

SOURCES OF CREATIVITY AND STRENGTH IN
THE DIGITAL CONTENT INDUSTRY IN SEOUL:
PLACE, SOCIAL ORGANIZATION AND PUBLIC POLICY

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“Creativity” has become a key to economic competitiveness. However, the formation of creative labor, the social organization of production, and the operational mechanisms of the creative industry remain understudied. Existing studies overemphasize the role of information technology in the creative industry sector and rely on earlier analytical frameworks from the manufacturing literature. They fail to recognize creativity as an important input or the unique features of the small–large firm relationship in the creative industry.

I explore the social organization of production and interfirm networks in a digital content industry cluster, Teheran Valley in Seoul, Korea, using a case study, mixed methods approach. I argue that creative skill is a critical input that influences a firm’s production organization and interfirm relationships. I find that digital content creators in Teheran Valley rely on in-house production systems organized as semi-symbiotic project teams. This production system provides the following advantages:

- 1) integrating different sets of creative skills such as cultural sensitivity, technological understanding, and commercial viability; and
- 2) enhancing the stability and consistency of the production process, which lasts from one to two years.

Self-reliant digital content creators maintain horizontal and reciprocal relationships with large telecom corporations. Although telecom corporations are major publishers in the Korean digital content industry, they have been unable to replicate the tacit knowledge embedded in the social organization of creative work. Therefore, to develop new types of digital content products, the two parties collaborate on experimental projects that require intensive face-to-face interactions and, consequently, spatial proximity. I find that small digital content creators tend to have greater negotiating power in their relationships with large firms in the digital content industry in Korea than found elsewhere.

I employ a multi-scalar approach focusing on the interaction among different scales of governance. I argue that the Korean national government tried to mediate the supranational pressure of economic liberalization through national technological standard setting, license control, and venture sector promotion at the local industry level. These policies have shaped a more balanced power relationship between small digital content creators and large publishers in the Korean digital content industry.

BIOGRAPHICAL SKETCH

Namji Jung was born and raised in Korea. A landscape architect by education, she worked as a public policy researcher for several years for the Seoul City government in the field of ecological waterfront rehabilitation, sustainable community development, and green transportation. She earned her master's degree in urban and regional planning from the University of Michigan, Ann Arbor, in 2001. She came to Cornell University for her doctoral program, where she focused on creative industry, commercial gentrification, and the balance between environmental sustainability and social justice from a community perspective.

I dedicate this dissertation to my parents.

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CHAPTER I: INTRODUCTION

1. A Creative Economy, Creative Cities, and Local Competence

With integrated international markets and the advent of new technologies, there has been a search for new sources of competitive advantage. One critical arena for new forms of competition is an economy that has emerged from a convergence of traditional content and information and communication technology. Some scholars use the term “new economy” (Pratt, 2000) to capture the peculiar characteristics of this weightless economy. The outputs of this new economy are characterized not only by their technological sophistication, but also by their aesthetic and entertaining appeal to consumers. Furthermore, a number of studies have highlighted the economic significance of new industries in late capitalism, documenting their contribution to employment, value-added production, and exports (Pratt, 1997; Power, 2002).

New industries also have a tendency to agglomerate in urban settings. As a constellation of a diverse set of fields, the “urban” setting offers firms a range of supporting and complementary services, in addition to institutions (training, research, financial) and a significant pool of specialized workers, all of which facilitate creativity. Such place-based communities are not only a focal point for creative workers but also centers of social reproduction in which cultural competencies are generated (Scott, 2000).

Much scholarly work illuminates the importance of cities as centers that attract creative workers (for example, Florida’s *The Rise of the Creative Class*) and as sites of the convergence of creative and economic activities. Technologically capable and flexibly specialized small firms, as a result of their agility, can be centers of

technological innovation in the post-industrial era, primary job creators,¹ and an engine of economic development (Piore and Sable, 1984). This connection between new industry and local economic development has sparked the development of new economic models and public policy approaches.

Systemic approaches have been developed in economics, economic geography, and economic sociology to explain the logic of agglomeration of firms in a locality including industry districts (Marshall, 1898), clusters (Porter, 1990), regional innovation systems (Lundvall, 1992), and learning communities (Oinas, 2000). Although these approaches take different perspectives on the critical elements shaping systemic firm agglomeration, they converge on a core insight: collaborations among small firms and their interplay with local institutions facilitate local interactions and provide the main sources of new knowledge creation, job creation, and local revenue generation. New knowledge is generated through interactions among creative small firms and between local institutions and other sources of stimuli (Lawson and Lorenz, 1998).

However, the new knowledge is spatially bounded, as there is what Michael Polanyi (1964) termed “tacit knowledge” that is not readily transferable through media. The transfer of such knowledge requires face-to-face interactions (Pratt, 2000; Storper, 1997). As a result of place-specific resources and knowledge, creative people and firms agglomerate more in specific locations (Storper, 1997; Christopherson, 2004). These processes are seen as being dependent on a specific “regional innovation system” (Braczyk *et al.*, 1998), composed mainly of firms and research institutions and defined as geographically distinctive, inter-linked organizations supporting and conducting attempts at innovation. Most research on this topic places small- and

¹ According to Bennett Harrison (1994), the exemplary work is David Birch’s book *Job Creation in America: How Our Smallest Companies Put Most People to Work* (New York: Free Press, 1987), which argues that “very small firms [with fewer than 20 employees] have created about 88 percent of all jobs in [1981–85]” (p. 16).

medium-sized enterprises (SMEs) at the core of the analysis as the most important agents of innovation.

2. The Missing Link: Small and Large Interfirm Relationships

Recently, some scholars have argued that although the ideas presented above have some merits for illustrating phenomena in some regions and countries, they do not provide an adequate framework for analyzing factors that induce variations in the social and political construction of local clusters (Gray, Golob, and Markusen, 1996; Grabher, 2001a; Park, 2001). For example, the comparative advantage of some regions stems from competition among various actors (Grabher, 2001b), while the strength of other regions comes from external links complementing intra-regional interfirm relationships (Flee, 2000). Although less noted in academic research and less adopted in public policy, one line of study views large firms as central in the social organization of industry clusters (Harrison, 1994; Gray, Golob, and Markusen, 1996; Francise and Young, 1999). The hub-and-spoke (Gray, Golob, and Markusen, 1996)² and core-ring (Harrison, 1994) models are based on representative cases of industrial structure and governance systems. They reflect the fact that there are many regions whose industrial structures and cultures are not flexibly specialized. Some scholars argue that this system is superior to the flexibly specialized industrial district because it provides a stable foundation for economic growth and resilience (e.g., Gray, Golob, and Markusen, 1996). Some even argue that this type of social organization, with small firms organized around powerful leading firms, will become the dominant trend

² Markusen's (1996) case study on firm clusters in the Seattle region, centered around a big firm, Boeing, suggests a hub-and-spoke system. This aptly describes the regional economic structure in which one or more large firms dominate the regional economy and small firms are agglomerated around them. Many small firms are spin-offs of large firms and perform outsourced work for major large firms. Competition among small firms and dependency on large firms are major characteristics of the region. Markusen (1996) argues that this type of system can render a region vulnerable to cyclical and secular decline and/or to the crowding out of non-competing, newer sectors or to the possible exploitation of competing small firms by large corporations.

in regional economic structure (e.g., Harrison, 1994). The reason for this, they believe, is that large “leading firms” offer better paying jobs, larger labor pools, higher productivity, and other merits that small firms can take advantage of.

However, these studies tend to overemphasize the dominant power of large firms. In most large firm-centric analyses of industry clusters that encompass large and small firms, small firms are positioned as subsidiary subcontractors or spin-off firms working as suppliers. In that framework, large firms function as magnets that attract small firms or that generate small firm constellations through spin-off processes. Therefore, the relationship between large and small firms is often interpreted as a trust-based but one-sided dependency of small firms on large firms. Mutual gain results from small firms’ gearing their major operations toward large firms’ specific needs. In fact, there is little mystery left to understanding how large corporations dominate certain industry sectors by utilizing their information and economic and political upper hand in manufacturing sectors, because the topic has been studied extensively in political economy and sociology.

Then why do I wish to raise questions about the relationship of small and large firms, if it has been so widely studied? It is because there have been few studies investigating the tension or cooperation between large and small firms in newly emerging industry sectors such as the digital content industry. The existing literature on interfirm relationships, in most cases, focuses exclusively on interactions among small firms and fails to capture these recent phenomena: the entrance of large media corporations in new economy sectors through mergers and acquisitions of innovative firms, and their striving to achieve economies of scale through mergers with firms that own information communication infrastructure or distribution infrastructure (e.g., the mergers of Sony with Columbia TriStar Motion Picture Group and AOL with Time-Warner and their expansion into the entertainment industry [Korea IT Promotion

Agency (KIPA), 2005; Kong and Gibson, 2003]). Mobile phone service carriers have also expanded their business models to include entertainment and Internet portal services, as in the case of AT&T in the United States and SK Telecom in Korea (KIPA, 2005).

Given the current phenomena described above, the inquiry into the small-large interfirm relationship is timely. In order to reflect the changed market environment in new industrial sectors, it is important to understand the changing relationship of small and large firms caused by knowledge- and creativity-centered production modes compared with traditional industry sectors such as the automobile and IT manufacturing sectors. Do interfirm relationships between small and large firms in creative industry sectors differ from interfirm relationships in the traditional manufacturing sectors? In creative industry sectors, creativity is a central, integrated, and necessary aspect of the production process, a source of competitive advantage, a highly decisive contributing factor in customers' choice of suppliers and consumption, and thus a source of status and economic resources (Augustsson, 2005b). Does "creativity" as one of the important inputs in the production process play a critical role? How do firms capture creative ideas and new knowledge as their source of competitiveness? How do firms organize their internal creative resources (workers) to facilitate, sustain, and innovate? How do firms ensure the commercial viability of creative ideas? How do digital content creators strategize to cope with the growing market dominance of large firms in the digital content industry?

The scope of investigation of the small- and large-firm relationship should be expanded to incorporate more complex and dynamic dimensions; it can take on more sophisticated forms because small firms also actively participate in, affect, and alter the power relationship. Surprisingly, small firm sectors—specifically, their interactions with large corporations—are scarcely researched and are poorly

understood in the industry cluster literature, especially with regard to this new type of industry. I argue that the interfirm relationship between small and large firms should be reinterpreted to account for changes brought about by the convergence of conventional content (cultural product), new ICT technology, and commerce.

3. Studying Small and Large Interfirm Relationships

Creative centered and Actor oriented Interfirm Relationships

The broader aim of this research is to identify the underlying mechanism of the social organization of production and the interfirm relationship in the digital content industry. I focus on the changes brought by creative input in the digital content industry as a factor that induces subsequent changes in the production system. I employ a multifaceted approach to the analysis of interfirm relationships. The four factors presented below form the basis of my methodology and schematic analytical framework: the characteristics of the creative skills required in digital content creation, the internal firm organizations of creative work, interfirm relationships, and spatial proximity.

Creativity input: Creativity is an important input factor in the digital content industry. However, defining creativity itself is difficult because creativity is, in fact, part of every operation. Therefore, in this research, I place creativity in the context of the production process. I define creativity as the continuous synthesis of different sets of skills, instead of defining it as the product of a “creative moment” based on a personalized process. Digital content work is the materialization of different sets of skills such as technological development and adaptation and the digitized expression of visual characters. In other words, creativity in the digital content industry, to be a meaningful input factor, should be socially organized.

Internal firm organization of production: To generate economic profit, firms should be able to manage and control workers' creativity and transform it into profitable products. In this respect, firms' strategic internal firm organization, task allocation, and decision-making processes are critical. This involves questions not only about the production process but also about managerial aspects such as decision making processes.

Interfirm relationship: In the existing approaches, such as the transaction-based or trust-based approaches to interfirm relationships, it is assumed that interfirm relationships are mediated by market mechanisms and hierarchies (institutional factors) that influence the kinds of changes brought by creativity in terms of firm strategies, capacities, and interfirm networks (Grandori, 1997). Within this perspective, actors' choices are omitted from the analytical framework. In this dissertation, I assume that although interfirm relationships are conditioned by certain sets of regulations and standards set by the national government from a macro political-economic perspective, actors' strategic choices still determine micro-level governance.

Face-to-Face Interactions and Spatial Proximity: Most empirical studies on high-tech industries argue that spatial proximity and face-to-face interactions became less important as communication in cyberspace became more satisfactory. Will communication via the Internet or instant-messaging software be considered satisfactory for the creative industry sector, too? I assume that although digital content work is about and for advanced information and communication technologies, creative work process still require face-to-face interactions to capture the inspirational moment and share the tacit nature knowledge.

My study of digital content firms includes established corporations currently located in the Teheran Valley and adjacent areas and operating in the field of digitized content production, such as online game developers, mobile game developers, mobile phone solution developers, and Internet portal companies. Therefore, the study of firms is strictly limited to digital content (and related software) only firms whose core business offering is the development and production of digital content and related software and who distribute them in an electronic form through online Internet or mobile Internet to mobile phones and DMB phones. These services are different from wireless Internet services that basically share a Web-based service. I compiled a list of relevant industrial sectors by Korean Standard Industry Code (KSIC), which is presented in Appendix B. I did not consider established firms in traditional industries that also use or produce digital content and/or technology to enhance their operations, such as a digital content development department in an automobile industry employed for the purpose of creating and maintaining a company's Web site.

Placing the Local in the Context of the National and the Supranational: A Multi-scalar Approach

To examine the roles played by national level policies and their dynamic interactions with local level industry clusters, I take a multi-scalar approach that provides an analytical framework to look at governance at different geographical scales and their linkages. In this introductory chapter, I will explore the connections between the local industry cluster, the national government, and international pressure to achieve economic liberalization by reviewing the discourse on the Korean industrial policy model, the developmental state, and its transformation after the financial crisis.

The interest in the “local” in creative industries led to a primary focus on local scale institutions. Most studies of industry clusters focus exclusively on local level

institutions as a critical factor facilitating communication, cooperation, and social networks among firms within a local industry cluster. At the same time, in the debate over economic globalization, some scholars have assumed that as a result of the rescaling of the nation-state, regions and localities (particularly cities) are becoming more important and independent participants of the global economy (Jessop, 1998a; Swingedow, 1997).

However, the nation state, while liberalizing its economic structure, can still mediate and redistribute international pressure to local actors by regulating technological standards and actors in the market and by promoting specific industries. Along the same line, scholars (Harrison, 1994; Park, 2000; Fligstein, 2005; Christopherson, 2002b) in economic geography and industrial economics have emphasized the need to understand the forms and operational mechanisms of industry clusters within the context of national-level regulatory controls because national level industry policies influence the growth of specific industries, interfirm relationships, and the operation of particular industry transactions.

The multi-scalar view tells us that the globalization of investment is not simply shaped by the activities of transnational corporations (TNCs) but is also constituted by the actions of other social actors. In particular, Dicken (2003) emphasizes the significance of the role of nation-states and their interactions with TNCs in shaping the changing geography of the global economy.

It is important to situate Teheran Valley in the context of multi-scalar governance because the emergence and rebirth of the Teheran Valley area and the digital content industry are closely related to the economic liberalization and deregulation policies that have intensified since the 1997 financial crisis in Korea. The Teheran Valley area emerged right after the financial crisis in the middle of a prime office district and transformed itself into a center for IT venture companies in the early

2000s and, later on, to a central digital content industry cluster in the country. This period parallels a critical juncture for the Korean economy in which an unprecedented scale and depth of economic reform and governmental institutional transformation took place.

4. Why Is Studying the Digital Content Industry Important?

The digital content industry is one of the fastest growing new industries in the world economy. One report (KIPA, 2005) shows that the annual growth rate of the industry has been 15% for the last several years and predicts that the trend will continue for the next 10 years. While North America is the biggest player in the world digital content industry, occupying 41.6% of the current market as of 2003, East Asian countries show a regional market that exhibits the fastest market growth rate, 35.3% (Table 1-1). The digital content industry is also recognized as a high-revenue-generating industry because of its “one-source, multi-use” characteristics and the trend toward the fast digitization of cultural products in both production and consumption.

Concurrent conditions, such as rapid technological development and fluctuating consumer tastes, the rise of new business models in combination with technological progress, and new forms of communication and transactions, have all contributed to the increasing importance of cooperation between small content creators and large network service providers. While small firms become more dependent on large firms’ marketing power and extensive distribution channels, large firms also become more dependent on local knowledge, which creates opportunities for small firms to be more independent than a subordinate subcontractor. Changes in actors in production chains and the market structure require the close examination of interfirm relationships, especially those between large and small firms.

Table 1-1. International Digital Content Industry Market Share by Region, 2003 (US\$, %).

Region	Games	Visualization	Mobile content	DC solutions	Online education	Online music	Total	Growth rate
World	28,657	29,739	32,211	5,154	17,328	894	113,983	26.4 %
	100	100	100	100	100	100	100	
North America	10,253	17,026	3,975	3,092	12,605	411	47,362	30.9 %
	35.8	57.3	12.3	60.0	72.7	46.0	41.6	
Europe	8,313	8,901	15,238	1,343	2,393	298	36,486	21.8 %
	29.0	29.9	47.3	26.1	13.8	33.3	32.0	
Asia	8,503	3,812	12,998	514	2,091	185	28,103	35.2 %
	29.7	12.8	40.4	10.0	12.1	20.7	24.7	
Africa & Oceania	1,588	-	-	205	239	-	2,032	9.7 %
	5.5	-	-	4.0	1.4	-	1.8	

Source: Korea IT Promotion Agency Annual Report, 2004.

Despite the importance of East Asian countries in the digital content industry, only a few case studies of East Asian industry clusters have been conducted in a scholarly and analytical manner. In order to understand the diversity of industry clusters and their mechanisms, we need to study the localized actors and mechanisms that emerge in local specificities.

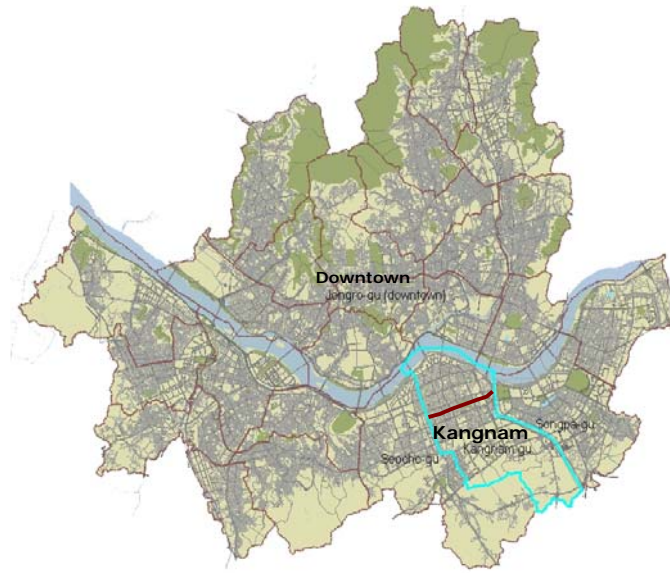
Understanding the diversity of industry clusters is also closely correlated with issues in public policy. There has been a significant amount of criticism about adapting U.S. and European originated concepts of industry districts/clusters in the promotion of industry clusters in an East Asian context. For instance, Silicon Valley has been considered the model case of innovative regions; furthermore, policy makers have created policy prescriptions such as the promotion of venture capital, venture companies, and collaboration among small firms as the main characteristics of a flexibly specialized economic structure. Although these factors are meaningful, given the strong historical tradition of the interventionist developmental state in East Asian nations, discussions of local institutions and actors are like a detailed descriptive story

missing an important structural skeleton. Therefore, an analysis of the contemporary phenomenon of digital content industry clusters within an East Asian context will be a meaningful addition to the literature on industry clusters.

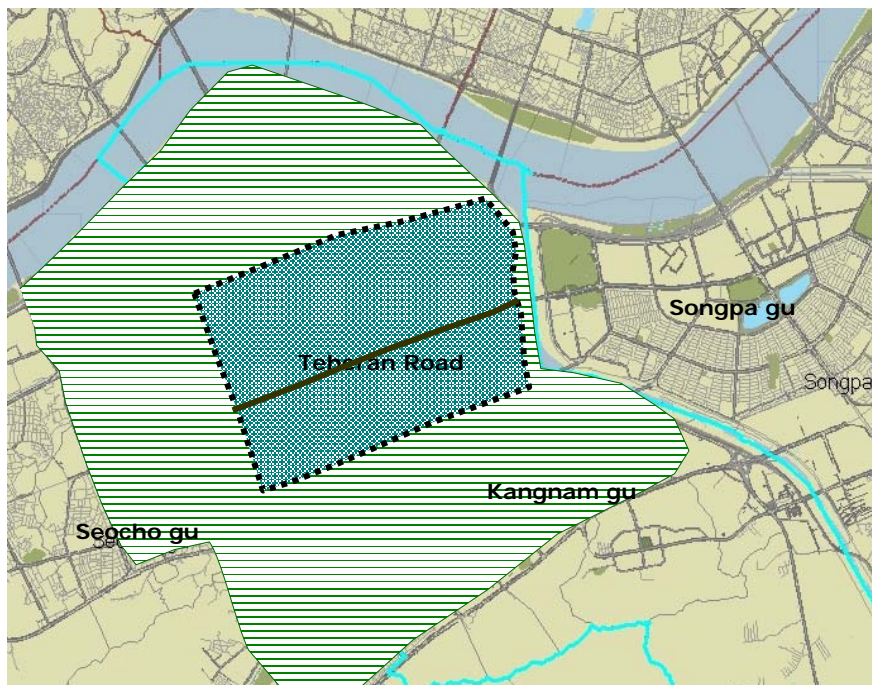
5. An Ideal Case for Study: Teheran Valley in Seoul, Korea

In order to provide detailed documentation of the organization of digital industry clusters and to identify key actors and their interrelations, I employed the case study method for my analysis. As Yin (1994) suggested, the case study method is the preferred research strategy when “how” or “why” questions are being posed and when the focus is on a contemporary phenomenon within a real-life context. The technical characteristics that define this method include a reliance on “multiple sources of evidence, with data needing to converge in a triangulating fashion [and on] the prior development of theoretical propositions to guide data collection and analysis” (Yin, 1994, p. 13). The conclusions that this method yields are generalizable to theoretic proposition(s).

The primary case for my dissertation is Teheran Valley, the area along side Teheran Road in Kangnam gu where the large majority of Seoul’s digital content industry activity is based (the area within the dotted line in Figure 1-1). Teheran Valley is a highly dynamic digital content industry cluster that has emerged in the heart of a central office district in Seoul. A high concentration of apparel and apparel-related activities within the four-by-eight-block area constitutes what is generally perceived as Teheran Valley. However, this research expands the area of the case study analyses to the entire area of Kangnam gu, a semi-autonomous urban district that encompasses the Teheran Valley area (the shaded area in Figure 1-1).



(A)



(B)

Figure 1-1. The Teheran Valley Area. (A) Location of the Teheran Valley Area. (B) Boundary of Data Analysis for the Dissertation Research. The map was created by the author using ArcGIS.

Teheran Valley is an ideal case for the study of interfirm relationships between small and large firms that are spatially situated together in an urban setting. The area's land use regulations, which facilitate a mixture of large office buildings and low-rise commercial areas, create a physical setting that allows large and small firms to be closely co-located. Besides the physical infrastructure, the evolution of Teheran Valley presents a story of local economic strength and resilience. From 1998 to 2001, Teheran Valley was a mecca for information technology (IT) venture companies. However, after a severe economic downturn following the 2001 crash of the dot.com boom, the Teheran Valley area was dismantled. Many initially predicted the demise of Teheran Valley as they witnessed the dissolution of an agglomeration of small firms, institutional supports, and financial investments. However, around 2003, the Teheran Valley area resurged as a center of the digital content industry and now shows the highest concentration of digital content industry firms and employees (26.6% of firms and 34.1% of employees) of all areas within Seoul.

Despite the lack of thick institutions and strong social ties in Teheran Valley, this area managed to transform itself from a center of the Internet/software industry cluster to a leading center of the digital content industry. This history suggests that Teheran Valley is an innovative industry cluster. My research findings show that the interfirm relationship between small content creators and large ICT corporations established a stable and strong economic foundation for this cluster.

Teheran Valley also is an ideal case for the study of the changed role of the nation state under the pressure of economic liberalization and economic restructuring into a knowledge-based economy. In the Korean case, economic liberalization and the transition to a knowledge-based economy occurred simultaneously. In the early 1990s, when the Korean manufacturing sector began to slowly lose its comparative advantage in international trade because of increased labor costs in the domestic market and the

rise of competitors in newly industrialized countries, Korean economic planners began spurring domestic technological development in the IT industry sector. However, the success of locally developed IT technology later instigated trade conflicts between Korea and the United States as U.S. telephony manufacturers came to rely heavily on Korean automatic switching systems because of their technologically advanced features and competitive prices.

The trade conflict with the United States resulted in the liberalization of the Korean domestic market in the IT industry sector. The liberalization of the Korean domestic market was imposed in a more comprehensive way after the 1997 Korean financial crisis and the 1997 World Trade Organization (WTO) Basic Telecom Agreement. Facing increasingly forceful international pressure to open its domestic market, the Korean government took a dualistic approach. It lowered tariffs, loosened regulations on foreign direct investment (FDI), and increased the participation of foreign firms within its domestic markets, but it also strategically focused on promoting and nurturing knowledge-based and high technology based industries such as the ICT industry. In this process, the digital content industry was developed and nurtured together with small business strengthening policies.

