Media and entertainment 1996-2000	30%	14%	11%	16%	9%	3%	17%
Consumer electronics 1986-1990	0%	0%	0%	0%	100%	0%	0%
Consumer electronics 1991-1995	33%	0%	17%	0%	33%	17%	0%
Consumer electronics 1996-2000	23%	0%	13%	13%	38%	13%	0%
Other communications 1986-1990	31%	3%	0%	45%	8%	5%	8%
Other communications 1991-1995	33%	9%	12%	12%	13%	7%	14%
Other communications 1996-2000	27%	17%	10%	8%	17%	8%	13%
Other business 1986-1990	16%	6%	0%	39%	36%	0%	3%
Other business 1991-1995	36%	9%	13%	12%	16%	8%	6%
Other business 1996-2000	38%	10%	13%	9%	11%	5%	14%

Figure 2 Sectoral Distribution of M&A deals, 1986-2000

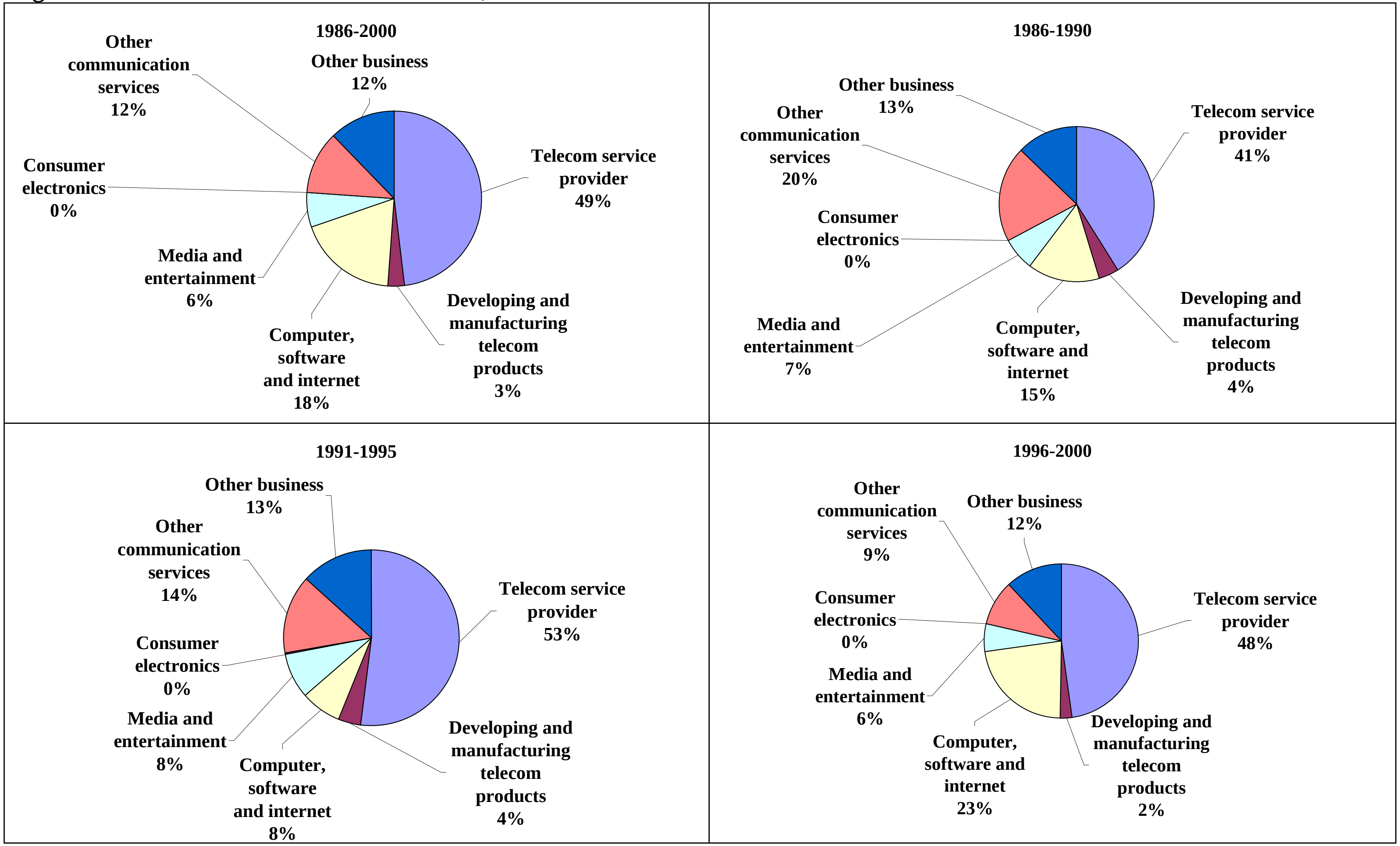

Figure 4 Sectoral Distribution of Inter-Firm Partnerships, 1986-2000