The geopolitical environment in which the Korean economy was situated and the role taken by the Korean government as a mediator between international pressure and domestic actors provides an opportunity to examine the role of the nation state and its policies in shaping new industrial sectors and influencing interfirm relationships by affecting production systems and supply chains in the market.

I also have chosen Teheran Valley as my case study research area because after having researched other digital content industry clusters, in New York City, San Francisco, and Toronto, I found that Teheran Valley barely has been studied in the literature in an analytical manner, despite the fact that it is one of the most interesting

cases in terms of its economic strength, the process of its evolution, and its social organization.

6. Generic Characteristics of the Digital Content Industry

Definition of Digital Content Industry

The term “digital content industry” is used carefully in this research in order to represent those industries that utilize the convergence between traditional content and information communication technology to bring broader technological applications compared with conventionally known multimedia or new media sectors. Because the nature and development of the digital content industry sector is constantly evolving, the boundaries and definitions of this field are contentious. Therefore, different approaches can be taken in defining the sector. I offer first a review of the digital content industry as a type of weightless industry. Second, I specify the subsectors of the digital content industry under investigation. I also offer the boundary of the industry sector in terms of statistical classification.

Digitized content has existed since the digitization of content³ became feasible. Industries that incorporate the process of digitization of traditional content are called multimedia industries, and the new-media industry has already been the subject of academic research in the field of economic geography (Storper, 1997; Scott, 2000; Pratt, 2000; Christopherson, 2002; and Pryke, 2002). The technical artifact “multimedia” is usually described as a combination of several digital media that are partly time-sensitive (e.g., sound or moving pictures) and partly time-insensitive (e.g., graphs or text) and which can be used interactively and in an integrative manner. The term “new media” industry, in many cases, has been used to indicate those involved in developing tools and practices that exploit the potential of the World Wide Web. As

³ Digitization is the process that transforms analogue content such as books, pictures, and motion pictures to digitized files.

multimedia industries, the new-media and digital content industries share much similarity; the distinction comes from technological usage that new media products are customized to be operated on the Internet.

Digital content incorporates multimedia and new media with a much more extensive use of advanced information and communication technologies and devices that are supported by broad wireless broadband (also known as Wi-Bro) Internet. Digital content expands its application to a much broader spectrum than CD-ROMs or the World Wide Web, backed up by rapid technological development, such as home automation, interactive television, and digital mobile broadcasting.

Subsectors of the digital content industry also can be categorized by genre: digital publications, digital motion pictures, digital music, digital games, and information content. The types of digital content can also be categorized by platforms such as computer, mobile phones, DMB phones, and digital television.

The Digital Content Industry Value Chain

At the dawn of the 21st century, Pratt (2000) pointed out that “the accounts of the weightless economy point to the radical possibilities of the cost-free reproduction and distribution of e-goods such as software. Infinite numbers of copies (all “originals”) can be made and be instantaneously available, ready for use on any number of customers’ computers.” (Pratt, 2001:428)

Pratt (2001) also argues that few goods actually fall into the weightless category.

To be weightless, a good must be conceived, traded, and distributed online. Moreover, it must have neither paper documentation nor packaging. Few items reach such purity, often for good reason.... [S]o while weightless products are possible, they do not yet, and possibly may never, constitute the majority of goods traded (even as a proportion of those that are nominally weightless). (Pratt, 2000: 428)

However, it seems that technological development has also bred new generations who feel more comfortable doing everything online. For instance, in the case of the online game, the transactions among game developer, publisher, and consumer occur online in an electronic form. Figure 1-2 is a simplified value chain of the digital content creator–publisher–consumer model. The simplified model looks similar to the writer–publisher–consumer model of book publication. However, the story behind this simplified value chain is more complex than that of book publication: the form of the product, electronic files, is different from books, and the products must be distributed online.

The developer is the company, studio, or team of individuals who design and develop the digital content product. The main part of the digital content production process is managed by the developer, while the consumer-related aspects of the business such as marketing and event planning are generally left to others in a form of outsourcing.

Once the digital content product is produced, it is distributed only through the Internet, mobile phones, wireless Internet, IP television, or cable. The publisher distributes the digital content product through its own mobile phone service lines, wireless Internet, or online portals (KIPA, 2005).

Although some paper documentation is still required, the production and distribution process of online game products is considerably more digitized compared with multimedia and new media work; online games require neither packaging nor printed user guides. In fact, it is uncertain whether a weightless industry with no physical material involved in the production, distribution, or consumption process is possible.

The dependence of digital content products on electronic distribution channels also brought a power shift among actors in the market: publishers who owned online

and mobile Internet infrastructure became more powerful actors in the digital content market governance. One report (Manninen, Kunjanp, Vallius, Korva, and Koskinen, 2006) found that digital content developers, which tend to be small firms, are dependent on these publishers for their product distribution. However, with the introduction of large distributors, advances of telecommunications technology, and the diversification of digital content play platforms, the demand for digital content product is increasing, which results in competition among publishers to procure high-quality digital content products. Therefore, in the market, digital content creators will increasingly wield more power.

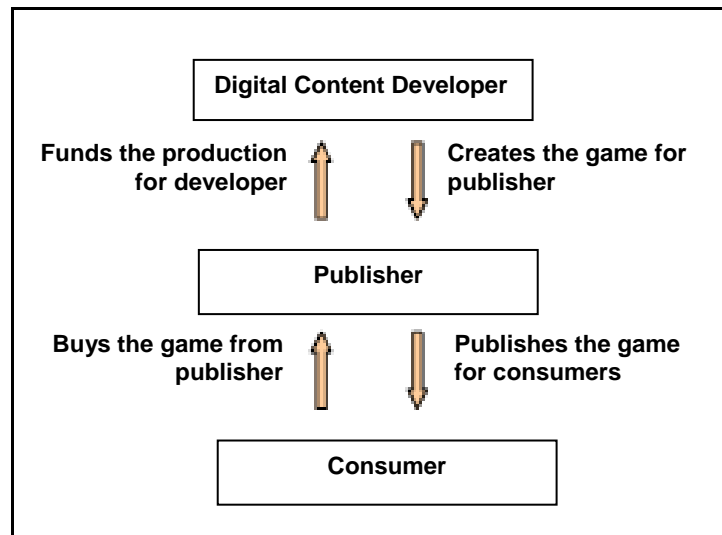


Figure 1-2. Generic Digital Content Industry Value Chain. Source: Manninen, Kunjanp, Vallius, Korva, and Koskinen, 2006. Modified and regenerated by the author.

The Weightless Industry and Property Rights

Given the weightless characteristics of the digital content industry and the growing market dominance of large digital content creators, property rights emerged as a key issue in the digital content industry. As many Internet-related business models (such as Internet portal sites) have moved from charging membership fees to charging fees for

specific products or service items (such as movie or mobile game downloads), retaining intellectual property rights in products and services became a critical issue for digital content developers.

Locational Characteristics

The locational preference for an urban setting is a characteristic that penetrates all digital industries: multimedia, new media, and digital content. Digital industry clusters have emerged in old manufacturing areas near business districts, where rent is much more affordable and the residents are culturally diverse (Indergaard, 2004; Hutton, 2004), and where firms can be close to their partner firms and clients. Examples include San Francisco's Multimedia Gulch (Saxenian, 1999), New York City's Silicon Alley (Christopherson, 2001; Indergaard, 2004), and Toronto's multimedia cluster (Britton, 1999). This locational preference is assumed to stem from these industries' close relationship to Internet business, media corporations, and office-based work.

7. Organization of the Dissertation

My examination of Teheran Valley's digital content industry cluster proceeds by way of three distinct, yet thematically linked, chapters. Chapter 2 provides the literature review of my dissertation. I review two bodies of literature that provide the foundation for my research questions and analytical framework. First, I critically review the small firm centered industry cluster approaches and discuss the need to expand investigations to one small-large-firm inclusive model. Next, I review how the literature offers a perspective of contextual understanding of local industry clusters in a multiple-scalar governance setting.

Chapter 3 reviews the epistemology and methodology of the research I have conducted for my dissertation. I show how my research questions organically evolved

during my fieldwork and how two different sets of methods, quantitative and qualitative, complemented each other. Chapter 4 provides a historical analysis of Teheran Valley, tracing its origins and development from an office district to a mecca of IT venture companies in the late 1990s. Drawing on theories of path-dependence, I argue that Teheran Valley's initial specialization in large ICT industry corporations has played an important role in shaping its subsequent development. The chapter shows how key local actors at critical historic junctures were able to nurture and promote their own local capacity and the role of governmental policies. The chapter highlights the foundation of Teheran Valley's innovation capability and how that capability rests on a balance between small and large firms.

Chapter 5 presents the results of the quantitative and qualitative data analyses and my major findings. By combining survey data analysis and in-depth interviews, the chapter examines the innovation capacity, production process, and social organization of digital content creators in Teheran Valley. Furthermore, it illustrates how digital content creators established production systems and social organizations that fit the characteristics of digital content. Interestingly, the chapter reveals that digital content creators in Teheran Valley have a strong innovation capacity that, in turn, results in weak social ties among content creators. On the other hand, I argue that content creators maintain intensive and cooperative interfirm networks with large firms, mostly Internet portal companies and mobile phone service providers.

Chapter 6 analyzes the role of the Korean government in building the capacity of small firms through the liberalization of industry policies. However, this chapter also illustrates the distinctive characteristics of the Korean government's policies that, in fact, still held strong regulatory influence over the emerging digital content industry sector. Chapter 7 presents the major findings of this dissertation and further discussions. Specifically, this final chapter highlights the lessons that chapters 3

through 5 suggest for economic development theory and policy and provides an overview of the avenues for future research suggested by the Teheran Valley case.

Last, Figure 1-3 sketches the evolution path of Teheran Valley and the corresponding governmental policies. I have classified the evolution of Teheran Valley into four different stages: emergence, growth, maturation, and resurgence. The period from emergence to maturation is dealt with primarily in Chapter 4's historical analysis. In Chapter 5, I focus on the point of Teheran Valley's rehabilitation, from the dot.com crash in 2001 to 2005. In Chapter 6, governmental policy is analyzed in-depth.

8. Terms Used

- The terms “digital content creators” and “digital content developers” are used to indicate small and medium-sized firms that specialize in producing digital content products such as online games, mobile games, and embedded software.
- The term “publishers” is used to indicate large firms that own online or mobile Internet infrastructure and that play an important role as digital content distributors. In the Korean digital content industry market, these firms are mainly online portal companies and mobile phone service carriers.

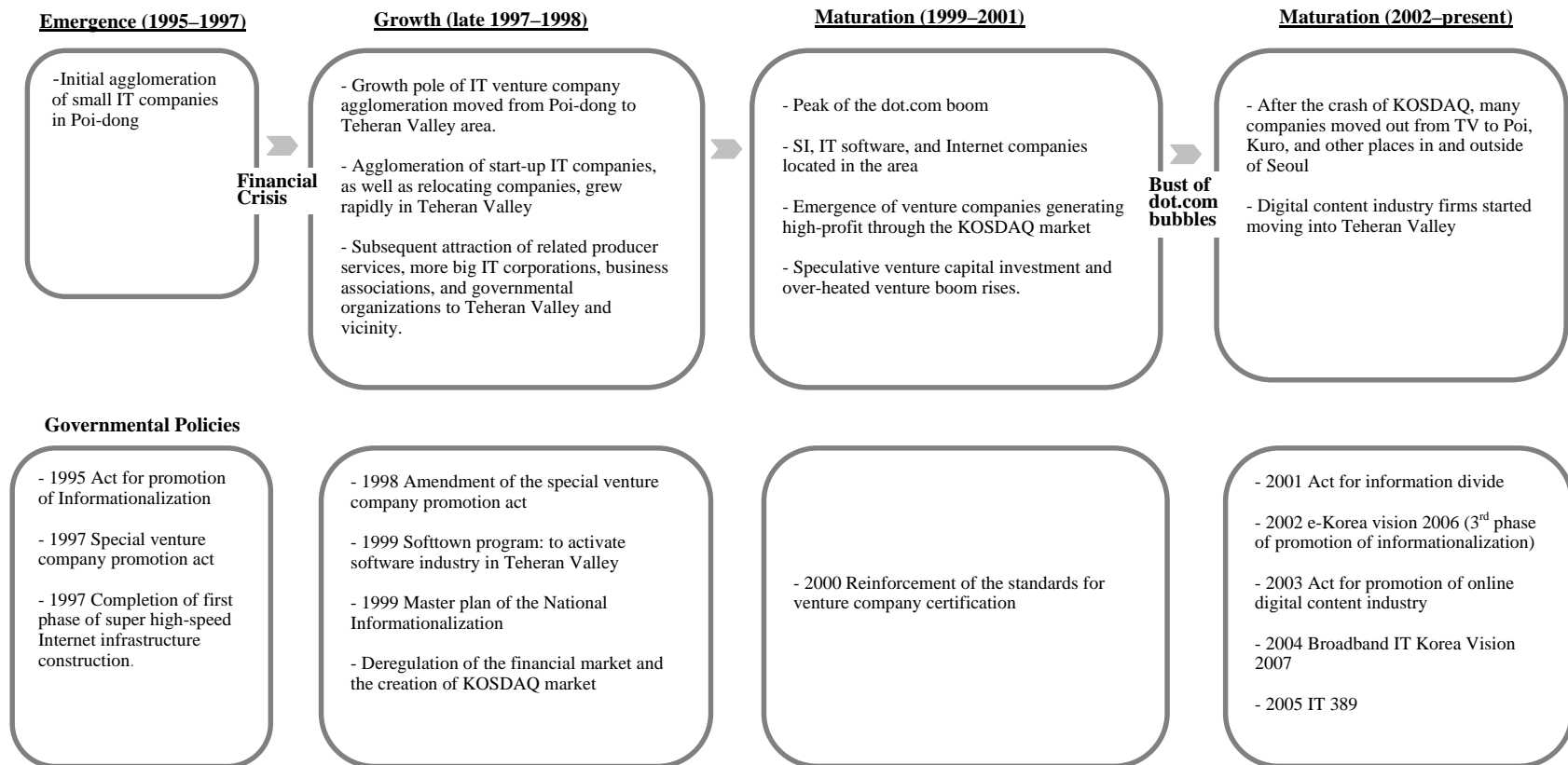


Figure 1-3. Time Table of the Evolution of Teheran Valley, Historic Events, and Public Policies.

CHAPTER II: LITERATURE REVIEW

The existing concepts and debates about industry districts in the post-industrial era are incomplete, and that their explanatory power is limited to traditional industry sectors. In an era of the convergence of ICT technology, cultural creativity, and commercialization, in the digital content industry, it is important to establish a new analytical framework that includes creativity as an important factor intertwined with the social organization of production and interfirm relationships.

In order to do this, I present three different bodies of literature as follows: First, I review the intellectual evolution of the concept of industry districts/clusters. Second, I critically review the prevailing prototype of industry district and cluster, centered on geographically co-located small firms and their collaboration. Next, I introduce, less studied but just as important, the large firm centered industry/district cluster model suggested as a counterargument to the populist, small-firm centered industry district/cluster concepts of the 1990s. Third, I discuss the role of creativity in creative industry sectors and construct an analytical framework that will guide my analysis.

I employ a multi-scalar approach to look at different scales of governance systems in order to capture the dynamic interactions among international economic liberalization pressures, national level policies, and local level manifestations and show how local-level adaptive strategies are partly—created and determined by state policies.

1. The Intellectual History of Industry Agglomeration and Local Economic Strength

The term “industry district” first appeared in Marshall’s *The Principles of Economics* (1898). During the past decade, Marshall’s concept of the industrial district has been

resuscitated and developed to explain the logic of agglomeration of firms in localized places including clusters (Porter, 1990), regional innovation systems (Lundvall, 1992), and learning communities (Oinas, 2000). To Marshall's emphasis on a common infrastructure, business services, a specialized labor pool, and local "know-how," these scholars have added the importance of long-term, socio-economic relationships between local firms that involve cooperative networking, trust in place of competition and rivalry, and fuzzy boundaries (Granovetter, 1985; Best, 1990; Harrison, 1994; Saxenian, 1994). This framework has been used to explain the revitalization of the Third Italy in the textile, high-tech ceramics, and leather industries (Brusco, 1986; Becattini, Pyke, & Sengenberger, 1990).

In the United States, the Marshallian industrial district concept was developed to theorize the rise of high-tech regions by emphasizing the importance of vertical disintegration and cooperation among small, flexibly specialized, innovative firms (Storper, 1989; Scott, 1988; Saxenian, 1994). In the following section, I briefly document the intellectual heritage that captures the mechanisms of the agglomeration economy and local economic competitiveness over the last two decades.

Post-Industrial Production Systems and Entrepreneurial Regions

In the mid-1980s, Piore and Sabel proposed that the existence of small, highly innovative, sectorally focused firms signified a new paradigm replacing the Fordist model of mass production and mass consumption (Piore and Sabel, 1984; Sabel, 1990). Their theories of the second industrial divide were based on a model case of an industrial district in the Third Italy characterized by cooperative and competitive interfirm relationships based on long-term trust and flexible specialization. Coinciding with the decentralization of economic development responsibilities in the United States, the idea that locally based small firms would be the center of job creation and

technological innovation was widely welcomed by public policy makers (Harrison, 1994). However, Piore and Sabel's work has been criticized by some (Harrison, 1994; Gray, Golob and Markusen, 1996; Christopherson, 2007) for its lack of relevance to other regions or societies. Such critics ask whether the trust-based artisan workshop model is applicable to an economic system whose entrepreneurial culture is based on competition.

Bennett Harrison (1994) warned that overemphasizing the contribution of small firms to technological development and job creation is misleading. To support his argument, he demonstrated the case of high-tech industries, where large corporations are still major technology users and developers.

From a different perspective, some scholars (the "California School") have expanded the discussion of new production systems. Michael Stoper and Susan Christopherson (1986) documented the very strong tendency toward vertical disintegration and flexible specialization in the California film industry, which is formally based on the studio production system. They showed that flexibly specialized firms were agglomerated in the Hollywood area for information exchange and co-projects.

Allen Scott (1988) captured the agglomeration of cultural industries in California by emphasizing transaction cost savings. Scott saw a landscape composed of a multitude of small firms interacting and participating in the same sector, filling niches in the supply base of larger and more diversified firms. Scott suggested that niche players emerged in response to highly contingent demands too small in scale to warrant internalization by bigger firms or too difficult to specify with the exactness of contracts. He hypothesized that these producers were composed of a net of transactions held together by sectoral specialization and geographical proximity.

In the 1990s, Michael Porter introduced the concept of industry clusters in his widely cited book *The Competitive Advantage of Nations* (1990). He introduced the concept of “related industries” to illustrate how industries complement each other within a common value chain and therefore must rely on each other to achieve competitive capability. He emphasized the qualitative aspects of such relations and the intertwined forces of strategy/rivalry, demand conditions, relative industries, and factor conditions. Later, he focused on firms located close to each other enjoying external economies: “A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities” (Porter 2000: 254). In this context, aspects such as local rivalry, collaboration, specialized factors, and customers’ demands are significant.

However, a number of Porter’s points have been identified as problematic (Martin and Sunley, 2001; Maskell, 2004). First, his cluster concept is remarkably imprecise with respect to spatial scale. Second, the concept lacks a sound institutional framework (Bathelt and Glückler, 2002). He treats institutions more or less as residual forces that are unimportant in explaining cluster phenomena. Third, Porter’s explanation is not historically detailed; nor does it provide a proper understanding of economic processes and their dynamics. Economic agents and their actions and interactions remain largely hidden (Maskell, 2004).

In *Regional Advantage* (1994), Saxenian concludes that local institutions and cultures are important in fostering innovation and wealth creation. A local economy built on flexible networks of firms of various sizes is more competitive and market-responsive than an economy based on larger, more autonomously structured firms. She also argues that Silicon Valley is characterized by competitive entrepreneurship rather than strong social ties, and by firm heterogeneity rather than homogeneity. She presents evidence based on comparative case studies on Boston’s Route 128 and

Silicon Valley. Saxenian characterizes the East Coast setting as having a relatively greater degree of corporate secrecy, more conservative universities, and more independent and hierarchical firms, whereas Silicon Valley is a more open and entrepreneurial environment that has fostered a network-based region with a relatively greater capacity to innovate and share knowledge.

Opposing Saxenian's emphasis on the culture of a local community and its reflection in social organizations, Kenney and URs von Burg (1999b) argues that innovative technological development determined the success of Route 128 and Silicon Valley. He argues that the development of new technology, such as semiconductors, is responsible for the success of Silicon Valley.

Saxenian's Silicon Valley model was hugely popular in the public policy arena as well as in academia. However, her work has been identified as lacking recognition of the role of national governmental policies and the transformation of venture firms into vertically integrated firms, as in the case of Hewlett-Packard. This debate leads me to investigate the interfirm relationship beyond the one among small firms.

Knowledge Transfer and Learning Communities

More recent debates about industry districts have moved in the direction of learning economies (Lundvall 1992), learning regions (Asheim, 1997), and regional innovation systems (Cooke and Morgan, 1998). According to scholars whose work is based on the concept of knowledge management, one must understand the contribution of territorial clustering to a firm's capacity to learn or generate new knowledge. As Lawson and Lorenz write,

There is little explicit discussion of the ways in which knowledge is used and transformed in the process of developing new products or processes and why localization should matter to them. (1999: 306)

As an extension of the approach on the territorial foundation of interfirm cooperation, Foss (1996) suggested two prerequisites for a capability to be a source of lasting competitive advantage to a region: regional specificity (it cannot simply be purchased and transferred elsewhere), and imperfect imitation (it cannot easily be replicated elsewhere). The first prerequisite stems from the concept of embeddedness (Granovetter, 1985): while the capabilities of individual workers can be transferred to other geographical regions, a regional capability (or knowledge and cooperative work system) embedded in particular patterns of interfirm networks and interpersonal connections cannot.

The second prerequisite may be satisfied largely by the tacit nature of knowledge underlying regional capacity, which makes imitation difficult. While the rapid diffusion of new information technology has eased the worldwide transfer of codified knowledge, tacit knowledge,¹ which is difficult to transfer in the absence of face-to-face contacts, has become a more important source of regional or local competitive advantage.

According to the “learning region” concept (Asheim, 1996; Florida, 1996), the capability approach to the firm provides a poor explanation for the sustained competitive advantage of such high-tech regions as Silicon Valley, Cambridge, UK, or the Toulouse aerospace cluster. Instead, according to the “learning region” concept, what counts in the longer run is the regions’ capacity for continuous learning and, more specifically, product innovation.

¹ The term “tacit knowledge” is coined by Michel Polanyi in his book “The Tacit Dimension” (1966). The tacit aspects of knowledge are those that cannot be codified, but can only be transmitted via training or gained through personal experience. Alternatively, tacit knowledge can be understood to be knowledge that is embedded in a culture (for instance a regional culture, organizational culture or social culture) and is difficult to share with people not embedded in that culture. Tacit knowledge has been described as “know-how” (as opposed to “know-what” [facts], “know-why” [science] and “know-who” [networking]). It involves learning and skill but not in a way that can be written down. The knowledge of how to ride a bike is an example: one cannot learn to ride a bike by reading a textbook, it takes personal experimentation and practice to gain the necessary skills.

However, the inherent tendency to focus on internal divisions of labor, interfirm knowledge exchange, and cooperation within a locality or regional setting is problematic, as Granovetter (1985) and Uzzi and Lancaster (2003) pointed out: over-embeddedness or strong social ties will result in local lock-in. Oinas (2000) and Scott (Uzzi, B., and R. Lancaster. 2003) argued that clusters can only create new knowledge and continue to grow if they are linked to external markets and employ a mix of local and non-local transactions.

Among these ongoing discourses, a new line of study pays attention to the parallelism of locally embedded learning processes and the strength of external linkages in obtaining new types of knowledge by framing the “local buzz and global pipeline” (Maskell, Bathelt, and Malmberg, 2006; Gertler, 2003). Anchored in the knowledge-based theory of spatial clustering, this approach attempts to theorize innovation, knowledge creation, and learning as the result of interactive processes through which actors possessing different types of knowledge and competencies come together and exchange information to solve technical, organizational, commercial, or intellectual problems. In the process of exchanging information and knowledge, spatial proximity among firms plays an important role. The main argument regarding the spatial aspects of the local buzz–global pipeline concept has been that the more codified the knowledge involved, the less space sensitive these processes tend to be. If the knowledge involved is diffuse and tacit, interaction and exchange is dependent on the spatial proximity of the actors involved. Only by being in the same local environment and by meeting repeatedly in person can actors exchange these more subtle forms of information. This is the main mechanism that makes it beneficial for a firm to be located in a spatial cluster surrounded by other similar and related firms with which it can interact.

Local buzz consists of the following: specific information and continuous updates of this information, intended and unanticipated learning processes in organized and accidental meetings, the application of the same interpretative schemes, and mutual understanding of new knowledge and technologies. These, as well as shared cultural traditions and habits within a particular technology field, stimulate the establishment of conventions and institutional arrangements that facilitate knowledge sharing. Actors are continuously contributing to and benefiting from the diffusion of information, gossip and news by just “being there” (Gertler, 2003).

By contrast, the global pipeline is a type of information and knowledge exchange activity that occurs between distantly located actors. The global pipeline requires intentional investment, whereas participating in the buzz does not require a particular investment. This sort of information and communication is more or less automatically received by those who are located within the region and who participate in the cluster’s various social and economic spheres. “Actors are not deliberately ‘scanning’ their environment in search of a specific piece of information, but rather are surrounded by a concoction of rumors, impressions, recommendations, trade folklore and strategic information . . .” (Grabher, 2002a: 209). Firms build pipelines to access knowledge that is not already part of their repertoire. Yet, if it is too different from the present mental representations, genuinely new knowledge may easily be ignored or treated as something unique and therefore not taken seriously enough (Durham, 1991, 1992).

However, while the global pipeline concept suggests that tacit knowledge is transferred beyond a locally bound space, local buzz simplistically posits that spatial co-location automatically enhances local level information and knowledge sharing through gossip, rumor, daily face-to-face interactions, and meeting other employees. In my opinion, this concept fails to recognize different levels of firms within the same

industry cluster that do not necessarily participate in the same pool of local buzz. For instance, some firms at different levels (for instance, a small digital content developing firm with 10 employees and a global mobile phone corporation such as Samsung) interact because they are connected through the value chain, but they are not necessarily in the same industry sector, and employees of each company's social spaces are likely separated and have few face-to-face interactions or opportunities to share any rumors or gossip. In this case, they are not necessarily part of the same "repertoire," yet they still share the present industrial development state, mode of economic development, and social norms that will enhance new knowledge exchange on the bases of their economic transactions and, possibly, their co-projects.

Critics of the SME Centered Model

Recently, some scholars (Harrison, 1994; Park, 1996; Gray, Golob and Markusen, 1996; Grabher, 2001a; Fligstein, 2005) have argued that although the popular industry cluster prototype centered on small firms has some merits for illustrating phenomena in certain regions and countries, attention must also be paid to the nature of firm networks if we are to understand variations in the social and political construction of local clusters. For example, Saxenian (1994) argued that the comparative advantage of some regional clusters stems from collaborations among locally agglomerated small firms, while others have suggested that the strength of regional clusters comes from rivalry among various actors or external links complementing intra-regional interfirm relationships (Grabher, 2002b). Still others have argued that human capital density and economic diversity are more important than specialization for innovation (Charkraroky, Koo, and Lall, 2000).

In the mid-1990s, while flexibly specialized small firm agglomeration became highly popular in policy circles, Harrison (1994) wrote a book that challenged the

“conventional wisdom . . . [that] the large corporation was in many respects becoming something of a dinosaur, increasingly unable to compete in a ‘*postindustrial*’ world characterized by continually fluctuating consumer demands, heightened international competition, and the need for more flexible forms of work and interfirm interaction . . . [it] has been told repeatedly that small companies are now the engines of economic growth and development” (p. 12.; emphasis added by the author).

He argued that the belief that small firms are major job creators and new technology inventors in a post-industrial economic system was misleading: empirical analysis shows large firms still generate most jobs and new technologies. According to Harrison, the rise of the SME sector in the 1970s was mainly due to the deverticalization of large firms as they sought to restore their profitability while maintaining control over their production systems through market power, rather than due to the actual rise of the small firm sector.

To show how large firms are adaptive and remain as leaders even in a new economy, Harrison used the case of Japanese firms such as Hitachi, Toshiba, NEC, and Fujitsu, which retain their superiority through standardization of the production process.

These firms’ managers made great progress in introducing into software production the principles of long-term planning; modulization of design; reusability of parts; standardization of design, coding, documentation, and testing; the use of databases from previous projects to inform new activities; and extension of the division of labor and specialization of tasks as sometimes a substitute for, and sometimes a complement to, small, integrated teams. (Harrison, 1994, p. 69)

2. Small and Large Firm Interfirm Relationships in Industry Districts

Over the last two decades, much progress has been made in investigating the critical factors, mechanisms, and social organizations of successful industry clusters. In this section, I revisit one of the subjects of scholarly discourse that has not been fully

reviewed yet: the small–large firm relationship in a geographically co-located situation. I first review the existing literature. Next, I show empirical studies of various types of interfirm relationships in a small–large firm co-located setting and its spatial aspects to build the direction and path of my dissertation research.

Small and Large Firm Co-location in Manufacturing Industries

Harrison (1994) constructed an industry district model based on empirical observations of economically successful industry districts in a networked industry production system in which small firms are agglomerated around a lead firm: the core-ring system. With the core-ring system, he introduces the concept of power difference:

The existence of a system core implies that power is asymmetrically distributed, and that some core firms have the power to determine the existence of others. Within the ring, power is more likely to be distributed symmetrically, and the existence of one or another unit or firm is not obviously under the control of other units within the ring (An exception is the tiered supplier system, in which those closest to the big firm customer are responsible for managing lower-level, usually smaller, contractors). (Harrison, 1994: 144)

Harrison argued that the movement toward core-ring networks organized around powerful lead firms is becoming increasingly dominant in the new world order. Many examples support his views, such as the transformation of Italy’s Emilia-Romagna from an agglomerated network, to locally embedded small firms, to a lead-firm-driven, more geographically extensive system; the growing dominance of big corporations, even outside of their original territories, as they build overseas plants (such as in the case of Toyota); and the reintegration of the Hollywood film production system by the largest film studios.

Following in Harrison’s footsteps, Glasmeier and Jensen (2001) showed that the share of employment, wage premiums, and productivity premiums of bigger firms

increased during the period from 1962 to 1992, which suggests that large firms are still the center of job creation and economic performance.

Gray, Golob and Markusen (1996) also substantiated the small–large firm industry district by developing the concept of the hub-and-spoke region, building from case studies of firm clusters in the Seattle region centered on a large firm, Boeing. This concept aptly describes the regional economic structure in which one or more large firms dominate the regional economy and small firms are agglomerated around them.

Many small firms are spin-offs of major large firms and perform outsourced work for them. Based on empirical observation of the Seattle region, Gray, Golob and Markusen elaborated on the characteristics of the hub-and-spoke system: the relationship among small firms in the system is competitive, whereas these small firms are more dependent on big lead firms. The competitive governance system at the small firm level, in fact, is generated by the lead firm’s strategy of playing one small firm against another to create price competition among suppliers. Therefore, this type of system can render a region vulnerable to cyclical and secular decline and/or to the crowding out of less competitive newer sectors or to the possible exploitation of competing small firms by large corporations.

However, despite noting the downside of an industry district centered on one or a few leading firms, Gray, Golob and Markusen (1996) also acknowledged that this system is superior to the flexibly specialized industrial district because it provides a stable foundation for economic growth and resilience.

Francis and Young (1999) researched entrepreneurship in New York State and concluded that small firms are largely spin-offs from large corporations and that their relationships with large firms are one-sided dependent.

Christopherson and Clark's recent empirical study (2007) of small–large firm co-located industry clusters is along the lines of those of Harrison (1994), Gray, Golob and Markusen (1996), and Francis and Young (1999) but is more elaborate in illustrating how the power difference plays out between large and small firms in a co-located situation. They argued that two attributes often mentioned in the existing literature as critical to the ability of co-located firms to become sustainable regional innovation systems—cooperation and trust—are somewhat misleading in that “the question of power relations has been missing from theories attempting to explain change in regional agglomeration economies and firm networks or failure in entrepreneurship and innovative capacity” (2007: 2).

From a case study of the Rochester region employing both firm surveys and in-depth interviews, Christopherson and Clark (2007) found that the innovation capacity of SMEs in this region is substantially hindered by transnational corporations, which have much greater power in the market as well as an upper hand in the public policy arena. SMEs there experience much pressure in competing with large firms for skilled workers and research capacity.

Relevant as the insights of this literature are, its contribution was directed more to manufacturing-based industry sectors, whose large and small firm relationship is generally defined as that between suppliers and assemblers or core firms and subsidiary positions. The manufacturing sector centered concept of interfirm relationships assumes that small firms are merely receptacles of the decisions made by powerful large firms or public policies. As a consequence, this concept omits the role of small firms in the small and large interfirm relationship. Small firms also actively participate in the market and attempt to change the interfirm relationship so that it is favorable to them. This aspect will be more important in the creative industry, in which small firms maintain relatively competitive positions compared with their

counterparts in the manufacturing sector. I propose that there is a need for a fine grained investigation of small and large firm relationships in the creative industry sector.

Small- and Large-Firm Relationships in a Knowledge-based and Creative Industry

It is worthwhile to discuss the lack of explanatory power of a small firm centered industry district/cluster mode within the creative industry sector. Next, I will also discuss expanding the perspective of interfirm relationship in creative industries by showing two empirical studies.

Upon the arrival of the boom of multimedia and new media, a handful of scholars began to investigate the characteristics of multimedia and new-media industries (Brail and Gertler, 1998; Pratt, 2000; Batt, et al., 2002; Christopherson, 2003, 2004; Britton, 2007). It was in response to the public consensus that emerged in the public policy arena that multimedia and new multimedia products were identified as a future wealth generating industry sector during the era of the global economy and dot.com boom in the late 1990s.

I would like to point out two main shortcomings of this line of literature. First, these studies are marked by a tendency to assimilate multimedia and new media with the ICT industry, especially the software industry. For instance, as Pratt (2000) noted,

The significance of using digitization as a starting point for analysis is that it takes the discussion regarding the organization of the cultural economy a step further. It requires researchers to focus on the strategies of firms and the technological means by which they pursue economic objectives, since *new technologies* create the possibilities of new strategies, and also of the new economic objects that can be exploited and governed in their different way (Pratt, 2000:7). (Emphasis added)

The majority of research in this era was intended to investigate the new horizon of firm strategies, new economic objects, new products, and “new

technologies.” The emphasis on the meaning of “new technologies” caused a lack of attention to the role of cultural creativity: it approached multimedia and new media from a perspective of understanding the factors and mechanisms of a “successful IT industry cluster/district,” focusing on the socio-economic aspects of workers, policy effects, and locational decision factors.

Second, as a consequence of emphasizing local agglomerations of vertically disintegrated and flexibly specialized firms, these studies failed to capture the paralleling process: the vertical reintegration of media corporations and the entrance of the digital content industry sector, which was considered the business area of small firms. Many multimedia firms, as mentioned in Chapter 1, strived to achieve an economy of scale by executing mergers and acquisitions. Large firms in the multimedia and new media sectors increased their market dominance by incorporating the technological infrastructure and distribution channels of other firms.

Little attention has been paid to identifying what constitutes the core competence of this type of industry, especially the possibility that the convergence of new technology and cultural content will also bring new opportunities for small firms; changed nodes of knowledge exchange that are critical for product innovation at the cluster in this new type of industry sector; and firm strategies that affect their relationships with their large competitors.

Two studies have identified “creativity” as the core competence of the industry sector and examined small and large firm interfirm relationships in the knowledge-based and creative industry. Rantisi (2002) illustrated that the innovation system in the New York City garment industry arises as a result of the flexible incorporation of entrepreneurial young designers who have established themselves in lower Manhattan. She showed that whereas creative young designers open their own boutiques, shooting for niche markets, while large fashion corporations copy new design ideas created by

these young designers.² In this system, young designers maintain their design, clothing production, and sales interdependently with the established fashion corporations in the garment district.

Sternberg examined the local innovation system that has emerged between Siemens and R&D-oriented venture companies in Munich. He argued that the interfirm relationship between these firms is a cooperative one, as Siemens functions as an important financial source for R&D centered smaller firms in Munich.

These examples suggest that in creative and knowledge-based industries, the interfirm relationship between small and large firms takes place in a more horizontal (but competitive) or cooperative form. This suggests the need for a more nuanced analysis of the innovation system and its complex spatial configurations in the new economy sector.

The key concept in these two empirical case studies is, I argue, the creative capacity of SMEs. The New York garment industry district case illustrates how start-up firms can forge their opportunities to be independent of market dominating large firms by being entrepreneurial and developing niche markets. Sternberg's Munich case illustrates that when a large firm relies on locally specific knowledge, instead of hindering the innovation capacity of small firms, it facilitates innovation by providing financial resources.

Creativity, the Social Organization of Production, and Interfirm Relationships in the Digital Content Industry

My approach to the interfirm relationships of the new industry sector is grounded in four core premises that together provide an analytical framework for understanding

² Rantisi (2002) identifies this as the “exploitation of ideas of small entrepreneurs by large corporations.”

interfirm relationships in the digital content industry.³ These premises are summarized briefly as follows:

Defining creativity: Christopherson (2002, 2005) defined “new media” as work partly encompassing the characteristics of cultural work that “reflects some elements of personal expression or authorship.” I argue that the characteristics of cultural work continue to play an important role in digital content work.

However, there is a need to re-interpret the creativity derived from “the creative moment” to a process and organization oriented perspective. Creativity in digital content work does not depend solely on individual or personal skills or talents. It has more to do with integrating different sets of skills in a highly interactive work process. Creative work requires multiple sets of creative skills, and to be successful, the creative worker has to balance the tension among different types of creativity or skills (from an in-depth interview). This discussion should start with the typology of creativity so that one can understand how different types of creativity correspond to a certain set of evaluation measures and to the social organization of production.

There are a handful of studies in the typology of creativity in psychology (cognitive studies) and knowledge of science studies. Among them, I found that Gertler’s knowledge base typology (Table 2-1) is a very useful framework. He classifies knowledge in three different categories: analytical, synthetic, and symbolic. He identifies analytical as scientific knowledge, models, deductive (cf. drug development); synthetic as problem-solving, inductive, custom production (cf. mechanical engineering); and symbolic as the creative process (cf. advertising). However, Gertler’s three part knowledge base typology is lacking in one important

³ These four core premises were identified after the pilot fieldwork as the systematic focus of my research questions and data collection. These four core premises provided a systematic approach to the social organization of production and the interfirm relationship in the digital content industry. However, I would like to acknowledge that there is still a need to define the concept of creativity in the creative industry field, more structured approaches to the typology of different types of creativity input, and their interactions with the social organization of productions in each subsector of the creative industry.

respect. This classification assumes that each profession or type of work can be characterized by one dominating knowledge typology. In reality, many cases cannot be identified by only one dominant knowledge base. For instance, the end product of advertising maybe viewed as symbolic; the work process itself involves very intensive analytical and synthetic knowledge such as collecting data on consumer trends and combining new knowledge from research on consumer behavior and psychology. Because he treats knowledge as an entity separate from the work process, an important characteristic of knowledge-based and creative work, the integration of different knowledge and skill sets to advance existing knowledge, is entirely omitted.

Table 2-1. Gertler’s Knowledge Base Typology.

Analytical	Synthetic	Symbolic
Know why; developing new knowledge about natural systems by applying scientific laws	Know how; applying or combining existing knowledge	Creating meaning, aesthetic qualities; affect; know who critical
Scientific knowledge, models, deductive	Problem-solving, inductive, custom production	Creative process
Collaboration within and between research units	Interactive learning with customers, suppliers	Learning-by-doing, in studio; project teams
Strong codified knowledge content; highly abstract, universal	Partially codified knowledge, strong tacitness, more context-specific	Strong semiotic knowledge content; some forms highly context-specific
Meaning relatively constant by location	Meaning varies substantially by location	Meaning highly variable by location
Drug development	Mechanical engineering	Advertising

Source: Presented at the 9th Annual Meeting of the Innovation Systems Research Network, Vancouver, BC, 3–5 May 2007. http://www.utoronto.ca/isrn/publications/NatMeeting/NatSlides/Nat07/Gertler07_KnowledgeFlows.pdf

I suggest a creativity quadrant (Figure 2-1) that includes four creativity factors: cultural, technical/scientific, professional, and commercial. This model is supported by initial interviews with my key informants during the pilot fieldwork period of this project. By placing each profession on any point in and on the quadrant, it is possible to show which types of creativity combination are important to that profession, and to

what degree. I argue that digital content work requires a combination of three important components: cultural, technical/scientific, and commercial.

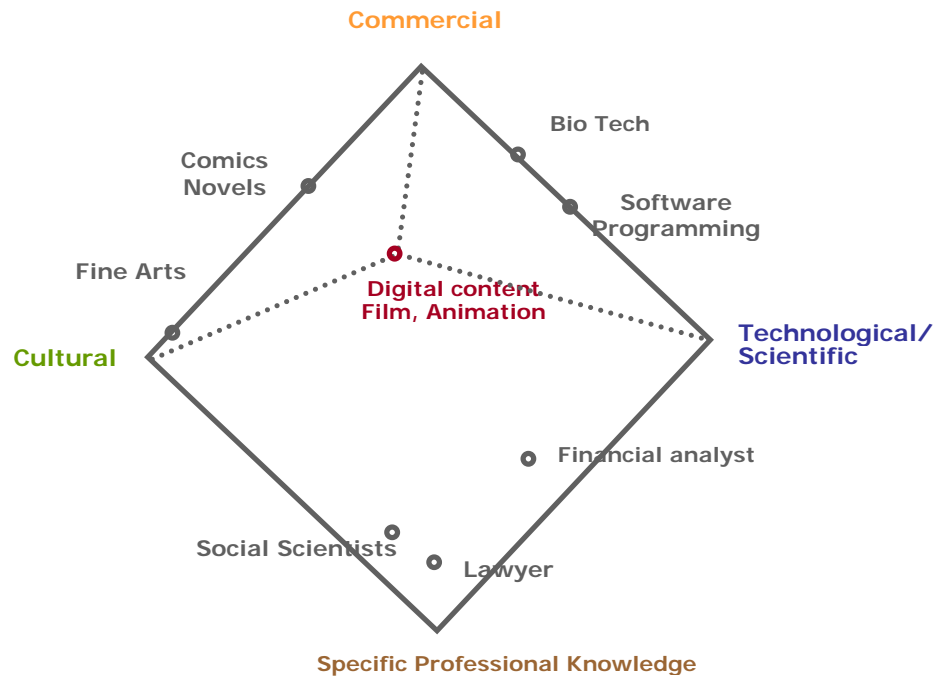


Figure 2-1. The Quadrant of Creative Skills. The digital content industry requires not only cultural and technological/scientific creativity, but also commercial creativity.

The incorporation of creativity in the digital content production process:

Existing studies of the production processes of multimedia and new media industries focus mainly on the high level of education of its workers, the possibility of geographically distanced collaboration, the vertically disintegrated, project-based work organization as a result of the adaptation of fast changing new ICT technologies, and so on. These research questions center on understanding the effect of new technologies.

However, how different sets of creative skills are integrated in the production process, how firms organize their internal work processes and creative workers to capture individual ability and transform them into firm competence, is surprisingly left unknown. Given that creativity is part of all work to differing degrees, one should in

principle talk of creative intensive labor, which denotes work where creative capability is central to the hiring, status, and economic rewards of workers.

Each step of such work requires a mix of different creativities. In order to ensure that creative firms invest in items that are commercially viable, new, and competitive, decisions about product development are made through various decision making levels.

Firm strategies for creating interfirm networks: What are the new opportunities and challenges brought by continuous new technological developments and diversification of the digital content service model, and how do small firms cope with the new business environment? Diversified subsectors of the digital content industry bring together a wide range of actors along the value chain, which generates a complex web of interfirm relationships and different types of interfirm structures, even within an industrial cluster.

I hypothesize that characteristics of cultural work in digital content creation inherently involve impenetrable qualities of the production process that are not easily standardized to fit into a vertically integrated, bureaucratic corporate culture. These impenetrable qualities create barriers for large firms attempting to grasp the know-how and creative production of local firms.

Learning, proximity, and urban land use: In the literature of industry clusters, the spatial aspect plays an important role both at the abstract (space, distance, proximity, and territories) and the physical level (urban form, land use, real estate market, and commercial/entertainment environment).

At the dawn of information technology development, some scholars, such as Castells (1991) predicted that geographical distance would no longer matter for business operations, as firms dealing with weightless products such as software would become footloose. A new ex-urban model (Fishman, 1987) was suggested that

predicted that the economic growth pole would move to suburban areas because that is where most people with a higher level of education reside, and job–house proximity can be achieved in a higher quality environmental setting. Based on these predictions, many corporations and governments located their new research facilities in suburban areas.

However, we did not have to wait long to see that such predictions about the relationship between communication and distance were seriously mistaken. Alongside information technology development, metropolitan areas have actually experienced higher economic growth rates than suburban areas. Moreover, the spatial agglomeration of footloose firms also rose in the center of urban areas.

What does all of this suggest? Many economic geographers and urbanists have strived to construct a plausible explanation. For instance, in Porter’s industry cluster concept, spatial proximity is important if firms are to save transactions costs. In the concept of knowledge diffusion or “untraded interdependency” by Storper (1997), distance is a kind of invisible wall blocking knowledge diffusion since tacit knowledge transfer requires face-to-face interactions and the sharing of locally embedded culture, norms, and other social codes.

Some scholars (Pratt, 2000; Indergaard, 2004) saw the important role of real estate developers in the formation of an industry cluster (as in the case of Silicon Valley), the existence of affordable office spaces near downtown areas such as old manufacturing buildings (Multimedia Gulch, Silicon Alley, and Toronto’s multimedia cluster), and the cultural diversity of these areas (Hutton, 2004), which attracted multimedia and new-media workers who are “cultural bohemians.”

A detailed study of the social interaction of firms and its spatial manifestation has yet to be systematically conducted. For instance, if the existence of affordable office space is important, what kind of land-use plan or zoning can enhance a stable

business environment for these small firms? How can planners solve the conflict between the popular property-led development and creating sustainable physical conditions for creative firms?

To answer this question, I look at spatial factors such as the composition of the office market and mixed land use in Teheran Valley to show how they contributed to the emergence and development of the industry cluster.

3. National Model Differences and Local Industry Clusters: Multi-scalar Approaches

Why Do National Differences Matter to an Understanding of Local Processes?

In recent decades, the notion of a “revival of the local” has attracted widespread attention from academics and public policy arena. Under neo-liberal economic globalization, the role of the nation state is rescaled and readjusted to promote a free-market system (Jessop, 1999; Brenner, 2002; Warner and Gerbasi, 2004). Cities rise as important and more independent participants in the global economy. As indicated by the proliferation of terms such as “local-global interplay” (Dunford and Kafkalas, 1992), the “local-global nexus” (Peck and Tickell, 1994), “globcalization” (Swyngedouw, 1992) and “globanization” (Jessop, 1998a), many urban researchers have begun to conceptualize the current round of globalization as a complex rearticulation of socioeconomic space upon multiple geographical scales.

Although global and local are intertwined, the global and national scales are privileged, as these are the arenas where rules disciplining governments are set. The nation state retains a powerful mediating role in crafting disciplines that regulate market processes and capital flows (Jessop, 1997; Cerny, 1999; Warner and Gerbasi, 2004).

Political economists such as Hall and Soskice (*Varieties of Capitalism*, 2001) have recently investigated the differences in national models in contemporary capitalism. Going against the popular-convergence theories of neo-liberalism, which suggest that all systems bend toward the Anglo-Saxon model, Hall and Soskice predicted continuing cross national divergence (Streek and Thelen, 2006).

Some scholars (Park, 1994; Gray, Golob and Markusen, 1996; Christopherson, 2002; and Fligstein, 2005) have pointed out the need to understand the rise of knowledge-based industries and industry clusters in the context of national level institutional (federal-level policies in the United States) changes. For instance, Fligstein (2005) argued that federal-level policies nurtured Silicon Valley, and Christopherson (2003, 2004) illustrated how regulatory changes in the media industry generated short-term and project-based work in a new media industry. Despite the increasing importance of the East Asian region economy in the world economy, few studies of countries in this region have been developed. This research attempts to contribute to this line of literature.

Differences in national governance models fail to appear in most studies of creative industry clusters, due to the local focus of the analyses. First, from a technology deterministic perspective, such as that of Castells (1997), it was expected that the universal and unavoidable exigencies of technological development would generate a prevalence of the liberal economic model across the world. The social embeddedness of economic activity (Granovetter, 1985) led some to conclude that the local or regional scale, rather than that of the nation state, is uniquely appropriate to engender the type of formal and informal interactions that encourage the kind of economic interactions that bring about the flexible economies of scope required for survival in globalizing markets (Ohmae, 1993). In a post-Fordist “knowledge-intensive” economy, participatory industrial systems are best encouraged by strategies

at the regional, local, or urban level (Mayer, 1992; Sassen, 1994). Some have even synthesized the notion that regions are at the right scale to nurture the formation of “associational economies” (Amin, 1997; Cook and Morgan, 1998) and the center of creative industries to attract creative classes (Florida, 1995).

I employ a multi-scalar approach because placing the forms and operational mechanisms of Teheran Valley in different scales of governance systems, such as national and international levels, helps us to understand the different factors forging local strategies and competencies. A multi-scalar governance approach captures not only the process of economic liberalization and technological development, but also specific historic events and choices determined by national governments that reflect continuing institutional behaviors and new institutional horizons.

In order to explore how the national governance system changed and recreated conditions for local business actors in conjunction with exogenous shocks, I adapt the developmental state as a theoretic framework to characterize Korean national governance.

The Developmental State and Neo-liberal Transformation

The Korean economic liberalization process is inseparable from the dismantling of the Korean developmental state. Industrial policy issues have been at the heart of the debate on the East Asian development experience during the past two decades or so. Indeed, in the late 1970s and the early 1980s, there was intense international debate on the issue, prompted largely by the Japanese industrial success during the first three decades after World War II. Johnson (1995) instigated the first phase of debate on East Asian countries’ industrial policies. Unlike that of Japan, Korean and Taiwanese economic development was understood as being driven by free-market economies with little industrial policy (Chang, 1999).

From the early 1980s, however, a number of institutionalist scholars provided detailed critiques of the market-centered approach to late-developing countries in East Asia such as South Korea, Taiwan, Singapore, and Hong Kong (Wade, 1980; Amsden, 1990; Evans, 1995; Woo-Cummings, 1999). In countries such as these, it was suggested that the developmental state governs (regulates) the market, rather than simulates the free market. The Korean developmental state is distinct from the Japanese developmental state in terms of the main sources of its financial resources. Whereas the Japanese developmental state relied on domestic savings, the Korean state had to borrow money, which resulted in high foreign debt in the 1970s. It was also distinct from the Taiwanese developmental state in the sense that the Korean state concentrated on breeding large corporations, whereas the Taiwanese state focused on SME sector oriented economic development.⁴

The Korean digital content industry emerged under two different sets of pressures to liberalize economically: the Korean financial crisis and the WTO regime. During the 1990s, with the resurgence of a comparative political economy, scholars strived to identify differences as well as similarities between the developmental states of each nation. Peter Evans, in his book *Embedded Autonomy* (1995), compared the three developmental states of Brazil, India, and Korea and asked why some developmental states fail in their bid for economic growth while others experience successful economic development. He argued that what matters is the quality of the state in maintaining its relationship with the rest of society. He also identified the Korean case as being more successful compared to the two other cases in terms of policy penetration into the private sector and at the local level.

⁴ For further discussion of the distinctive characteristics of the Korean developmental state and its changing nature, see *The Developmental State* by Woo-Cummings (1999) and *Restructuring Korea Inc.* by Chang (2003).

However, other scholars, such as Eun-Mee Kim (1997), have argued that the existing development state thesis over-emphasizes the role of the state and fails to give sufficient attention to the role of the private sector. She argues that private sector companies led to the rapid growth of the Korean economy, because they became less controlled by the developmental state and gained more liberty as their businesses expanded into the global market (e.g., the Daewoo, Kia, and Hyundai automobile and electronics industries).

Recently, younger Korean scholars point out that existing discussions on the developmental state are misleading and focus only on the positive aspects of Korean development. They argue for a more balanced and reflective viewpoint encompassing both the bright and negative sides that have been generated from the Cold War as a form of anticommunist capitalism (Lee, 2006): in particular, the social and political consequences of the military regime until the late 1980s, the social cost that Korean civil society paid in order to gain social and political democratization, and other social and environmental costs associated with the developmental state.

Since the 1997 financial crisis, however, the developmental state has swiftly transformed and acquired more neo-liberal characteristics. This transformation has been made possible through intense reforms implemented by the post-crisis Korean government under the IMF's guidance and has been encouraged by domestic political, ideational, and social conditions. Examples of the latter include the full scale liberalization of financial and real estate markets and the abandonment of bureaucratic interventions in most levels of governmental, especially governmental advisory activities that penetrate down to the local community level or to local economic activities.

However, it is not one exogenous shock that causes a transformation of the function, behavior, and relationship of institutions into characteristics totally

disconnected from their previous institutional settings and actors. According to historical institutionalism (Hall and Taylor, 2005), there are relative relationships between institutions as structures and the individuals within them that often create gaps between structural changes and individual behaviors and mentalities. In turn, this makes the swift and radical change of institution difficult.

Discursive institutionalism (Pedersen, 2005) points out that the creation of a new path and its relative dependence on the previous path takes scale, hierarchy, and identity (cite). Thus, even within the same nation, region, and locality, the degree of change or its direction can be different according to actors' interpretations of new standards and structures.

The Path-dependent Way of Understanding the Evolution of an Industry Cluster

One of the most frequently asked questions in the industry district/cluster literature is: Why does a particular region become a place for industry agglomeration and a center of economic growth, while other regions with similar assets do not? More recently, the concept of path-dependence has been appropriated for the analyses of local and regional economic development by some scholars, including Storper (1995), Maskell and Malmberg (1999), and Cooke and Morgan (1998).

In documenting the history of Teheran Valley, I will adapt the concept of path-dependence. This concept was developed by economists such as Arthur (1988) and David (1986) to describe what they saw as apparently inferior technologies dominating market spaces. Arthur (1994) developed abstract mathematical models showing how features such as increasing returns could create winner-take-all outcomes. David, in a series of historical articles, demonstrated how this occurred in the adoption of specific technologies. He found that under certain conditions, early decisions reverberate throughout history, closing alternative paths and validating a

single path. The implication is that history matters and that outcomes need be neither rational nor optimal.

The significance of evolutionary economics for analyzing the innovation process is that it underscores the fact that this process is embodied within a set of routines and habits, or, more broadly, institutions (both formal and informal). As such, it has served as the theoretical foundation for a range of institutionalist approaches, the most notable being the national system of innovation approach.

The historical analysis of industry clusters from the perspectives of path-dependence takes two critical junctures that create a path of specialization and the further development of a locality. First, there is often an initial period of openness with a number of contenders prior to the selection of a dominant design or dominant location. It is at such moments that small events can result in long-term differences (Storper, 1997; Kenney and Urs von Burg, 1999a). This perspective argues that locational opportunity is important in a transitional period when many actors are competing to take advantage of new opportunities. Second, these specializations become reinforced through the development of training programs for the industry or by the development of support and supply firms, which in turn attract more firms in search of specialized labor or an advanced and knowledgeable client base (Martin and Sunely, 2006). Over time, regional advantages or specializations also lead to the development of a unique set of conventions and norms for “how business is done.” This local or regional culture of production can facilitate relations between key economic actors by ensuring the flow of information necessary for continual adaptation and innovation. In this way, initial advantages develop into localized capabilities that are difficult for other regions to imitate (Storper, 1995). Once a lead is established and barriers to entry are set, a region may become locked into certain lines of sectoral specialization and, consequently, into certain paths of development. And in

cases where the lines of product specialization define the symbolic images of regions (as in the case of cultural products industries), they may confer onto those regions an authenticity or reputation that persists even after actual production declines (Scott, 2001).

Employing the path-dependence concept to local and regional economic development is useful because it provides systematic approaches to studying the role of history in shaping the practices and relations of firms and industries in particular places. The trajectory of the emergence and the evolution of industry clusters varies: Some industry clusters emerged from local skills and a cultural/industrial background that resulted in the formation of craft workshops operating on trust-based relationships (Third Italy). Some clusters grew based on business relationships and exhibited more competitive, rivalry-centered social networks (Silicon Valley). Still other clusters were planned and formed by national or regional governments (e.g., Dae-Duk Valley in Korea). Path-dependence addresses the importance of how institutions and markets can reproduce themselves and thus define the opportunities and risks from historic events within which firms operate. The path-dependence perspective is structured. In using it, one can undertake a systematic approach to understanding the history of an industry cluster.

However, its clear conceptual framework has also been criticized for its over-emphasis on structure, which often leads researchers to disregard structure and agency relations. As Giddens (1984) pointed out, local actors are not merely receptacles of structural change. Rather, structures (e.g., rules) form the basis for individual action; individual agents, through the very act of drawing upon them, reproduce and adapt those structures (Giddens, 1984). Actors' choices can not simply be "read off" the prevailing structures; nor can they be viewed as independently shaping those structures. Rather, it is through social practices that the two are given meaning.

In my dissertation, I construct the formation and evolution of local industry clusters in the context of inter-scalar dynamics—the supranational, national, and local nexus. Understanding the supranational–national–local nexus is particularly important because the rise and growth of the digital content industry in Korea is tightly intertwined with the process of economic liberalization.

In order to analyze the role of government in the rise of the digital content industry and Teheran Valley as the industry’s center, I employ a sectoral analysis approach, which allowed me to investigate the supra-national, national, and sub-national level policies (industry level policies) that frame industrial policies (Scharf, 1995; Thelen, 1995).

I am particularly interested in investigating, first, how local actors strategize to cope with international pressure and domestic market condition changes. For this purpose, I examine the social organization of a production and innovation system in Teheran Valley (Chapter 5). Next, I investigate the effect of the national government in terms of how a set of actors in a particular industry is bred—in this case, the ICT/digital content industry—, how the production value chain is conditioned by national-level policies, and how the qualitative form of the interfirm relationship is facilitated (Chapter 6, ICT and digital content industry sector formation).

CHAPTER III: RESEARCH METHODS

My dissertation investigates the digital content industry in terms of how digital content creators employ adaptive strategies, the spatial manifestation, and the role played by the national government in mediating international pressure and facilitating sector strategies. In this chapter, I discuss my pragmatic epistemological approach and case study method, which combines quantitative and qualitative data collection. Next, I document my fieldwork, the process of redefining research questions, re-identifying subjects (local actors) of my investigation, and collecting data, specifically in-depth interviews.

1. The Philosophy of Knowledge of the Research

Pragmatism¹

Pragmatism, as a philosophical background of research, is concerned with “what” and “how” questions instead of committing to any one system of philosophy or reality.

This allows researchers to choose methodologies not strictly bounded by the conventional division: positivism-quantitative/constructivism-qualitative.

I choose a mixed method approach for my case study, combining quantitative data analysis and reflexive research processes. The combination of quantitative data analysis and reflexive approaches not only provides a richness of data sources and

¹ The epistemology of this research stems from pragmatism. Pragmatism challenges the assumption that knowledge and action are two separate spheres, and that there exists an absolute or transcendental truth above and beyond the sort of inquiry that organisms use to cope with life (Hickey, 2005). The contemporary Pragmatism’s ascendancy over Positivism was induced by philosophers’ reflection on the modern quantum theory in microphysics.

Initially, several of the essential insights of contemporary Pragmatism were articulated by one of the originators of the quantum theory, Heisenberg. In his book *Quantum Theory*, Heisenberg reinterpreted his finding that the observed tracks of the electron in the Wilson cloud chamber are reflexive of the observer’s existence and affected by the observer’s observation at the very moment it takes place; he initially shaped the scientific realism that challenges the Positivist idea that there is an absolute truth and knowledge. Later Heisenberg’s ideas were taken up and further developed by academic philosophers such as John Dewey (Hickey, 2005).

stories from behind the scenes, but also enables me to incorporate local knowledge in developing and forming appropriate research questions and the means and processes to pursue answers. Because I am interested in identifying the changes in social organization and interfirm relations brought about by information technology and cultural content, and in how local actors strategize differently under changing economic conditions, I use both quantitative and qualitative data. Data collection and analysis strategies are discussed below.

Primary Data Sources

Quantitative Data

KIPA survey data. This data was generated from the Korea IT Industry Promotion Agency (KIPA) Survey of 2004. I used this data because the goal of the survey, understanding the characteristics of firms in the digital content industry,² coincided nicely with my study goal. The KIPA survey³ data analysis included 100 small- to medium-sized digital industry-related firms. The total population of the model group was estimated to be 13,734 in Korea (including Seoul), with an estimated 9,698 of those firms located in Seoul. After confirmation of the existence of the businesses, KIPA found the valid total population to be 8,643; 2,277 firms went out of business and 568 firms were not part of the software/digital content industry sector. Of these 8,643 firms, a total of 6,107 (70.6%) are located in Seoul. Using a random sampling method, 3,187 firms were selected as a sample population for Seoul, a figure that represents 38% of the total population of firms in Seoul. Among the surveys sent to the selected 3,187 firms, 1,086 were returned with notations that the firms had closed or with markings that indicated a delivery failure or mailing address error. Another

² Such as employment status, interfirm network, routes for information exchange, and employee education. For a complete set of categories of questions, refer to Appendix A.

³ The KIPA survey was conducted based on firms (not establishments). The questionnaire questions are listed in Appendix A.

452 firms declined to participate in the survey. In addition, another 103 survey attempts failed for unknown reasons. Therefore, 443 (13.9%) of the total surveys attempted were returned. Among these 443 responses, 116 responses fell within the boundaries of Teheran Valley (the Kangnam gu area; see Table 3-1).

Although this survey includes the specific population group I investigate in my dissertation, there are some respondents that I consider to be only remotely related and the inclusion of which, therefore, would lower the representativeness of the sample population. Therefore, I eliminated 16 inappropriate responses, which rendered the sampling process closer to the quota sampling.

Table 3-1. KIPA Survey Sample Population and Response Rate.

Region	Total estimated population	Total valid population	Sample population	No. of surveys collected	Response rate to sample population
Korea	13,734	8,643	7,159	1,509	21.1%
Seoul	9,398	6,107	3,187	443	13.9%

Business census data To examine the spatial distribution pattern of the digital content industry agglomeration in Teheran Valley, I use the business survey data collected by the Seoul City government from 1993 to 2003. In the attribute field in the database, each type of business is classified by a five-digit Korean Statistical Industry (KSIC) Code (equivalent to the NAICS), which allows me to distill the specific subindustrial sectors that comprise the digital content industry. Appendix B lists the subsector industries that constitute the digital content industry according to KSIC code. In fact, there is no such industrial sector that represents the digital content industry. Therefore, this dissertation employs the industrial categorizations found in the existing literature.

Qualitative Data

In-depth interview data. To collect data on the main reasons for agglomeration and inter-firm relationship and innovation process, I conducted in-depth interviews with firms located in Teheran Valley and other competing sites in Seoul. This fieldwork took place in Seoul, Korea, from February of 2005 to July of 2006. To identify firms and interviewees, I used the “snowball” method. The development of informants started with personal contacts at the Seoul Development Institute, in the Seoul City government, in the Korea Venture Company Association, and in KIPA. After repetitive contacts with my informants for 5 months, in July I finally was introduced to 16 firms ranging from Internet/mobile game, mobile phone operation software, and Internet portal firms, to Web solution providers. I interviewed CEOs and heads of management or human resource departments. I also interviewed other significant firms in each industry, and a plurality of suppliers and business service providers, project team leaders of venture company associations, national/local governmental officials, scholars, and representatives of governmental institutions. The structure and process of in-depth interview data collection is discussed in detail in the following sections.

Archival data. I use archival data to complement and triangulate the collected interview data and quantitative data. Archival data is used extensively to analyze the institutional aspects, especially with regard to governmental policies. The types of archival data range from journal articles to master’s and doctoral degree theses, governmental documents, newspaper articles, research institute reports and publications, and so forth.

2. Fieldwork Process

The field research for this case study was carried out from February of 2005 to July of 2005 and in January of 2006. After the two separate phases of field research, I continued to contact my key informants in order to update and triangulate my data. The entire fieldwork consisted of preparation, pilot study, primary data collection, and data triangulation phases (see Table 3-2).

Table 3-2. Phased Fieldwork Activities.

Phase	Period	Activities
Preparation	September 2004– January 2005	- Literature review
Pilot study	February 2005– March 2005	- Initial contact with key informants - Review of multiple case study sites and confirmation of the case study site - Pilot interviews - Re-construction of research questions - Confirmation of new research questions - Statistical and survey data collection
Primary data collection	April 2005– July 2005	- In-depth interviews - Collecting archival data
Data triangulation	August 2005– January 2006	- In-depth interviews both face-to-face and on the phone - Checking with archival data

The Preparation Period

I started by reading and analyzing the existing research articles, various business association reports, and governmental official documents on Teheran Valley generated in the late 1990s and early 2000s. This literature, written mostly by Korean scholars, shows that IT venture company CEOs and workers in Teheran Valley had dense social networks, not only within the same business network but also with venture capitalists, business organizations, and governmental intermediary offices. However, it was not easy to find data and literature on Teheran Valley for more recent phenomena. It

seemed that after the dot.com bubble crash, scholarly and practical interest in Teheran Valley disappeared. Based on the available information on Teheran Valley, I set up my research questions. Initially, I constructed my research agenda on the concept of the ‘power of the place shaping industry and its social organizations.’

The Pilot Study and Reconstructing the Research Questions

Pilot Study Activities

During 6 months of in-depth fieldwork, from January 2005 to July 2005, I spent the first 2 months analyzing existing survey data and pilot interviews with various actors to triangulate the research direction and interview questions. At the same time, I spent the first 2 months visiting different sites of digital content industry clusters in Seoul to confirm that Teheran Valley is the representative and major case.

Reconstructing the Research Questions

From the survey data analysis, I found that digital content creators in Teheran Valley show scarce interactions with other content creators both inside and outside of Teheran Valley. In terms of information procurement, the Teheran Valley community relies heavily on the Internet, conferences, or exhibitions rather than depending on more locally embedded and socially tied sources such as partner firms. This was an interesting contrast to the literature. In the learning community literature, new knowledge creation and diffusion occur through dense social interactions among local actors. The entrepreneurial region literature, for instance, that which addresses Silicon Valley, also emphasizes the importance of social interactions among actors even though the local business culture is based on competition rather than collaboration.

This initial finding provoked questions of why and how: Why do Teheran Valley firms not interact intensively and collaborate over different projects when they have very obvious geographical proximity? And how do they stay strong and resilient

in the face of economic fluctuations, even though the form of their social organization is not shaped in the way that is found in exemplary model cases, such as Silicon Valley?

There were gaps. And there were mechanisms that should be analyzed to answer these questions. Therefore, although I prepared a set of research questions and hypotheses before my fieldwork based on the initial literature review and data analysis, after learning more about what is really going on in the field, I embraced the local conditions and changed my research questions and hypotheses. I revised my research questions and formed them to engage in the existing debates and to fill the gaps between the existing literature and local specificities.

The overarching question was the following:

What is the source of economic strength and resilience of Teheran Valley?

To answer this question, I developed a set of subsequent questions, as follows:

In the face of this increasing dominance of large firms in the digital content industry sector, how do small firms strategize to organize their production systems and create the firm networks?

What are new opportunities and challenges brought by continuous new technological developments and diversification of the digital content service model, and how do small firms cope with the competition with large firms?

In this process, how do national level policies engage in shaping important actors and market governance?

Have there been any institutional changes that facilitated the current form of social organizations?

What institutional settings influenced actors' decisions and altered their strategies?

I verified the completeness and validity of my research questions, case study site, and the firms for my study with various key informants associated with the digital content industry: digital content creators, venture capitalists, academics, network service providers, business associations, and governmental officials. The period and the process that I immersed myself in the local specific environment and building relationship with local actors was critical in understanding what, why, and how.

These processes point to the value of the reflexive qualitative field study, the openness to local knowledge and local actors' engagement in identifying problems and issues that are important in the local context. I was able to identify the gap between local conditions and the existing literature. If I had used a conventional research method that relies on formal business registries, phonebooks, official statistical data, etc., I would not have had a chance to develop a set of questions that are locally embedded.

3. Primary Data Collection on Social Organization and Interfirm Networks

Although all of those secondary research questions are nested under one question that asks about the source of economic strength and resilience, for the sake of logical convenience, I would like to group the research questions into two groups.

The first group of research questions investigates the social organization of production in Teheran Valley. This portion of the research focuses on the micro level governance system within a spatially confined industry cluster. In analyzing the social organization of production, I emphasize the concept of "creativity" not only as one of input factors but also in terms of how the creative aspects of the worker and production process interact with and in relation to the internal firm organization, decision making process, and interfirm relationships.

Research Questions on Firm Strategies and the Social Organization of Production

In the face of this increasing dominance of large firms in the digital content industry sector, how do small firms strategize to organize their production systems and create their firm networks?

What are new opportunities and challenges brought by continuous new technological developments and diversification of the digital content service model, and how do small firms cope with the new business environment?

Defining Actors to Study

In order to understand the social organization of production, it is important to understand who the main actors in the digital industry are and how they are connected through the production chain. Since my goal is not to study the production chain of the digital content industry itself, I will sketch important actors and their characteristics briefly to help identify who I should explore to examine the social organization of the production and innovation of the Korean digital content industry.

The diagram in Figure 3-1 captures important actors throughout the value chain of the digital content industry in Korea. The model is not necessarily linear, and there are many interactions between each of the various links previously mentioned. This illustration, however, allows us to identify the main players in the industry and to specify their main roles.

Among these various actors and sectors involved in the process of digital content production, the focus of interest of this research is on the producers of the digital content industry, those who create and distribute digital content. This research focuses mainly on two important actors: digital content creators and publishers.

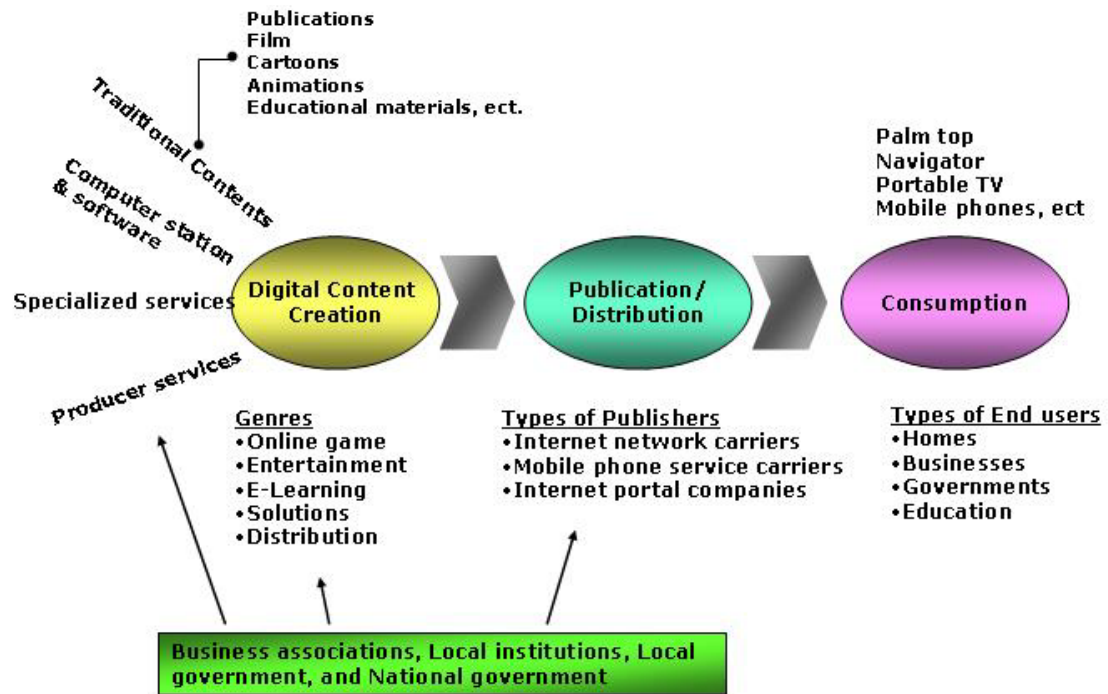


Figure 3-1. Simplified Value Chain and Actors of the Digital Content Industry.
 Source: Created by the author.

Developers of Digital Content

The activities of digital content development range from idea development, to the technological enabling, conversion, package, and storage of completed digital content. Because of the nature of the work of digital content production, which combines technology and cultural creativity, like many creative commodity producers, digital content workers' characteristics lie at the intersection of the "technical" and the "expressive" (Christopherson, 2001). They reflect the tensions inherent in this intersection and the conflicts common to those creative workers who produce commodities but whose work also reflects some elements of personal expression or authorship. The map of skill sets illustrated in Figure 2-1 shows that digital content workers, compared with biotech or nanotech workers, require less competitive technological capacity, yet they are required to have a certain level of creativity, if not as much as traditional cultural industry workers.

Distributors (Publishers)

Because of its amorphous characteristics, the digital content product remains in the form of an electronic file throughout most production processes and distribution channels, except where digital content is sold in the form of a CD-ROM. However, because technological development increases network dependency throughout the creation, distribution, and consumption processes, the role of the infrastructure owner becomes much stronger.

In the case of the United States, the main role of publishers of multimedia products is to market these productions. Publishers sometimes develop their own applications internally, but they usually work in close cooperation with external developers. The publisher is thus often involved in the general definition of the content and in the funding. However, in the Korean context, the professional publisher group, also called syndicators, has not fully developed. Instead, especially in the digital content industry, large Internet portals and mobile phone service carriers play a role as publishers.

Structuring and Strategizing Qualitative Data Collection

To systematically collect several kinds of information in order to examine a variety of social organizations and interfirm relationships, I have imposed three structural aspects: the statistical representation of interviewees, the use of semi-structured interview questions, and the verifying of interview results.

Selecting Firms to Interview

First, in order to obtain statistical representation of the sorts of firms interviewed, I chose firms that represent current subsectors of the digital content industry: online games, mobile games, and Web-based software. Through the literature review and initial interviews, I could identify core subsectors of the digital industry in Teheran

Valley. Most important, the survey data show subsectors and their proportions. Table 3-3 represents the types of subsectors within the group of Teheran Valley digital content creators. It appeared that the respondents produce various types of software products, ranging from operating systems, security systems, and business application programs to educational content, digital publication, games, and digital visualization. Among these subcategories, the embedded software development and digital content creation parts comprise the core subsectors of the digital content industry. These two subsectors account for 69% of the digital content firms in the KIPA survey. Therefore, I allocated the number of my interviewees accordingly. Throughout my in-depth interviews, I interviewed CEOs, heads of management departments, or HR employees. Most of the interview subjects were specifically content creators. Table 3-4 shows my selected interviewees, allocated by subsector, and Table 3-5 shows the different types of publishers I interviewed. Table 3-6 compiles other interviewees from governmental organizations, business associations, scholarly organizations, and NGOs. These interviews were added for two purposes: to cross-check the interview results with the business sector and to compile data on the historic, institutional policy aspects of Teheran Valley.

Table 3-3. Types of Subsectors in the Digital Content Industry.

Package Software	System SW	OS, communications, utilities, security, middleware, etc.	7%
	SW supporting other product development	Program development tools, management tools, content creation tools, etc.	6%
	Application	Office software, corporation management software, scientific research software, industrial software, etc.	13%
	Other package software		3%
Embedded software		Home appliances, mobile communication, communication network, storage, automobile, industrial automation, broadcasting/filmmaking, entertainment (game & animation), medical science, etc.	43%
Digital content		Educational content, information/cultural content, game/entertainment, digital publication, digital visualization, etc.	26%

Source: KIPA Survey, n = 100.

Table 3-4. Content Creators Interviewed.

Subcategories	Firms
Online game and Entertainment	6 (Onnet, E3net, M-Game, Ex-em, Ace-Tel, and Enium)
Software/OS	5 (Gaon I, MTel, Chips and Media, Syworks, and CheckFree)
Online Commerce	1 (Auction)
Public service (medical service)	2 (Insung Media, Anternet)
ETC	1 (Azooma.com)

Table 3-5. Publishers Interviewed.

Subcategories	Firms
Mobile Phone	2 (KT and SKT)
Software/OS	1 (MSN Korea)
Internet Portal	NHN

Table 3-6. Other Interviewees.

Organizations
Ministry of Information and Communication
Ministry of Culture and Tourism
Small and Medium Business Administration
Seoul Metropolitan City Government
Office of Kangnam District
Korea Venture Business Association
Association of Online Game Industry
Seoul City Government Business Agency
Korea Information Society Development Institute
Seoul Development Institute
Korea IT Industry Promotion Agency
Korea Culture & Content Agency

Semi-structured Interview Questions

Second, I used semi-structured interview questions and included a variety of firms.

After defining some criteria about the social organization of production and interfirm relationships to study, I wanted to make sure that I chose appropriate questions to capture the characteristics and mechanisms in question. I collected personal information about the CEO of each firm and general attributes of the firm such as year of establishment, number of employees, types of products, and factors of locational choice. In this way, I made the interview data compatible with existing survey data.

The categories of the structured interview questions are as follows:

1. General firm information including established year, number of employees, average age group of employees, background information of the CEO, and development stages of the firm.
2. Important factors for locational decision, with 11 choices⁴.

⁴ The 12 factors are: 1) rent, 2) CEO's residential location, 3) employees' residential location, 4) transportation, 5) urban cultural amenity (diversity of choice), 6) environmental amenities (parks and rivers, etc.), 7) proximity to cooperative partners and clients, 8) supporting institutions, 9) support from

3. Interfirm networking: major cooperative partners, type of cooperation, and frequency of meetings.

Triangulation of Interview Questions and the Interview Data

In order to make sure that my interview questions were relevant, through pilot interviews with scholars, a few firms, and business associations, I triangulated my interview questions and confirmed their relevancy.

I also interviewed other significant firms in each industry, and a plurality of suppliers and business service providers, project team leaders of venture company associations, national/local government officials, scholars, and governmental institutions. They are listed in Table 3-6.

In-depth Interview Processes

I began contacting various organizations through referrals from key informants and my own social network. One interview led to several others. In the process of conducting the interviews, I experienced two strikingly different degrees of openness and of making new networks. One interview with scholars and governmental officials easily led to the next one through their human networks. However, when it came to interviews with businessmen, making connections became much harder. I later found that because of the intensive competition and rivalry among digital content creators in Teheran Valley, business owners were very cautious about revealing their business operations. During the first two months, I developed a list of interviewees in the digital content industry through personal human networks (mainly through my friends). Later, after interviewing people from intermediary governmental organizations, the KIPA and the KOCCA, it became much easier to network with more digital content

local government, 10) access to labor pool, 11) image of Teheran Valley, and 12) good relationship with the building owner.

developers through the relationship, especially with KIPA, since they were operating a few different programs in support of small digital content firms.

Before I met my interviewees, I initiated contacts via phone calls or e-mail to explain the purpose of my research and to briefly introduce questions that I wanted to ask. These initial communications were followed by another e-mail with an attached file containing a short description of my research, a list of interview questions, and a confidentiality clause.

At the instance of a face-to-face meeting, I explained that I had an obligation to protect my interviewees, that all information obtained from the interview would be used for academic research only, and that data would be stored at a separate, secure location. I also told my interviewees that if they did not want to be identified, I could either not use the data for my dissertation or disguise their identity. Interestingly, most of my interviewees were willing to expose their names and the stories of their companies. Some of my interviewees also clarified that they would not tell me any information critical to their business. Some other interviewees said that as long as my publication activity occurred outside of Korea in English, I could cite whatever they said.

When I began the actual interview, I first asked these respondents factual questions about their background, noting social identity groups of which they might be a member: hometown region, fields of expertise, university, previous experience, etc. In this way, we could start getting comfortable with the interview situation through easy, nonthreatening questions, but I could also contextualize their social identity. The questions I asked included the following: What is the background of digital content creators? Where do they usually go when they hang out with their friends? From these questions, I could learn that digital content workers commute from various places,

even from outside of Seoul. However, most of their social activities (including meeting their college friends) occur within the Kangnam area.

Next, I would start asking questions already prepared in the interview sheet (Appendix C) that was previously provided via e-mail. In the middle of a conversation, I would attempt to insert other questions as long as the new question did not disturb the conversation flow. I inserted some questions about how they organize their project teams, who is allocated to the same team, what is the main consideration when they form a project team, and so forth. This is how I found out how firms strategize to organize their internal firm structures to facilitate communication and control the creative work process.

I then systematically started asking them more detailed questions about their development projects. I traced their product development process step-by-step, their considerations in making decisions about their specific projects, and how they implemented each phase. At this point, the interview could go off in a variety of directions because I wanted to allow them to tell me the way they saw the development process without me imposing a framework or focus of observation. I wanted to be open to new discoveries and to the need to alter my research questions.

At the end of the meetings, I would ask the interviewees about any institutional factors they had not brought up or had briefly mentioned in order to probe whether they were issues in their view. I used this approach in order to avoid biasing the direction of the interview or suggesting answers to them but also to capture anything they might have forgotten.

If possible, I also spent time in their informal social gatherings. Ultimately, I ended up with a large quantity of interview notes that look at the digital content industry in Teheran Valley from a variety of perspectives.

Data Analyses: Making Sense of a Mixed Data Set

Descriptive Data Analysis

This study has some methodological limitations that are worth mentioning. First is the lack of proper official statistical data. Because the digital content industry is such a young industry, even within the ICT sector, the lack of clear-cut sector boundaries makes it difficult to analyze the emerging industry. In addition, the rapid development of digital content as a new industry implies that digital content production is inadequately registered in most official statistics. Thus, this research carries out case studies and qualitative interviews, organizes personal surveys among digital content creators and closely related sectors, and draws on a variety of heterogeneous statistical sources.

Analyzing and Remapping the Social Organizations

To analyze the basic characteristics of the digital content firms in terms of their innovative capacity, contributions of collaborations in new technological developments and information exchange, and the contribution of interfirm networks, I use two complementary forms of information:

1. Seoul and business survey data on 116 firms in the Teheran Valley area.
2. Sixty-two semi-structured interviews with content creators, service providers, governmental officials, scholars, and business association representatives who worked in Teheran Valley or worked for fields related to the IT industry and venture policies.

To transcribe the voice recording of my interviews, I employed a research assistant. I first transcribed all interviews into Korean. Next, I analyzed the Korean interview transcripts. In this way, I could easily capture the nuance of Korean words and expressions. Because of the issue of exact translation of Korean to English, translation was done after the data analysis. I translated important portions to quote.

4. Primary Data Collection on Institutional Aspects

Research Question on Institutional Aspects

How do national level policies engage in shaping important actors and market governance?

Have there been any institutional changes that facilitated the current form of social organizations?

What institutional settings influenced actors' decisions and altered their strategies?

A Constructive Approach to the Problem

Examining the relationship between the current social organization of Teheran Valley and the role of governmental policies was rather challenging. I employed a constructive research process, too, but investigating the role of governmental policies required a heavy reliance on qualitative data, which brought more complexity into the process. Especially when governmental policy was meant to affect local economic activities indirectly, capturing or identifying the impact of policies at the local level is rather complex. For instance, there is a great diversity of opinion about the effects of governmental policies on the Korean digital content industry. Actors in private sectors (digital content creators, small firms) testified that there were no obvious governmental supports from which they benefited.

However, governmental documents and interviews with Korean governmental officials showed that the Korean government has actively promoted the digital content industry in various ways such as designating the digital content industry as one of “ten industries for the future growth engine,” providing subsidies, and rearranging governmental institutions to support firms with research and consulting services.

Why are the perspectives of the two parties so different? What created the missing link between national level governmental policies and local level policy recipients? Is it a problem of inefficiencies in governmental resource allocation? Is it related to problems of middle men who are supposed to deliver upper level policies to the local level? Or does it suggest a mismanagement of communications between national governmental and local actors?

In order to answer these questions, I asked the same set of questions of my initial informants from different backgrounds. I began with the question of whether there was any governmental policy effect on the current digital content industry. I conducted the preliminary interviews with key informants from the Ministry of Information and Communication (MIC), Small and Medium Size Business Administration, Seoul City government, and business owners. Interestingly, I discovered that there are two contrasting perspectives on the role of governmental policies in the growth of the digital content industry and in the current shape of the social organization.

Governmental officials testified that there have been diverse policy programs imposed to promote the ICT/digital content industry since the late 1990s. There has been a tremendous amount of governmental investment and policy support for the SME sector, such as venture capital companies, governmental institutions, subsidized venture buildings, venture start-up incubators, and KOSDAQ companies.

In contrast to the straightforward answers from governmental officials, opinions from local business owners were more discursive and complex. Local actors' usual first reactions to the question of whether they have benefited from any governmental policies or whether they see that governmental policy affected the development of the digital content industry in general was that they did not see much governmental policy support. I began to wonder whether there was a great inefficiency

involved in implementing the policy program at the local level. After a few more detailed questions and conversations on particular subsidy programs and laws, I realized the term “governmental support” used among local businessmen indicated direct governmental actions such as industry districts or Free-Trade Zones that are visible at the local level and heavily subsidized.

Where is this disconnect being generated, and why? The gap was generated by the sudden adoption of liberalization measures in economic policies after the 1997 financial crisis. Traditionally, the Korean government had closely supervised Korean firms by controlling their financial resources and providing extensive industrial subsidies (Chang, 2003). The industry district policy was one of the national state’s spatial policies that encouraged the development of specific industries by providing industrial estate, various infrastructures and plant buildings built by the nation–state, and local labor pools (Kim, 2001). At the same time, the industrial district was a policy tool for boosting the local economy.

However, for governmental officials, the term “governmental policy” was used to indicate more extended boundaries of institutional support and regulations. The cause of the “gap” becomes much clearer if we understand that the economic liberalization effort became more intense and spread to broader economic sectors after the 1997 financial crisis. The changes, which happened over a short period of time, created a gap in the understanding of the role of the government between local entrepreneurs and upper level policy makers. The change was imposed from the top; although governmental officials understood the changes, the understanding did not penetrate to the local level. It was during this period that liberalization of the economy

and deregulatory policy shaped and gradually became embodied in various public policies in Korea.⁵

Surprisingly, there is a disconnect in the literature, too. Although many Korean scholars examined the impact of economic liberalization after the financial crisis, they dwelled macro level changes such as financial sector reform. The academic debate fails to address how changes at the macro level penetrated into a specific industry sector market governance or local level economic activities.

Since the late 1990s, the body of literature on high-tech industries, innovative clusters, and industry districts has grown rapidly. Most studies are exclusively concerned with introducing prototypes of successful industry districts/clusters. Empirical case studies are geared toward evaluating Korean local industry clusters by adapting North American- or European-originated concepts and analytical frameworks. Therefore, proper discussions or debates about the impact of industrial policies and the roles taken by governmental organization are largely missing in the related literature.

I explored the institutional aspects primarily through the qualitative methods of archival research and key informant interviews. Qualitative methods are preferable for understanding processes, and interrelationships in a complex system and the formation of social organizations, and organizational issues and agents' motives and perceptions. Qualitative methods also have the advantage of being open to the possibility of detecting important issues that I might not have theorized a priori (Yin, 1984).

A Multi-Scalar Approach

To capture how the nexus of supranational and national interactions have manifested in the rescaling activities of governmental policy and how this affects the scope of

⁵ It is a point on which Korean scholars who regularly read news articles would agree. I also had internal access to the governmental policies because I previously worked for the Seoul City government as a policy researcher.

choices for local (business) actors, I used a multi-scalar approach. I show how governmental industrial policies are intertwined with the Korean economic liberalization processes.

I employ a multi-scalar approach by framing the Korean industrial policies in three different stages, which also correspond with distinctive supranational pressures to liberalize the Korean economic structure (See Table 3-7). Table 3-7 presents the classification of the three phases, the target industry of each period, and external shocks that affected the roles and the scope of actions of the Korean government.

Table 3-7. Analytical Framework for Multi-Scalar Analysis of Institutional Aspects.

Decade	Target industry	Policy parameters	External shock
1980s	Telephony	Private-public consortium Subsidies on high-technology development	Trade conflict with US
1990s	Broadband infrastructure, IT high-tech manufacturing, Telecommunication industry	Providing visions of industrial growth License control Technological standard setting Vocational education Venture capital SME promotion	Financial crisis and Economic reform
2000s	ICT industry Digital content industry	SME-centered industry promotion Market diversification	WTO regime

The Korean government's strategies, I argue, are proactive policies to respond to the domestic demand to reform its economic structure, as well as supranational pressures that affected industrial policies enacted by the Korean government. The sectoral analysis will enable me to trace policy direction changes chronologically, to address how the Korean government responded in order to cope with or take advantage of international market competition and the pressure to liberalize its domestic market, and to capture how the national level industrial policies affected shaping of main actors and their relationships in the digital content industry.

By combining survey data analysis and in-depth interviews, in Chapter 5, I examine the innovation capacity, production process, and social organization of digital content creators in Teheran Valley. Furthermore, I illustrate how digital content creators established production systems and social organizations that fit the characteristics of digital content. To understand how multifaceted factors are at work interacting in the formation of the social organization of production and interfirm relationships, I construct three digital content firm case stories and one publisher case story based on in-depth interview data.

In Chapter 6, by combining various archival data, I analyze the role of the Korean government in constructing the market governance in the ICT and digital content industries and strengthening small firms through the liberalization of industry policies.

CHAPTER IV: THE HISTORY OF THE SPATIAL FORMATION OF TEHERAN VALLEY

1. Path Dependency and the Evolutionary Path of an Industry Cluster

In this chapter, I map the history of Teheran Valley, how it emerged, developed, and formed into an industry cluster, from its initial formation, to the dot.com crash, to its revival as a digital content industry cluster around 2003.

Teheran Valley is a distinctive case in the sense that it emerged in the middle of a business district without strong connections to nearby research institutes or universities. It is, nevertheless, among the best known urban industry clusters in Korea and the East Asia region. Focusing on the process of the evolution of Teheran Valley, especially critical junctures that created the momentum of transition from an office district to an IT venture industry cluster and digital content industry cluster, and factors involved in the process, this chapter attempts to show how local actors and governmental policies played out together in the formation of Teheran Valley in the late 1990s.

In understanding the history of an industry cluster, some scholars (Storper, 1995; Maskell and Malmberg 1999a; Cooke and Morgan, 1998, Martin and Sunley, 1999) have adopted the concept of path dependence¹ in local and regional economic development. According to this line of thought, the local or regional culture of

¹ The concept of path dependency was developed by economists, such as Arthur (1988) and David (1986), to describe the phenomenon they noticed of apparently inferior technologies dominating market spaces. Arthur (1994) developed abstract mathematical models showing how features such as increasing returns could create winner-take-all outcomes. David, in a series of historical articles, demonstrated how this occurred in the adoption of specific technologies. They found that under certain conditions early decisions reverberate through history, closing alternative paths and validating a single path. The implication is that history matters and that outcomes need to be either rational or optimal. One of the classic examples of technological path dependence most frequently cited was the QWERTY case suggested by David (1985). The QWERTY keyboard layout system is the prevailing standard in typewriter and computer keyboards, although it is an inferior technology, because it was the first-to-market. He called this “path dependence,” and argued that inferior standards can persist simply because of the legacy they have built up.

production can facilitate relations between key economic actors by ensuring the flow of information necessary for continual adaptation and innovation. In this way, initial advantages develop into localized capabilities that are difficult for other regions to imitate. Once a lead is established and barriers to entry set in, a region may become locked in to certain lines of sectoral specialization and, consequently, to certain paths of development. And in cases where the lines of product specialization define the symbolic images of regions, as in the case of cultural products industries, they may confer onto those regions an authenticity or reputation that persists even after actual production declines (Scott, 2001). It takes an exogenous shock or intervention to enable the system to break free (“escape”) from those consequences and to begin to endogenously evolve a new, path-dependent trajectory.

In this concept, incremental and cumulative changes are important in local economic specialization and in gaining local competitiveness. Specifically, locally provided institutional supports such as skill training, business associations, and lawyers with specialized knowledge of a specific industry are also important.

But what of localities or regions that are experiencing continuous exogenous shocks and changes, for instance, a transforming economy (a highly transitional economy setting such as the Korean Economy)? Or an economic structure that is frequently affected by exogenous shocks? Is path dependence still applicable? And how can we explain the start of local specialization and the formation of an industry cluster? Is it the case that absent exogenous shocks, localities or regions are not able to create a new path?

In adapting the concept of path dependence to the evolution of Teheran Valley, these questions emerged, because the emergence and evolution of Teheran Valley is, in fact, deeply embedded in a series of exogenous shocks (the financial crisis and the dot.com bubble crash) and subsequent intervention by the government (Korean

economic restructuring, venture promotion, ICT industry promotion, etc.). Before the area became Teheran Valley, there was no specialized or localized institutional infrastructure to support venture companies or an industry cluster.

Therefore, I borrow two important frameworks to capture the characteristics of the emergence of Teheran Valley. The historical analysis of industry clusters from the perspectives of path dependence takes two critical junctures that create a path of specialization and the further development of a locality. First, often there is an initial period of openness with a number of contenders prior to the selection of a dominant design or dominant location. It is at such moments that small events can result in long-term differences. This perspective argues that locational opportunity is important in a transitional period when many actors are competing to take advantage of new opportunities.

Second, the initial specializations are reinforced through the development of training programs for the industry or the development of support and supply firms, which, in turn, attract more firms in search of specialized labor or an advanced and knowledgeable client base.

I argue that, in the Teheran Valley case, instead of proximity to universities or research centers, the diverse economic and business environment became important attractions. Specifically, the much higher concentration of ICT corporations and workers in the area functioned as an important anchor for the initial agglomeration of IT venture firms. Second, it was the Korean government's national policies that reinforced the initial agglomeration of IT venture companies.

The usefulness of employing the path-dependence concept to local and regional economic development is that it provides a systematic approach to studying the role of history in shaping the practices and relations of firms and industries in particular places. However, its clear conceptual framework also has been criticized for

its overemphasis on structure, which often leads researchers to disregard structure and agency relations. As Giddens pointed out, local actors are not merely receptacles of structural change. Rather, structures (e.g., rules) form the basis for individual action, and individual agents, through the very act of drawing upon them, reproduce and adapt those structures (Giddens, 1984). Actors' choices cannot simply be "read off" the prevailing structures; nor can they be viewed as independently shaping those structures.

I try to engage in this debate by raising my third argument. In the emergence of Teheran Valley, it was local actors (IT venture CEOs and business associations) who captured opportunities that emerged in the biggest economic crisis in modern Korean history and strategically utilized the resources that were available but not yet claimed, such as affordable office markets and governmental supports.

In this chapter, I examine the interfirm relationship in Teheran Valley after the IT venture bubble crash, beginning with the year 2003. There is a reason to draw a distinction between the periods before and after the IT venture bubble crash. When Teheran Valley came back to life one or two years after the dismantling of the IT venture cluster following the crash, the core industry sector of the cluster had also changed. Whereas during the IT venture boom the main business model was IT manufacturing such as semiconductors, or Internet businesses such as mobile phone bell sound service, since the IT venture bubble crash, the main players have come from the digital content industry.

2. Inventing Urban Space

The Kangnam Area: State-led Urban Development

The urban area where Teheran Valley grew was a state-created place with specific urban functions, an urban social class to be accommodated and served, and a relevant

urban spatial form to contain those economic, political, and social activities. Until the 1970s, the southeast part of Seoul (currently the Kangnam gu and Seocho gu areas) remained undeveloped as agricultural land that included pear orchards and cabbage fields. To increase the housing supply for middle-income households and a third urban office district that would complement the two already in existence, the Downtown and Yoido areas, the Seoul City government created a plan to develop the Kangnam gu and Seocho gu areas (the Kangnam area) in the late 1970s.

The old downtown traditionally had been the major location for Korean corporation headquarters, central governmental functions, and foreign embassies, reflecting its 600-year-long function as the nation's capital. The second urban core, the Yoido area, developed in the 1970s, specialized in the finance and broadcasting industries based on the presence of the Korean stock market exchange, two major broadcast companies, and the Korean Parliament. To complement these already existing functions, the Kangnam area, since the mid-1990s, had become a major host to new industries such as IT industries and producer services (Park, 2000; Yang, 2005).

The development of the Kangnam area nicely coincided with the national government's intention to decentralize the population concentration in the downtown area as part of the city's downtown growth-management strategy in response to housing shortages and traffic congestion (Son, 1999). The Downtown population decentralization was also intended in part to prepare for any possibility of a recurrence of the Korean War because tension between North and South Korea still ran high.

To facilitate the development of the Kangnam area, the city government erected a "Special Apartment District" in 1987 to halt any individual land development or construction and to allow only major construction companies to consolidate small parcels from small private landowners to create bigger lots on which to build high-rise apartment complexes (Son, 1999). As part of its population-

decentralization policies, the national government also relocated major governmental functions, especially judicial functions such as city residential and commercial development in these areas. The Seoul City government also relocated many high schools and colleges from the Downtown. Important governmental functions such as the National Supreme Court and Prosecution Authority were moved to the Kangnam area resulting separation of three government functions—administration, legislation, and jurisdiction—in three urban centers: Downtown, Yoido, and the Kangnam Area (Son, 1999). Figure 4-1 presents the spatial configuration of these three urban centers.

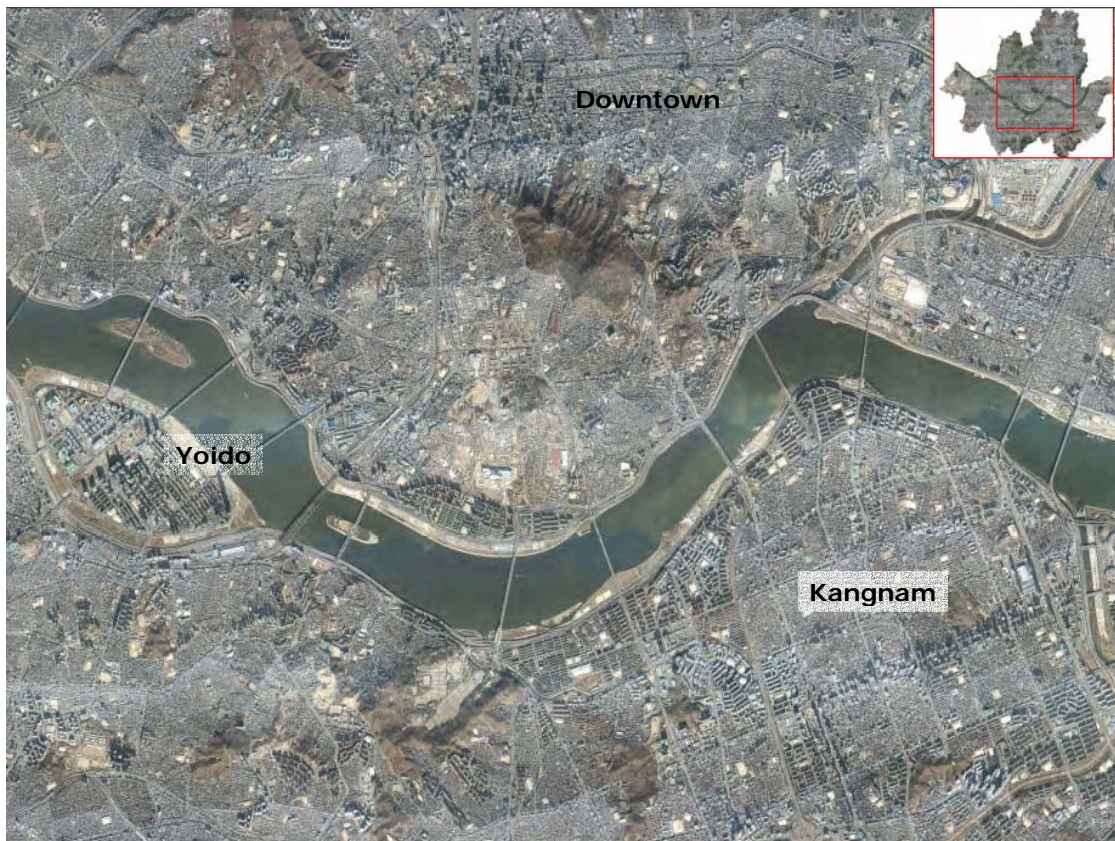


Figure 4-1. The Location of Kangnam gu. Source: SDI. Recreated by the author.

Besides serving as a new supply for new residential and commercial area outside of the Downtown area, Yoido was in fact developed in part to accommodate the relocated Korean Stock Exchange Market and Korean Broadcast Corporations, important governmental economic, political, and cultural functions formerly located in the Downtown area.

The completion of a subway loopline circulating and connecting the north-south-east-west parts of Seoul and an inter-regional express bus terminal in the Kangnam area in the mid-1980s also facilitated the development of the Kangnam area and the decentralization of the population.

Growth of the Kangnam Area Office Market

As a result of the Kangnam area development, the spatial configuration of the office market in Seoul has changed.

Until the mid-1970s, the Downtown area was the single urban core responsible for the largest proportion of prime level office space² in Seoul (see Figure 4-2). Between the second half of the 1970s and the first half of the 1980s, the supply of new office space dramatically increased with the completion of the Yoido area, which was developed to supply middle-class residential areas (apartments) and office space.

However, since the second half of the 1980s, as its development was completed, the Kangnam area has become the biggest new prime level supplier of office space, exceeding both the Downtown and Yoido areas in Seoul City, and during the period of 1991–1995, the total square footage of office space supplied by the Kangnam area was double that of Downtown and Yoido combined.

² In the Korean real estate market, prime level office space is defined as being greater than 30,000,000 square feet of total building floor space.

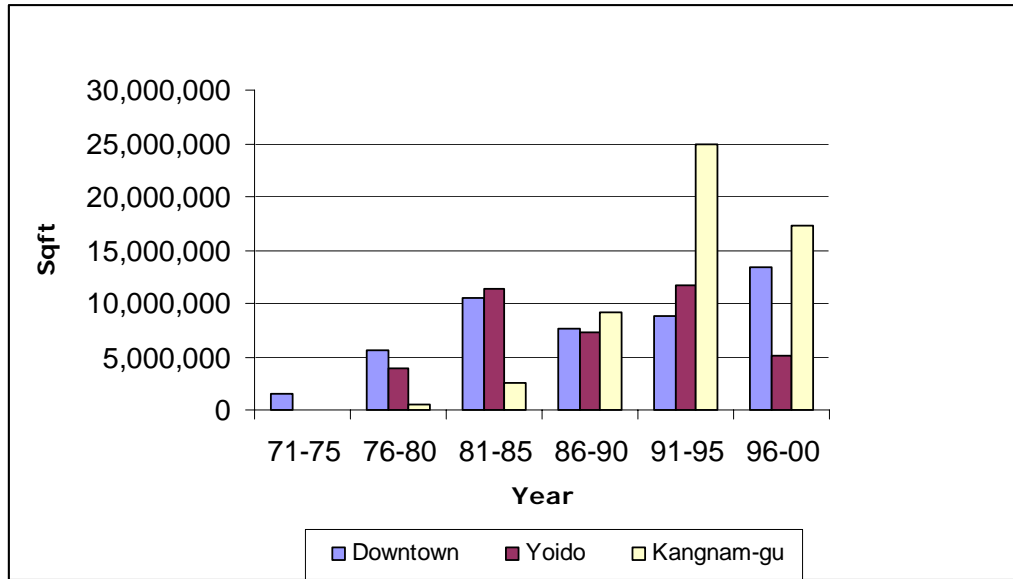


Figure 4-2. Prime Level Office Space Supply Trend in Three Urban Centers in Seoul, 1971–2000. Source: Yang, 2004.

Growth of the Kangnam Area as an Urban Employment Center

The increase of office stock in the Kangnam area means not only growth in the commercial real estate market but also an increase of office-based industry activities to fill the new supply of office space. As the Kangnam area grew as an important office-space market, the economic functions of three urban centers, the Downtown, Yoido, and Kangnam areas, were also transformed. Table 4-1 shows the pattern of change in numbers of employees between 1991 and 2001 among the three urban centers in five office-based industry sectors: manufacturing (office workers), communication, finance/insurance, real estate, and producer services. The table not only exhibits which area is predominant in each industrial sector but also captures the dynamic changes of the ranks among the three urban centers.

Table 4-1. Change in Employee Distribution among Three Urban Cores in Seoul, 1991–2001

Year	1991	2001	% of Change
Manufacturing (office workers)^a			
Downtown	88,483	44,509	-50%
Yoido	54,488	26,628	-51%
Kangnam gu	63,030	84,591	+34%
Seoul (Total)	351,280	256,966	-27%
Communication^b			
Downtown	4,619	10,152	+120%
Yoido	1,541	3,500	+127%
Kangnam gu	1,205	13,832	+1,048%
Seoul (Total)	18,947	49,817	+163%
Finance/Insurance^c			
Downtown	93,259	75,089	-19%
Yoido	43,672	44,572	+2%
Kangnam gu	24,921	39,025	+57%
Seoul (Total)	217,807	226,939	+4%
Real estate^d			
Downtown	10,003	13,679	+37%
Yoido	10,117	11,967	+18%
Kangnam gu	17,458	35,475	+103%
Seoul (Total)	74,575	122,439	+64%
Producer Services^e			
Downtown	32,624	49,678	+52%
Yoido	21,632	56,565	+161%
Kangnam gu	42,850	169,533	+296%
Seoul (Total)	125,681	381,912	+204%

^a **Manufacturing (office worker).** Between 1991 and 2001, the overall number of employees in manufacturing in Seoul declined (-27%). The rate of decline in the Downtown and Yoido areas was much higher than the overall city level. Kangnam gu, conversely, attracted more manufacturing, showing a 35% increase. Downtown was the leading center of the communications sector in 1991 among the three urban centers. However, in 2001, the rank order changed, and the Kangnam area achieved the first rank.

^b **Communication.** The communication sector grew rapidly between 1991 and 2001 in Seoul, showing an overall 163% increase. Downtown and Yoido show increases of 120% and 127%, respectively, which is lower than the rate of increase for Seoul City overall. Surprisingly, the rate of increase for communication industry workers in the Kangnam area reached 1,048%, which exceeds the increases for Downtown and Yoido almost tenfold. Downtown was the leading center of the communications sector in 1991 among the three urban centers. However, in 2001, the rank order changed, and the Kangnam area achieved the first rank.

^c **Finance/Insurance.** While Seoul City's level shows a 45% increase in the finance/insurance sector, Downtown exhibits a 19% decrease, and Yoido a 2% increase. However, the Kangnam area again shows a much higher rate of increase, 57%. Even with this increase, the Downtown area is still a leader of the finance/insurance sector in terms of absolute numbers of employees in this field.

^d **Real Estate.** In the real estate industry, Kangnam has been the leading urban center among the three centers since 1990s. The rate of increase in the Kangnam area is also much higher (103%) than Downtown (37%) and Yoido (18%).

^e **Producer Services.** In the producer services industry, Kangnam has been the leading urban center among the three centers since the 1990s. The rate of increase in the Kangnam area is also much higher (296%) than in the Downtown (51%) and Yoido (161%) areas.

Source: SDI, 2004. Table modified and re-generated by the author.

For instance, the manufacturing sector declined (-27%) between 1991 and 2001 in Seoul City. Following this trend, the manufacturing sector in the Downtown (-50%) and Yoido (-51%) areas declined during the same period. However, the Kangnam area saw a 34% increase in manufacturing. In 1991, the Downtown showed the highest proportion of the manufacturing sector in Seoul; however, in 2001 the Kangnam area shows the highest proportion of manufacturing among the three urban centers in Seoul.

In 1991, the Downtown area was predominant in communications and finance/insurance (4,619 workers in the Downtown area, 1,541 workers in Yoido, and 1,205 workers in Kangnam). In 2001, the Kangnam area exceeded the Downtown area, as the Kangnam area showed almost 10 times the rate of growth (+1,048%, 13,832) compared with the Downtown area (+120%, 10,152) in the number of communications workers. However, although the number of workers in finance/insurance in the Downtown area declined (from 93,259 to 75,089, -19%) between 1991 and 2001, the Downtown area still maintains its predominant status in this industry sector (Yoido 44,572; Kangnam 39,025). Overall, for each of the five industry sectors, the Kangnam area shows the highest growth rate between 1991 and 2001, while the other centers show either decline or steady growth (see Figure 4-3).

Besides the functional differences discussed above, there were also differences in terms of type of building tenants between the Downtown and Kangnam areas. Occupied mainly by Korean corporation headquarters and governmental organizations, the Downtown office space market culture is oriented around authenticity. Reportedly, Downtown real estate brokers do not welcome new types of businesses such as insurance, entertainment, or venture companies:

You know, the Downtown area has been the core of this capital city for more than 600 years. This area is known for high-government functions and embassies, royal class residential areas since the Cho-Sun Monarchy. Besides

the many buildings that are owned by Korean corporate headquarters and foreign investors, there are also many embassies, important media corporations. Kangnam somehow still insinuates the “overnight millionaire.” People think there is a difference between the wealth inherited from the family and money from land speculation in the 1970s, 1980s land development. That’s not authentic. (from an in-depth interview with a real estate developer and analyst in Seoul)

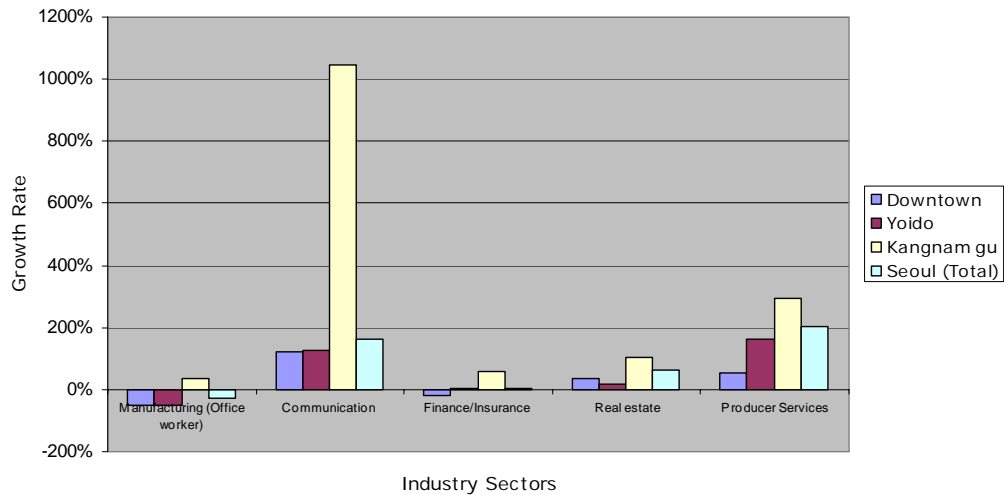


Figure 4-3. Cross-comparison of the Number of Employee Changes in Five Office-based Industry Sectors in Three Urban Centers in Seoul. Source: Yang, 2004. Figure modified and re-generated by the author.

Characteristics of the Kangnam Office District: A Counterfeit Corporate City?

It was quite astonishing to learn how the conventional class-oriented perspectives are still important in the contemporary real estate market.

Compared with the Downtown area, the Kangnam gu office space market had a higher proportion of medium-sized office spaces (Figure 4-4). At the same time, unlike the Downtown and Yoido areas, where office buildings were built by and used for large corporation headquarters, the Kangnam office market was established for the rental market, which provided more flexibility to accommodate new types of industries or short-term rentals (from an in-depth interview with a real estate developer and analyst in Seoul). This factor also explains the more severe downturn in

the Kangnam area office market that occurred when a sudden shock, such as the 1997 financial crisis, hit the Korean economy, which is represented by the higher vacancy rate in the office market (Figure 4-5).

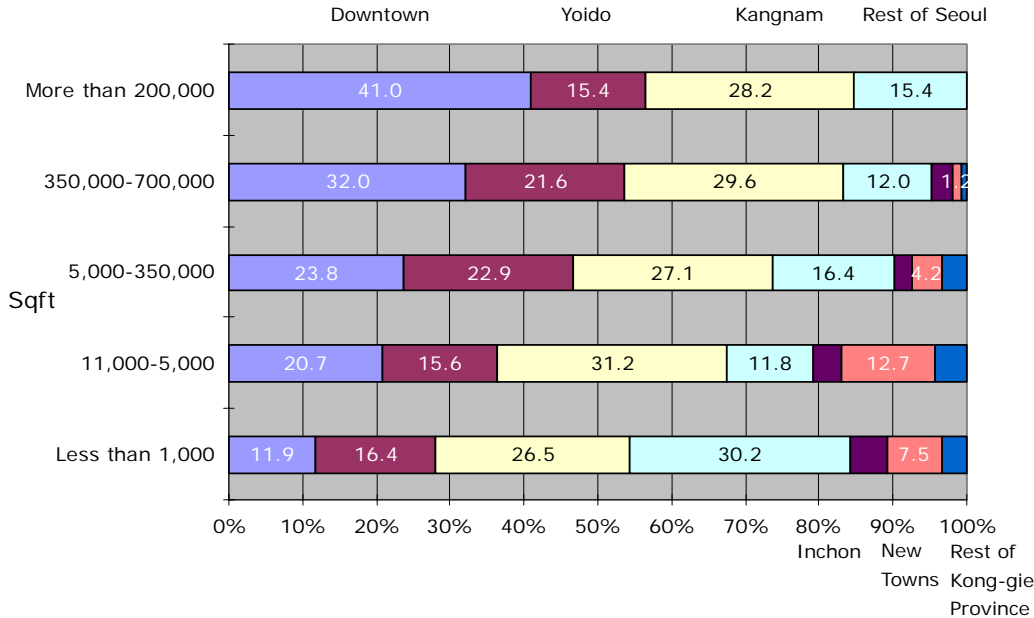


Figure 4-4. Breakdown of Office Markets According to Total Square Footage of Office Buildings. Note: The Downtown office market shows the biggest share in the largest office space market segment whereas it shows the smallest share in the smaller office market segment. On the other hand, the Kangnam area office market shows the over all even distribution from the smallest to the biggest, which suggests that there are bigger office markets for smaller office businesses. Source: Yang, 2004. Modified by the author.

However, there have been some advantages to being culturally flexible and open to new types of industries. During the late 1900s, the Teheran Road area became the major host to many domestic and transnational ICT corporations such as Samsung SDS, Hansol PCS, Hyundai Electronics, Microsoft, Sun Cheap, Yahoo Korea, and CISCO. Later, the initial existence of the large, influential ICT corporations and transnational companies played a role inseparable from the agglomeration of small firms at the dawn of the IT venture boom (Lee, 2001; Kangnam-gu, 2002).

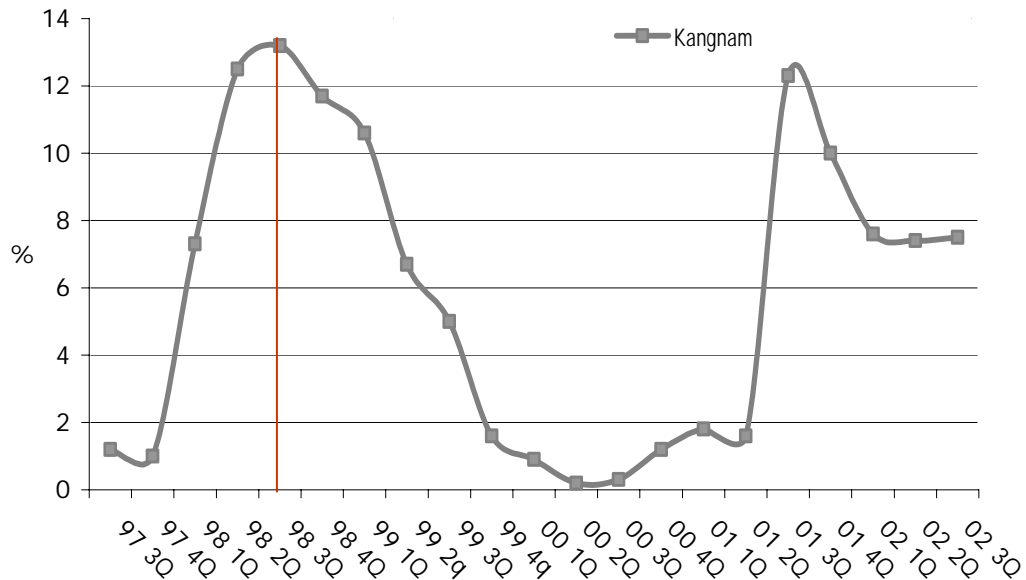


Figure 4-5. Kangnam Area Office Vacancy Rate. Note: As a reaction to the financial crisis that occurred in November of 1997, the vacancy rate started rising at the beginning of 1998 and reached its peak in the third quarter of 1998. The second peak of the vacancy rate, which occurred in the third quarter of 2001, represents the shock from the dot.com bubble crash. Source: Data obtained from ShinI, 2001a, and R2 Korea Commercial Real Estate Data. The author combined the data.

The Co-existence of the Corporate City, Landmark Places, and Daily-life Alleys

One of the important spatial characteristics of the Kangnam area is the co-existence of the landmark place and the daily-life place. The center of commercial activities in Kangnam gu is the Teheran Road area. Alongside Teheran Road—the major urban arterial, 20 meters wide, running east and west, and cutting across Kangnam gu—city blocks were designated as an urban design district. This was done to allow special high-density office building development with orderly urban streetscapes, and to enhance the street activities at the street level, including the first row of buildings facing Teheran Road. Therefore, a higher level of building density was allowed within the district. Instead, a certain set of regulation was applied. For instance, the owners of these buildings were required to spare a certain portion of building space for public

use, especially at the street level, mostly in the form of public space in front of buildings that face the main street. Automobile entrances and exits were to be located behind the buildings so that the automobile flow would not disturb pedestrian walkability at the street level.

Mimicking the densely developed urban corridors and soaring skyscrapers of Western cities, the Teheran Road area has been a “symbolic area” or “showcase” of modernization of the Korean economy and of economic growth in the 1980s and 1990s. Like many other urban centers strategically created in pursuit of “global taste,” this area hosts various urban amenities and facilities known for attracting global businesses and travelers, such as an international convention center, a high-end shopping mall, ethnic restaurants, entertainment centers, five-star hotels supported by various producer services, and high-end residential areas.

The Teheran Road area has most of them: the Convention and Exhibition Center (COEX), a high concentration of financial institutions and world-class hotels, outstanding school districts, and several upper-middle-class residential areas. It also has a well-developed transportation infrastructure including airport terminals and extensive local public transportation, and proximity to urban parks (including Olympic stadiums). With these amenities, the Teheran Road area became the most expensive prime office district in Korea during the 1990s.

Starting from the late 1980s and early 1990s, with the emergence of post-modernism in Korean society, urban and cultural sociologists such as Nae-Hui Kang and poets such as Ryu Ha started criticizing the capitalization, corporatization, or privatization of urban space in the Kangnam area. In particular, Ap-Gu-Jeong dong became the target of critics because this area was known for upper-middle-class condominiums and highly sumptuous commercial environments that were quite

distinctive from the rest of Seoul at that time. This area was called an “excretion of modern capitalism” or a “place where the bourgeois’ desire swaggers.”

However, this negative image of the Kangnam area is somehow overly exaggerated and prevents one from recognizing the co-existence of highly vibrant and mixed land use daily-life space. Immediately behind the iridescent main street, one can easily observe daily-life spaces that are no different from those anywhere else in Seoul—the continuous parade of restaurants, bars, and convenience stores line both sides of small allies, and the streets are filled with pedestrians (mostly those who work in the adjacent areas). After passing a few blocks of low-density, small-bulk commercial areas, one suddenly realizes that the block turns into dense residential areas, apartment buildings, or sometimes elementary schools and neighborhood parks.

As Figure 4-6 shows, the Kangnam area land use is characterized by, first, its linear development as a high-density prime office district (the darker-colored areas along major roads in Figure 4-6-B). As one can see in Figure 4-6-A, the high-rise buildings are concentrated along Teheran Road.

The prime office district is immediately adjacent to a general residential area (the yellow areas in Figure 4-6-B) that allows neighborhood commercial activities such as restaurants, clinics, retail shops, convenient stores, parking lots, and so forth.

This mixed land use and mixed density provides low-rise, affordable commercial spaces for small firms. This again, from the perspective of the large-small firm relationship, allows small firms to locate very close to large corporations, which allows them to have daily meetings and other types of frequent interactions.

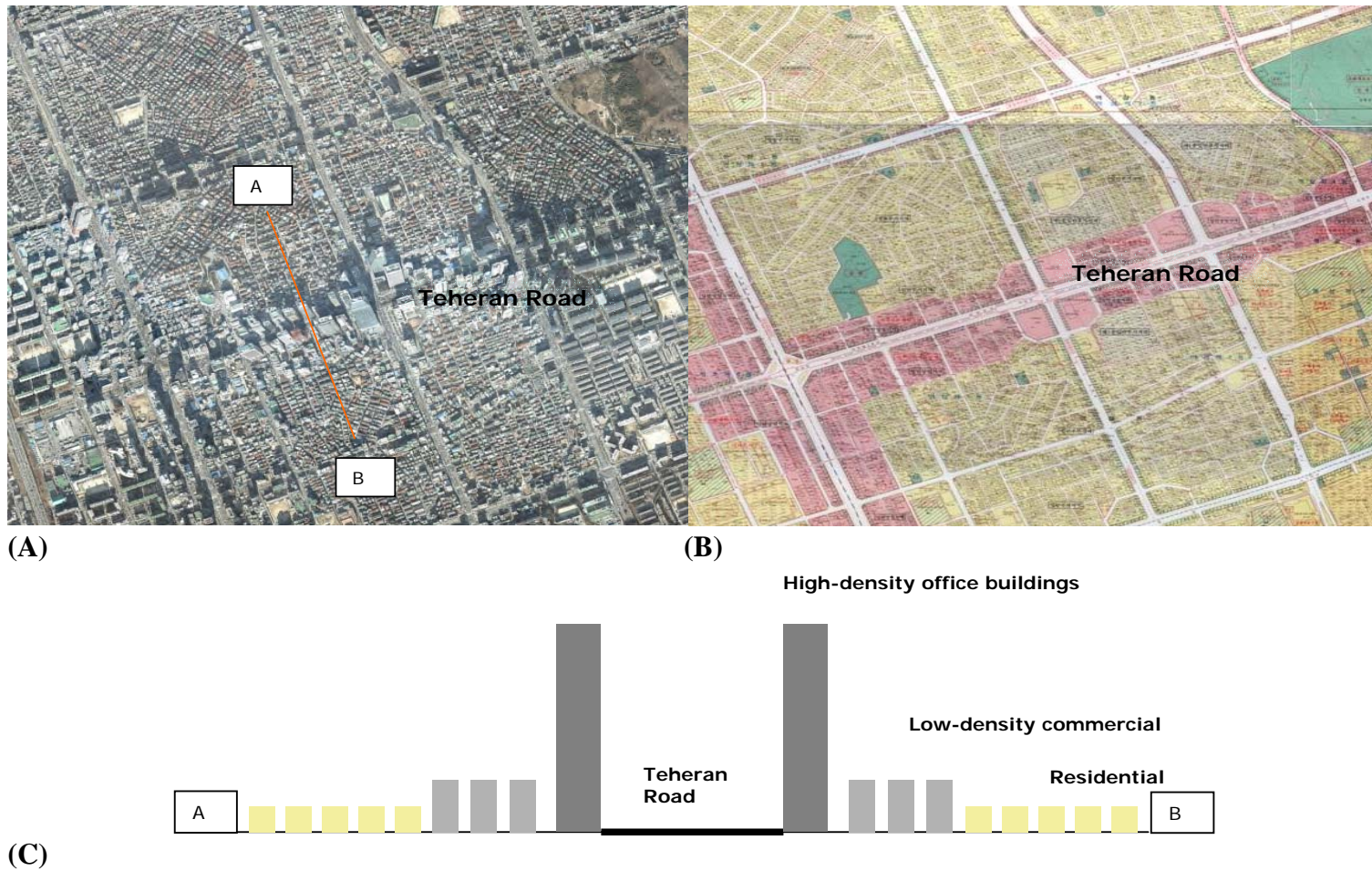


Figure 4-6. Spatial Configuration, Zoning Regulation, and a Section Diagram of the Teheran Valley. (A) Aerial photo of Teheran Valley Area. (B) Zoning map of the Teheran Valley Area; (C) Section of the line A-B in the figure (A) showing how the height and bulk of buildings dramatically changes as they become more distanced from the prime office building district.

The governmental policies to build upscale apartment communities and the prime office district alongside arterial roads signaled the Kangnam area as wealthy, post-modern, and economically successful. However, on the flip side of the coin, the economic vibrancy of this area subsequently attracted small- and medium-sized businesses behind the splendid scenes of high-tech equipped tall buildings. At the same time, its cultural openness, compared with the conservative Downtown area, made the Kangnam area more desirable to new types of industries and younger generation popular culture, both important cultural beds for the digital content industry.

3. The Rise of Teheran Valley

The Emergence of Korean IT Venture Companies

It was during the mid-1990s that Korean IT venture companies started to grow. Unlike Silicon Valley venture start-ups, such as Fairchild, which were started by young, talented college students, the first generation of Korean IT venture companies were founded by engineers who had already established their social status. The first venture company was reportedly Qunix Computer, founded in 1981 by Professor Bum-Cheon Lee (Lee and Kim, 2000). He earned his doctoral degree in engineering from the Korean Advanced Institution of Science and Technology and had taught at KAIST until he resigned the position to start the company. Given the social custom at that time—that having an advanced degree and working in academia was a sign of one's successful social establishment—Dr. Lee's venture start-up itself was somewhat adventurous and cutting-edge. Later, he established Microsoft Korea jointly with Bill Gates.

Min-Hwa Lee is also considered a leader in the Korean venture sector. In 1985 he founded his company, Madison, which grew to a medium-sized firm generating \$5 million in revenue. He was one of the founding members of the Korean Venture

Company Association (KOVA) and served as its first president. KOVA had 1,000 venture-company members before the dot.com bubble crash in 2000. KOVA later played a central role in shaping institutions in support of SMEs and venture companies and in recommending governmental policies such as the establishment of the Act for Small and Medium Size Enterprise Establishment Support, policy recommendations for nurturing venture companies, possible contributions of venture companies to restore the competitiveness of the Korean economy, and policy avenues to support venture companies according to their development status (Lee and Kim, 2000).

Table 4-2 shows the first and second generation of Korean venture companies that helped introduce the venture company concept to Korean society.

Table 4-2. First- and Second-Generation Venture Companies in Korea (1980–1995)

Period	Venture Companies
First Generation (1980–1985)	Qunix Computer, Madison, Mirae Industry, Bit Computer
Second Generation (1986–1995)	Handy Soft, Hangul and Computer, Humax, TurboTech, Ocsori, Nanum Technology, Namo Interactive, Locus, SaeRom Technology, Sae Won Telecom, Standard Telecom, C&S Technology, Apex, Ahn Virus Research Lab, Appeal Telecom, Insung Information, Telson Electronics, PanTac

Source: History of Korean Venture Company Development, 2000, Korea.

The initial agglomeration of IT venture companies took shape right outside the Teheran Road area, Yang-Jae dong (community district), and Poi dong in the mid-1990s (Figure 4-7). These areas were low-density peripheral commercial districts near the Teheran Road area (Kangnam-gu, 2002). These locales were also close to small satellite cities with specialized functions, such as central governmental administration and middle-class residences, and still offered more affordable rents and a high-speed Internet infrastructure. At that time, there was a great demand for system integration from large corporations, financial institutions (e.g., banks), schools, and governmental

and nonprofit organizations. These factors together attracted many small ICT firms to the Yang-Jae and Poi areas.

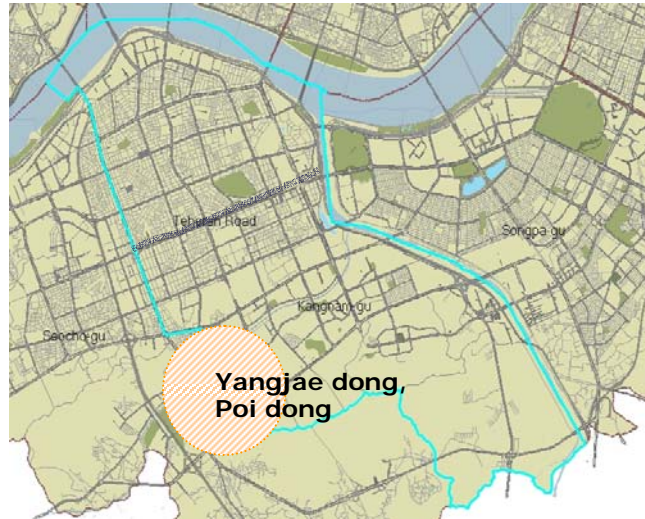


Figure 4-7. Location of Yangjae dong, Poi dong, and Teheran Road.

However, even after the enactment of the Act for Small and Medium Size Enterprise Establishment Support in 1995, small companies were still struggling because of a lack of financial sources for and social perceptions about small firms. Because of the Korean government's economic and industrial policies that had concentrated on the growth of large firms as a major driver of an export-oriented economy, neither an entrepreneurial environment nor the social value of small entrepreneurs was well established. The dramatic increase of venture companies reportedly started in 1998, as a reaction to the financial crisis.

The 1997 Financial Crisis: A Window of Opportunity for IT Venture Companies

Following the epidemic financial crisis among Asian countries in the late 1990s, the Korean economy also experienced an abysmal economic downturn by November of 1997 (Chang, 2002).

The economic downturn of the office district in the Teheran Road area ironically played a role as “a window of opportunity” for IT venture companies. After the Korean financial crisis in 1997, many businesses, especially financial sector businesses, were shut down. The office vacancy rate suddenly soared rapidly in most areas in Seoul, especially in the three urban centers: Downtown, Yoido, and the Teheran Road area. The Teheran Valley area in particular was most severely affected (SDI, 2001a). Suddenly, well-equipped office space became available at rents affordable for smaller businesses. Soon after the financial crisis, IT venture companies that had initially agglomerated in Poi-dong started rushing to the Teheran Road area, now known as the Teheran Valley area (from in-depth interview).

According to Kangnam-area office vacancy rate data, the vacancy rate in this area soared rapidly immediately after the financial crisis and hit its highest point in the second quarter of 1998 (Figure 4-5). However, after that peak, until 2000, the vacancy rate decreased to almost zero percent, which meant that empty office spaces were quickly reoccupied. Considering the natural office vacancy rate under a normal economy, the almost zero percent vacancy rate illustrates how crowded the area was and how high the demand for office space was. This is indirect but very strong evidence of IT venture booms in Teheran Valley at that time.

As the concept of path dependency regards the “unexpected consequences” of exogenous shock, ironically, the financial crisis became a pivotal opportunity for IT/Internet-related companies—especially venture start-ups—to locate in the central business district.

There were also “unclaimed opportunities” that became available after the external shock of the financial crisis, such as new financial opportunities for venture companies and social and political support for start-ups. While many actors were not

ready to adjust to the new environment, the IT venture sector was ready to claim new opportunities.

Governmental Policies: Reinforcing the Incipient Venture Sector

The initial agglomeration of large ICT-related corporations and IT venture companies took a serendipitous event. However, in the process of reinforcing the initial agglomeration, governmental policies played important roles.

There were two distinctive leap-frogs in the number of venture companies, between 1995 and 1996 and between 1998 and 1999 (Figure 4-8). Behind these breakthroughs, there were two governmental policies aimed to promote the venture company sector: the Venture Promotion Special Act in 1996 (the first arrow in Figure 4-8), and an Amendment to the Special Act in 1998 (the second arrow in Figure 4-8).

Venture company promotion policy, in fact, began in 1996 during the Young-Sam Kim administration. It was on the first anniversary of the creation of the Small and Medium Business Administration (SMBA) that the president asked to create a favorable start-up environment for young entrepreneurs as part of his “new thinking” policy philosophy. Responding to this request, the SMBA drafted “Comprehensive Policy Measurements for Venture Company Start-up Vitalization.” Based on this initial plan, the mother institution of the SMBA, the Ministry of Commerce, Industry and Energy (MIE), imposed the “Special Act for Venture Company Promotion” in 1997, and this became the engine of the SME sector promotion. This law aimed to create the institutional ground for SMEs including venture capital sector promotion encouragement, revision of a policy outline to promote start-ups, tax increment policies, venture company facilities, a venture company industrial park, a venture company promotion special district, and de-regulation of M&As (Song, 2004).

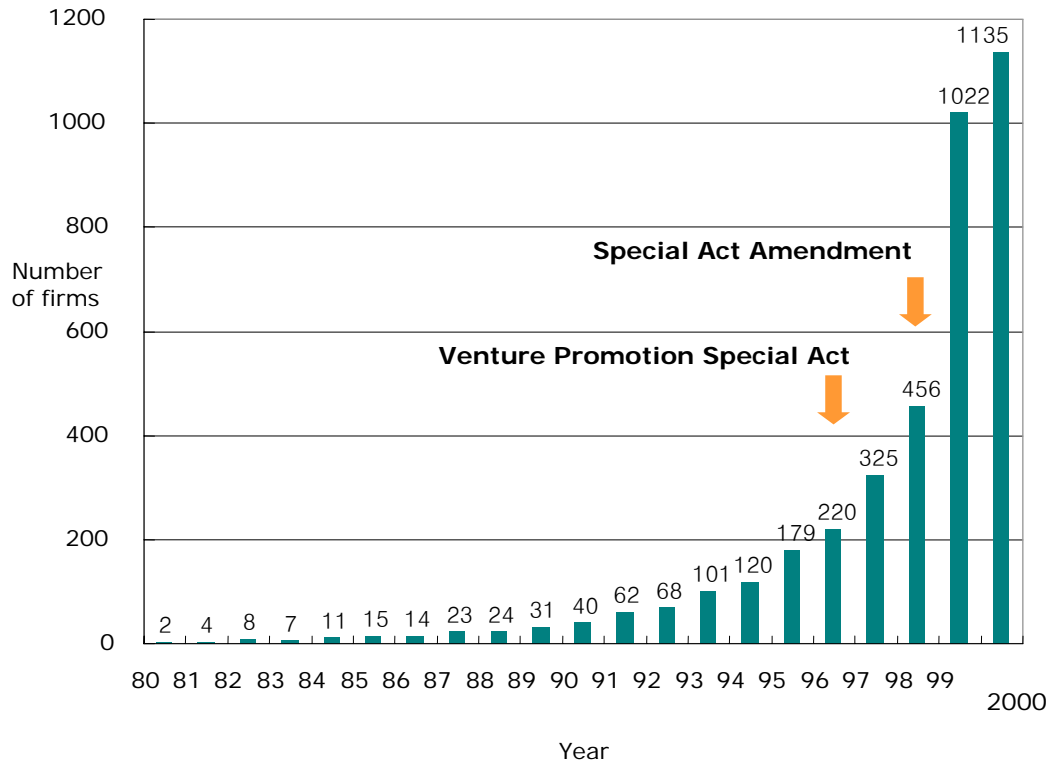


Figure 4-8. Venture Company Growth and Effect of Government Policies. Source: Shin. 2001.

After Dae-Joong Kim became president, in 1998, the existing Venture Promotion Special Act was amended to provide more systematic support for venture companies through the adoption of a Venture Certificate System. This program aimed to facilitate and regulate governmental support for venture companies by registering venture companies at the time a venture certificate is issued. Companies that are certified as venture companies by the SMBA also automatically obtain qualifications to receive various governmental supports such as tax cuts and qualifications to enter special venture company facilities. At the same time, having an SMBA venture company certificate also allows a venture company to attract venture capital investment. Table 4-3 presents categories of venture certificate evaluation standards.

Table 4-4 shows the breakdown of types of venture companies that earned venture certificates in Teheran Valley, by qualification type. For venture capitalists, a venture certificate was one of the important standards used to evaluate the investment potential of start-up firms because there was no concrete basis on which to evaluate promising firms. Table 4-3 shows the categories to confer venture certificate established by SMBA.

To create a favorable financial market for venture companies, the Dae-Joong Kim administration supported the venture capital sector by direct and indirect investment in it and by loosening the regulations on foreign direct investment. Governmental institutions were strategically placed in the Teheran Valley area to amplify the synergy of agglomeration. In turn, this process facilitated the economic competitiveness of the district, with the best innovative milieu in the country (Shin, 2001). As a result, the number of venture companies literally doubled from 1998 to 1999 (Figure 4-8).

Table 4-3. Categories of Evaluation Standard to Confer Venture Certificate.

Categories
1. Venture capital investment firms: firm that are invested in by venture capitals which established with last 7 years and the total amount invested by venture capital should be more than 20% of the firm's total capital.
2. R&D investment firms: those firms whose proportion of R&D investment is more than 5% of the previous year's total sales.
3. New technology development firms: those firms whose proportion of patent or new technology (especially for government-led technology development projects) occupies more than 50% of the total sales or export takes more than 25% of the total sales.
4. Outstanding technology firms: Firms rated for high technological potential or commercialization ability by venture business evaluation agencies

Source: Kangnam gu, 2002.

Table 4-4. Distribution of Venture Certificates by Qualification Types in Teheran Valley.

	1999 Number of firms, (%)	2000 Number of firms, (%)	2001 March Number of firms, (%)
Venture capital investment firms	508 (15.7)	839 (15.7)	1,514 (15.2)
R&D investment firms	970 (30.0)	800 (15.0)	965 (9.7)
New technology development firms	1,380 (42.7)	1,663 (38.2)	1,985 (19.9)
Outstanding technology firms	374 (11.6)	2,045 (38.2)	5,514 (55.3)

Note: The data incorporates all type of venture companies.

Source: Kangnam gu, 2002

4. Re-Inventing Urban Space

Three sequentialized maps of the geographical concentration of IT venture companies from 1991, 1997, and 2000 show how the cluster of IT venture companies in Teheran Valley developed rapidly in the later 1990s, especially between 1997 and 2000 (Figure 4-9).

Figure 4-10 is a close-up of Teheran Valley. This map was created by the SMBA in 2000 to map the geographical locations of IT venture companies, governmental organizations, business associations, and other important institutes in Teheran Valley. At that time, most venture companies occupied buildings facing Teheran Road, a configuration that illustrates the central role of venture companies in the local/regional economy at that time.

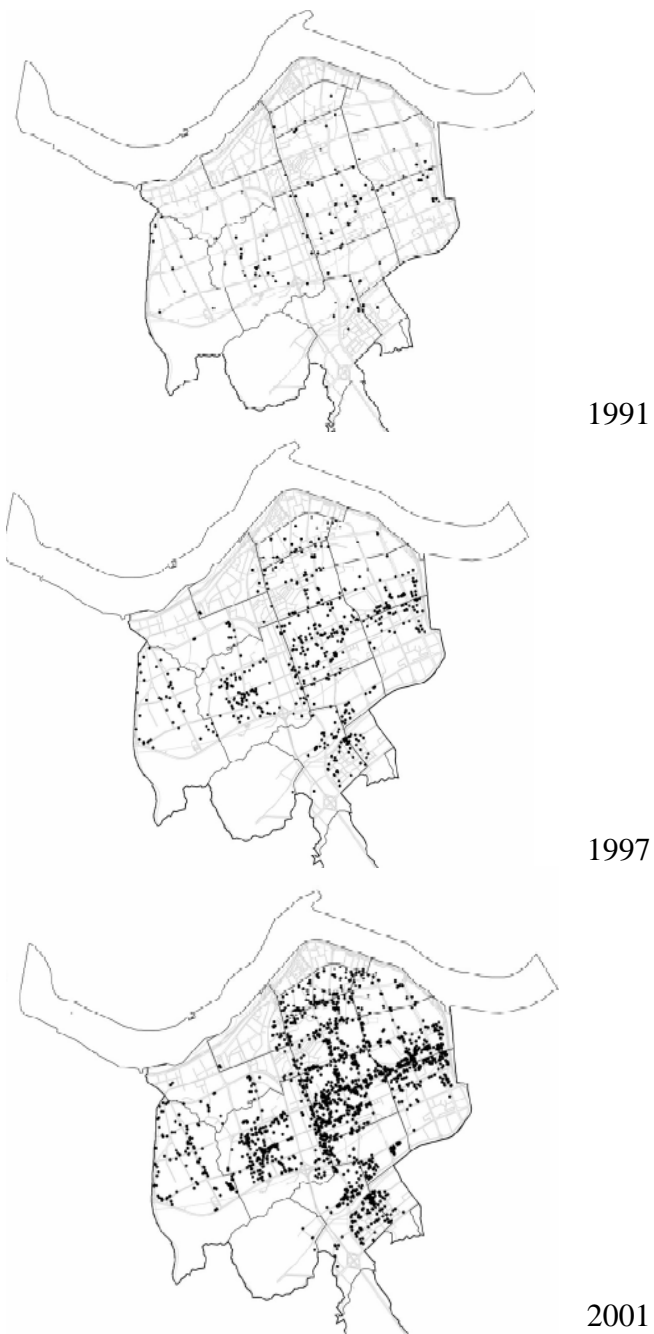


Figure 4-9. Spatial Growth of IT Venture Companies in Teheran Valley. Source: Shin, 2001.

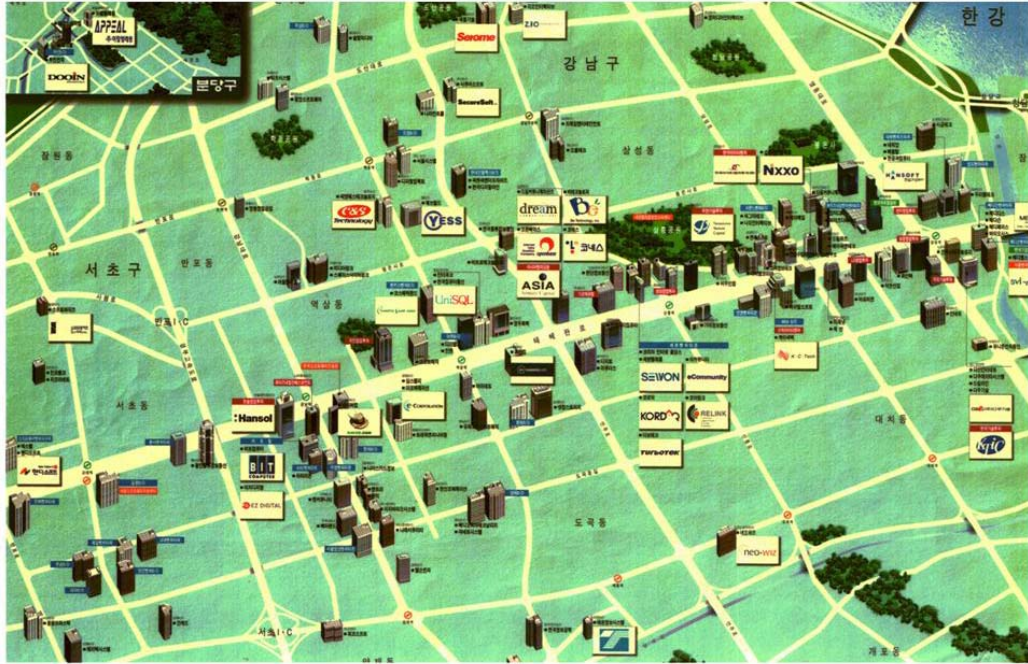


Figure 4-10. Venture Locations, Teheran Valley. Source: SMBA, 2000. This map was created by SMBA as part of their public information service.

5. The Dot.com Bubble Crash and the Rebound of Teheran Valley: 2001

The establishment of a vibrant SME sector is desirable for any economy, but it was all the more true for the Korean economy, whose weak spot lies in the relative underdevelopment of SMEs. However, the attempt to achieve this overnight led to a huge bubble in the KOSDAQ market, which crashed in the latter half of 2000 as spectacularly as it had boomed. Its market capitalization shrank to 29 trillion won (\$24.1 billion) at the end of 2000, barely above one-fourth of the figure at the end of 1999. The KOSDAQ composite index also dropped to 52.2 at the end of 2000, one-fifth of the figure at the end of 1999. It would have been a great improvement in the Korean economy if the investment funds for SMEs increased linearly from 7.9 trillion won in 1990 to 29 trillion one in 2000. However, this was unfortunately accompanied by the bursting of the huge speculative bubble in the KOSDAQ market, which naturally had negative effects.

After the dot.com bubble crash, many commentators predicted that the venture promotion policy was a good example of governmental policy failure. However, I argue that it is a little premature to announce the governmental venture promotion policy a failure, for a few reasons.

First, the main reason for the severe downturn in the IT venture sector was the KOSDAQ market bust caused by overheated speculative investment and quick return of the fund. This speculative behavior was not limited to the KOSDAQ market; it also happened in the NASDAQ. Significant foreign funds poured into the KOSDAQ market after the financial liberalization as a condition of the IMF bailout in 1997. This led to speculative investments. Second, the venture promotion policies contributed to the success of new types of business models: Internet portal companies and game developers.

Teheran Valley Rebounded

After the dot.com bubble crash in late 2000, many IT venture companies in Teheran Valley, as well as in other parts of Seoul, failed. According to the CEO of one Web solutions company who has run his business in Teheran Valley for the last eight years,

Around the year 2000, many software companies went out of business. There were many reasons associated, such as the temporary Korean economic downturn, but the main reason was the lack of a solid profit model for their businesses. Some companies had to wrap up their business after running out of the venture investment. Among those, some companies did not make any profit until the last day of their business. Only one of ten software companies survived, I suppose. (Interview)

However, around 2002, some Internet portal companies, such as NHN, NeoWiz, Nexon, NC Soft, Daum Communication, Action, and others that are representative of those “made in Teheran Valley,” experienced outstanding success in

the KOSDAQ market by exhibiting more than 100% growth compared with the previous year.

Dot coms U turn to Teheran Valley! (Daily Economy. 4.7.2002)

Last week, the current total stock market value of leading internet portal companies such as NHN and DAUM Communication soared up to over 10 billion dollars for each firm. This rise of internet portal companies happened for the first time since the dot com crash in 2000. Many people regard this as a sign of the rebirth of Teheran Valley Reflecting the success of NHN, last year, the competition among job seekers applying for NHN's recruitment was more than 50:1. As leading internet portal groups have expanded their size, some fields experienced a shortage in the supply of skilled workers The success of 'made in Teheran Valley' internet portal companies functioned as a magnet and attracted successful companies from other cities such as Pusan to move into Teheran Valley. For example, Bug's Music, which originally started out in Pusan, moved its nest to Star Tower, the most expansive office building in Teheran Valley. (Hankyore. 6.2.2003)

On the other hand, major ICT corporations and large multinational ICT firms that have newly opened offices or relocated to Teheran Valley remain there and have constructed an even stronger image of Teheran Valley as the center of the ICT industry in Korea as well as in Seoul. Examples of such firms include LG Telecom, Hynix Semiconductor (previously Hyundai Electronics), Dacom, KIDC (Korea Internet Data Center), KT, and Samsung SDS. In addition, foreign ICT companies such as Microsoft, Softbank Korea, Yahoo Korea, NEC, Sun Microsystems, Apple, Inc., and SISCO are also located in the Teheran Valley.

Anchored by the success of Internet portal companies and the presence of large ICT corporations, the rebirth of Teheran Valley happened earlier than was originally anticipated. According to Kangnam-gu (Kangnam-gu, 2002), as of 2002, more than 3,200 ICT-related small and medium-sized firms (including a semiconductor producer, software development companies, Internet service companies, and multimedia firms) had concentrated in the Teheran Valley area.

In the discussion of the second phase of growth in Teheran Valley, there are two important aspects that should be acknowledged. The first point concerns the difference in the type of subsector industries comprising the cluster. During the IT venture boom between 1997 and 2000, the majority of IT venture companies agglomerated in Teheran Valley were those in subsectors that focused on technological advancement and new-product development in hardware such as medical tools, semiconductors, set-up boxes, computer chips, parts for mobile phones, and others.³ After 2002, the industrial sectoral composition of Teheran Valley appeared to shift toward sectors such as software development, Internet portal sites, and entertainment services.

While de-territorialization in Teheran Valley of technology-driven IT venture companies continues, the landing of gaming and entertainment industry companies into Teheran Valley seems to become a new phenomenon. Ahn Lab and Korean Information Engineering have left Teheran Valley and relocated in Yoido and Bundang, Daum Communications is pursuing the option of moving to Jeju Island. Interpark, Dreamwiz, and Inisis have moved to the Downtown and Jamsil. . . . In major prime office buildings in Teheran Valley, it is not a difficult thing anymore to find game portal firms such as NHN and Planners, and mobile game creators such as GreTech. Some game and internet entertainment portal companies occupy 3 or 4 buildings located within the central region of Teheran Valley as part of strategies to accommodate rapidly expanding employees. Debut of film making firms is also a visible change in Teheran Valley area: CJ Entertainment, CJ CGV, SHowBox, MegaBox and Sidus have moved into Teheran Valley area. (Joong-Ang Daily, 6.10.2004)

The relocation of hardware technology development in IT venture firms must be understood within the context of the industrial structural changes in the ICT industry in Korea. At the turn of the 21st century, the structure of the Korean IT industry, which was formally centered around hardware production and network construction, exhibited a greater proportion of software sectors (from an in-depth

³ IT venture companies in manufacturing held their headquarters or marketing office in Teheran Valley while they kept their plants in other industrial cities in Seoul, China, or Malaysia.

interview). On the other hand, as the game and entertainment industry became “geese laying golden eggs”—in some cases, gaining up to 50% of net profit out of total sales—these firms were able to pay expensive rents.

The second major point is that the main mechanism of firm agglomeration in Teheran Valley had changed. The IT venture boom was boosted by various governmental supports that led various resources to become concentrated within Teheran Valley, including venture capital, various governmental offices, incubator facilities, and educational institutions. Combined with the availability of much cheaper rental rates in Teheran Valley around 1997–1998, these conditions created a historically unprecedented, highly favorable environment for small and medium-sized start-ups. However, after the dot.com bubble crash, as the government pulled back most of its support, the supportive and favorable environment for start-ups diminished.

According to the CEO of NHN, “about three years ago, most people started their business based on a rosy future vision (unverified) that was not based on any solid business models. However, things are different now. Some of the ICT venture companies demonstrating rapid growth have concrete performance measurements. They are the ones who have survived from the dot com bubble crash and endured the most severe environment for ICT venture companies. They have been tested in the market and have proven their economic viability.” (Hankyore. 6.2.2003)

Summary of the Chapter

An overwhelming historic event (exogenous shock) such as the Korean financial crisis created a pivotal “window of opportunity” for the IT sector to rise as an important economic sector and to form a cluster in the Teheran Road office district (now called Teheran Valley). In analyzing the process of the initial spatial formation, I identified two important space-related factors of the Teheran Valley area in attracting IT venture companies: a breakdown in the office space market in the Teheran Road office district, and the pre-existence of IT corporations in that area. After the financial crisis, the

Teheran Road office district experienced the most severe collapse of the office market following the bankruptcy of finance-related businesses. Although the affordable office space available in the Teheran Road area has been an important attraction for newly emerging IT venture companies looking to relocate, this factor alone does not answer the question, “why Teheran Road area among other many similar places in Seoul?” Another important factor was the existence of IT corporation headquarters in the Teheran Road area.

However, my interview and archival data analyses showed a different side of the story besides the importance of the exogenous shock: Domestic actors and institutions have played important roles. In the rise of the IT venture sector and the IT venture industry cluster, in fact, local actors (IT venture CEOs, governmental officials from the SMBA, and business association staff members) and governmental policies played critical roles in reinforcing the incipient economic sector and the cluster formation in the Teheran Road area, and created a new path.

I also showed that local and governmental support became critical to the further development of the initial IT venture agglomeration. In the process, the collaboration of IT venture CEOs, governmental officials from the SMBA, and business association staff members played a critical role in the creation of institutional settings for IT venture promotion in the late 1990s.

CHAPTER V:
THE SOCIAL ORGANIZATION OF PRODUCTION AND INNOVATION
IN TEHERAN VALLEY

This chapter examines the interfirm relationships among actors in the digital content industry, focusing especially on the relationship between digital content creators (SMEs) and publishers (large firms). Unlike the semiconductor industry (high-tech manufacturing), digital content creators are more culturally driven. Like multimedia and new media work, digital content development requires cultural sensitivity, technological capacity, and a mind for business. Digital content work, like other cultural work, requires personal interests and devotion. The production process is intensively human (Pratt, 2000). Furthermore, it also involves multiple team members with different sets of skills (graphic, computer programming, content design, etc.), and requires intensive face-to-face communication to seamlessly facilitate the production process.

There is one more critical aspect to note. Because of the nature of convergence between the ICT industry and cultural industry sectors (media and electronically based cultural industries), the role of large IT corporations, especially mobile phone service companies, becomes increasingly important. Large IT corporations dominate one of the most important parts of the value chain: the distribution (publication) of product.

In this analysis, I take the location of both large and small firms and the diversification of the digital content industry as a given and attempt to investigate the small firms' strategies to cope with the challenges brought by 1) the convergence of cultural content and new ICT technologies; 2) the need to capture the commercial viabilities of the digital content product in a fast changing and highly competitive market environment that is exposed to global competition; 3) and the form of interfirm networks that sustain and or enhance the innovative capacity of small firms.

I offer a multifaceted analysis of the interfirm relationships between small firms (digital content creators) and large firms (publishers) in Teheran Valley and attempt to answer the following questions:

Would these different characteristics (compared with high-tech manufacturing) bring differences to the social organization of production, specifically the interfirm relationship? How does the small–large interfirm relationship manifest itself? Will the relationship be different from the typical supplier–assembler relationship? How do SMEs strategize to adjust and succeed in this environment, in terms of product innovation and employee retention? What is the role of large firms in terms of innovation capacity of the industry cluster? Do they hinder the small firms’ innovation capacity by dominating the market direction? Or, do they create a favorable environment for small firms by funding projects or buying products?

Before answering those questions, I will examine the general characteristics of digital content creators (SMEs) in Teheran Valley using KIPA survey data. This analysis will reveal the commonly shared features of digital content creators in Teheran Valley, such as firm size, average firm age, types of products, ways to obtain new knowledge, the frequency of their interactions with other firms, locational decision factors, and the rate of full-time workers. From the results of the initial analysis, it would be possible to determine whether Teheran Valley shows those characteristics of innovative regions: flexibly specialized and vertically disintegrated firms seeking collaboration with other digital content creators.

Next, I will investigate how digital content creators arrange their production systems and strategize the social organization (interfirm relationship) to survive intense competition. I will construct three case studies of digital content creators in Teheran Valley out of 14 firm interviews. Based on case studies of three firms that represent mobile solutions, mobile games, and online games, I will examine the firm

level social organization of production, interfirm relationships, and employee retention strategies. As a third step, I will discuss the function of the small–large firm relationship from a public policy perspective, focusing on whether the current relationship contributes to the local innovation capacity.

1. Characteristics of the Digital Content Creators in Teheran Valley

I use KIPA survey data to examine the general characteristics of content creators.¹ Teheran Valley creators are supported by a high rate of R&D investment, full-time workers, and self-reliant production processes. I use in-depth interview data to illuminate why Teheran Valley firms take this distinctive pathway and how their distinctive qualities are extended and projected in their production processes and interfirm networks.

The presentation of quantitative and qualitative data analysis is combined where further explanation of the survey results to provide interpretive information.

Firm Size and Firm Growth Stages

Teheran Valley firms are small in size, averaging 27 workers per firm, and ranging from 2 to 200 workers. As Table 5-1 shows, more than 73% of the firms in Teheran Valley were founded after 1998, which corresponds to the peak year of the IT venture boom in Teheran Valley. In terms of the distribution of firm growth stages, 26% of the firms are less than three years old, that is, they are in the initial development stage. In contrast, 55 among 100 firms are in their rapid development stage (four to six years old). It is also interesting to see that 19 firms among 100 are in their mature development stage, having been in the business more than seven years. This shows

¹ For detailed information on sample population and response rate, please refer to Chapter 3.

that Teheran Valley provides a favorable business environment for firms at various development stages.

Table 5-1. Year of Establishment.

Year of establishment	Firm age (as of 2005)	Percentage
1995–1997	8–10 years	29
1998–2001	4–7 years	55
2002–2004	2–3 years	26
Total		100

Source: KIPA Survey, 2004. n = 100.

Spin-offs

The KIPA survey contains two questions that help to identify the proportion of spin-off firms in Teheran Valley. One question asks directly about the firm’s establishment path (Table 5-2). In this case, the proportion of companies that started as independent enterprises (not spin-offs) is 79%, which well outweighs the proportion of spin-offs (11%). Thus, most small firms in Teheran Valley are not spin-offs from larger ICT corporations in the process of vertical disintegration.

However, data obtained on the previous occupation of CEOs reveals a different dimension (Table 5-3): 63% of CEOs worked for Korean corporations, 11% worked for foreign corporations, and 5% worked for college or governmental research institutes before they started their own businesses.

This is related to the historic environment in which the IT venture boom occurred erected in Korea, immediately after the financial crisis. The venture boom coincided with the lay-offs of skilled workers from large, high-tech-oriented corporations such as Samsung and LG who established their own businesses. Therefore, even though a large proportion of the firms did not officially spin off from large firms and research institutes, it is possible to presume that many firms in Teheran Valley may have been influenced by large firms through a social network of actors.

Table 5-2. Path of Firm Establishment.

Path	Percentage
Started own firm independently	79
Spin-off from mother corporations	11
Research center spin-off	1
Miscellaneous	1
Missing	8
Total	100

Source: KIPA Survey, 2004. n = 100.

Table 5-3. Previous Occupation of CEOs.

Previous occupation	Percentage
Working for Korean corporations	63
Working for foreign corporations	11
Running own businesses	13
College or governmental research institutes	5
Miscellaneous	2
Missing	1

Source: KIPA Survey, 2004. n = 100.

High R&D Investment, High Full-time Worker Rate, and Self-reliant Information Sourcing²

Teheran Valley content creators, although mostly small firms, show a distinctive self-reliance. Significantly, the cluster lacks collaborations with universities or research institutes (Kangnam gu Report, 2002). However, Teheran Valley firms partly compensate for the absence of university and research lab affiliations by having in-house R&D functions. Of the 100 firms analyzed, 59% have their own internal R&D centers (Table 5-4). On average, 30% of net profit is reinvested into R&D (Table 5-5).

² All data are derived from KIPA survey data analyses.

Table 5-4. Internal R&D Centers.

Presence of an internal R&D center	Percentage
Yes	59
No	41

Source: KIPA Survey, 2004. n = 100.

Table 5-5. R&D Spending.

Proportion of R&D spending/net profit	Percentage
Less than 10%	24.7
10–30%	31.2
30–50%	12.9
50–70%	18.3
More than 70%	12.9
Mean	30%
Total	100

Source: KIPA Survey, 2004. n = 100.

Teheran Valley content-creator firms also show a distinctively high rate of full-time workers, which reaches 94.88% (Table 5-6) compared with other multimedia or new media clusters such as Silicon Alley in New York City, where 32.4% of respondents were independent contractors or entrepreneurs, and the multimedia district in Toronto, where 63% of workers are full-time workers (Brail, 1997³). The project process itself is an important employee training process, and 69% of the firms rely on in-house education.

Based on both survey data analysis and in-depth interviews, most Teheran Valley firms utilize internal resources in developing new technology (73%; see Table 5-7). Firms primarily rely on the Internet (50%) rather than on face-to-face interactions (20%) and on seminars or forums (19%; see Table 5-8) for new information.

³ 1997 Survey of Toronto's Multimedia Industry
<http://www.multimediatech.com/publications/write035.shtml>

Table 5-6. Full-time vs. Freelancer Ratio of Respondent Firms.

Worker type	Percentage
Full-time workers	94.88
Part-time workers	5.12

Source: KIPA Survey, 2004. n = 100.

Table 5-7. Source of New Technological Adaptations.

Source	Percentage
Utilizing firm internal resource	73
Adapting from Korean research canterers	2
Adapting from Korean firms	8
Collaboration with research canterers/universities	1
Co-work with Korean corporations	4
Outsourcing	4
Adapting of foreign research canterers/universities	2
Adapting foreign corporations	6

Source: KIPA Survey, 2004. n = 100.

Table 5-8. Medium for New Information Procurement.

Medium	Percentage
Internet	50
Related journals and news articles	9
Seminars and forums	19
Exhibitions	1
Face-to-face interactions	20
Miscellaneous	1

Source: KIPA Survey, 2004. n = 100.

According to the literature, although small firms are quick to adapt new knowledge and technologies because their small size gives them an advantage when faced with short-term changes and readjustments to a niche market, they are not self-contained in terms of skills and other administrative work. Therefore, small firms tend to geographically agglomerate to take advantage of knowledge spillover and

local/regional labor pools and producer services. In this process, personal interactions are critical in exchanging information and knowledge; thus, spatial proximity also plays an important role.

What the above data suggest is that although digital content creators in Teheran Valley locate close to each other, the geographical proximity does not, in fact, facilitate their social interaction. Then, why do they choose to locate in Teheran Valley? This will be answered in the section on locational choice. There are some other questions to think about: How do digital content creators in Teheran Valley, then, renew their knowledge and technology without much intentional collaboration with other firms in the cluster? Do they heavily rely on external linkages? I will try to answer these questions in subsequent sections, too.

Local vs. Non-local linkages

In determining the boundaries of local vs. non-local interactions, the areas within Seoul City should be considered local. Although Teheran Valley is the first-rank digital content cluster in Seoul, Teheran Valley still shares the city’s economic structure, consumer groups, institutional supports, and technological advancements. I found that each digital content firm in Teheran Valley maintains a strategic cooperative relationship with 4.9 firms within Seoul and with 0.75 firms outside of Seoul, on average (see Table 5-9).

Table 5-9. Average Number of Local vs. Non-local Partners of Respondent Firms.

Partner firm type	Average number of firms
Local	4.9
Non-Local	0.75

Source: KIPA Survey, 2004. n = 100.

From this data, it is possible to conclude that digital content creators in Teheran Valley rely heavily on firms within either Teheran Valley or Seoul. It is another interesting contrast to some studies (Grabher, 2002a) that show that self-sufficient firms with competitive social cultures tend to seek their cooperative partners outside their locality or region.

Location Choice

The previous characteristics, that Teheran Valley firms do not strongly connect socially or collaborate in new knowledge creation and transfer, are also reflected in the reasons they gave for choosing to locate in Teheran Valley. The survey question asking about location decision factors (Table 5-10) showed various factors affecting a firm's locational decision. The advantages in marketing have attracted many firms in the digital content sector to relocate to Teheran Valley. The second important factor is the advantages provided by the agglomeration of similar industry firms and supporting institutions. It appears to be relatively easy to recruit specialized/skilled workers. A favorable environment for start-ups ranked only fifth.

In my in-depth interviews I also asked what motivated firms to locate in Teheran Valley. I asked three questions: (1) what factors were considered most important in locational choice (12 choices)?⁴ (2) what locational advantages did Teheran Valley offer to businesses (open-ended question)? and (3) were there any disadvantages to the current location (open-ended question)? It appears that digital content firms prefer Teheran Valley for various "convenient" amenities such as nearby

⁴ Although I mentioned these items in chapter 3, as a reminder, I am repeating it one more time. The 12 factors are: 1) rent, 2) CEO's residential location, 3) employees' residential location, 4) transportation, 5) urban cultural amenity (diversity of choice), 6) environmental amenity (parks and rivers, etc.), 7) proximity to cooperative partners and clients, 8) supporting institutions, 9) support from local government, 10) access to labor pool, 11) image of Teheran Valley, and 12) good relationship with the building owner.

producer services, a larger labor pool than elsewhere in Seoul and Korea, and a convenient transportation system.

These results suggest that in the Teheran Valley case, neither collaboration with other firms nor a “learning community” is a major attraction. Instead, the small firm agglomeration in Teheran Valley appears to be a rather loose form of industry cluster.

Table 5-10. Location Decision Factors (from the Survey).

Location decision factors	Ranking
Advantageous location for marketing	1
Agglomeration of similar industries and institutional supports	2
Easy to recruit specialized/skilled workers	3
Good living conditions	4
Favorable environment for start-ups	5
Personal relationship with the founder	6
Advantageous location to get funded	7
Outstanding research/development environment	8
Business supporting systems (incubator, consulting and venture capital, etc.)	9
Others	10
Local governmental support	11

Source: KIPA Survey, 2004. n = 100.

Summary of the General Characteristics

The interpretive analysis of the KIPA survey data shows that digital content firms in Teheran Valley are small to medium in size and vary in terms of their firm-development stage. Many CEOs worked for large corporations before they established their own businesses.

Teheran Valley firms also exhibit an indication of higher self-reliance: their full-time worker rate is around 98%, and new information and technology is

developed and gained mostly through internal sources. Teheran Valley firms invest 30% of their annual sale into R&D on average, although the percentage varies from firm to firm.

Most firms decide to locate in Teheran Valley because of the advantage of marketing and externalities of agglomeration of similar types of businesses and institutions, and in order to share a common labor pool. The factors of research/development environment, local governmental support, and funding opportunities were ranked lower.

One interesting finding contradicts the self-reliance and strength of digital content firms in Teheran Valley: the data about local versus non-local linkage suggests that Teheran Valley firms have much stronger interfirm activities among local firms (within Seoul City), an average of 4.9 firms compared with 0.75 non-local firms.

I also have raised a few challenging questions that emerge from the gap between the existing literature and my observations. In the learning community literature, new knowledge creation and diffusion occur through dense social interactions among local actors. The entrepreneurial region literature, for instance, that which addresses Silicon Valley, also emphasizes the importance of social interactions among actors, even where the local business culture is based on competition rather than on collaboration. Then, how do Teheran Valley firms innovate and strengthen their economic competitiveness without cooperating with other firms? In the existing literature, when the local social culture is more rivalrous than collaborative, firms tend to be more self-reliant, or vice versa. Then, do the data analysis results indicate that Teheran Valley firms are only rivalrous?

Here is another interesting mismatch between the existing literature and the reality of Teheran Valley: Grabher (2002a) showed that self-sufficient firms with a competitive social culture have a tendency to seek their cooperative partners outside of

the locality or region. However, although Teheran Valley firms show that they are more self-reliant, the data of local vs. non-local linkage shows that Teheran Valley firms have much stronger interactions with local firms than with non-local firms. What does this suggest? What generates this somewhat contradictory result?

In the next section, based on case studies of three firms that represent mobile solutions, mobile games, and online games, I will examine the firm level social organization of production, interfirm relationships, and employee retention strategies. After that, I will discuss the function of the small–large firm relationship from a policy maker’s perspective, focusing on whether the current relationship contributes to the local innovation capacity.

2. Case Study of Digital Content Production Firms

Three Firms and Statistical Representation

I have chosen three firms to represent the core subsector of the digital content industry in Teheran Valley: an embedded software developer, a mobile game developer, and an online game developer. As I showed and discussed in Chapter 1 and Chapter 3, I define digital content firms as digital content creators and embedded software developers given that they make up the core subsector in the digital content industry in Teheran Valley.

Company A⁵

Founded in 1999, Company A is a wireless Internet multimedia solution provider. As of 2005, it is a 6-year-old firm in its fast growth stage. Currently, a total of 117 employees work at A, with an age distribution ranging from 27 to 30 years. Of these employees, 55 are part of the research workforce, working in the company's own research lab, where almost 90% of total sales are reinvested.

Company A's products are in the area of wireless Internet multimedia vector solutions such as simple image solutions (SIS), vector image solutions (VIS), and mobile streaming format (MBF). These are mobile phone solutions that transform combinations of different types of multimedia files, such as sounds, images, or movies, by compressing them together to be played in the mobile phone environment.

Nowadays, multimedia content products, for instance, music videos, movies, and television shows, are produced in a digital form from the beginning and played in multiple digital environments such as digital cable television, IP television, online Internet, and wireless Internet, and so forth—the so-called one-source multi-use. Therefore, to play a cable show drama in a mobile phone setting, because of the different type of data transmission (online vs. wireless), different capacity of data streaming, and different size of display (television vs. mobile phone screen), the technology of data compression and decoding to make one digital content fit into another technological setting (in this example, mobile phone) is critical.

Company A's products are adapted not only by a domestic mobile phone manufacturer (Samsung) and the "Big 3" mobile phone service providers (SKT, LGT,

⁵ This case is constructed based on the information I gathered from interviews with the head of the finance team at Company A. I had a total of 2 face-to-face interviews with him, along with 2 phone interviews. Each face-to-face interview lasted about 60 minutes, and each phone interview lasted about 30 minutes. Face-to-face interviews took place in his office in Teheran Valley. I recorded the interview with a digital voice recorder. For the phone interviews, I placed phone calls from my office, jotted down our conversation, and then created a transcript right after the phone interview so that I could capture most of our conversation while my memory was still fresh. (Important note: Because the interviewee requested that the firm remain anonymous, I have changed the name of the firm. However, he gave me permission to use the firm case for my publications outside of Korea.)

and KTF), but also by overseas clients such as Motorola, Qualcomm, China Mobile (CMCC), and Hutchison (Taiwan). The diagrams in Figure 5-1 exhibit the basic concepts of a mobile solution.

As of 2005, this company was experiencing the burgeoning of new product/service development and a diversification of the product/market. In 2004, Company A's total sales were \$12,839,000, a total of \$2,950,000 of which was from export sales.

The company was established by a Cornell University engineering doctoral student. He started the company before he received his doctoral diploma, which he has not yet attempted to complete. Company A was started in Teheran Valley when the IT venture market was at its peak and experienced the severe backlash of the KOSDAQ crash in the early 2000s. However, this company was not affected by the IT venture bubble crash because the phenomenon affected mainly those companies registered on the KOSDAQ.

Production Process. Idea development at Company A begins with the gathering of information from the Internet, magazines, and newspapers, and by looking at how people use their mobile phones on the street or in restaurants. Catching up to consumers' needs requires a cultural sensitivity that enables one to figure out which option would be the right movement among many different ideas. Although the Company A product is not exactly "digital content," an understanding of consumers' desires and needs is critical in developing new solutions.

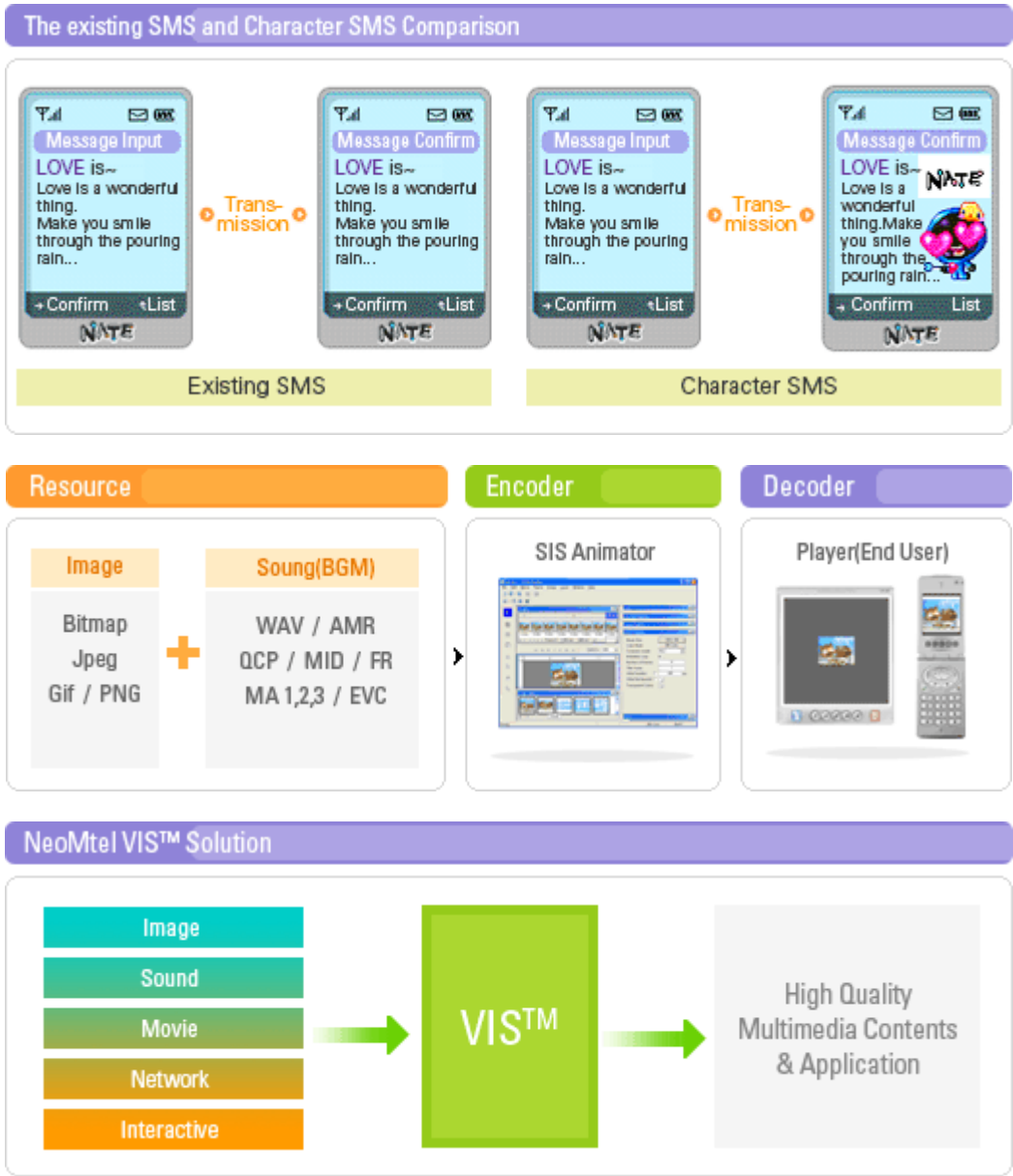


Figure 5-1. Diagram of the Function of Vector Image Solutions (VIS) and Simple Image Solutions (SIS). Source: Company A Web site.

This understanding is especially critical given that the leading user group in the Korean mobile digital content market is teenagers and adults in their twenties. The interviewee made a remark that highlights this aspect:

I think having young workers is definitely helpful in terms of catching up to consumers taste. These young workers share similar culture and mentality with

the target consumer group of digital content as the majority of mobile digital content is teenagers and people in their early twenties. (Interview)

Combining new information and new product ideas from team meetings, one team can come up with a new idea, for instance, adapting face-morphing tools for mobile phones. Even though a team comes up with a new idea, more processes must take place before the idea is finally approved for actual development as a product.

If we want to adapt a morphing technology to a mobile phone to transform pictures taken by the camera attached to the camera to animal faces, we need to think, how long will it take, will the result of morphing look similar enough to the person's face? Could it be a good business model? Can we make this program fit a small mobile-phone size?

These programs also take up a lot of storage and memory space which cannot be done on the individual mobile phone. Instead, the consumer connects to the mobile Internet through their handsets and will use the software that is located in a large capacity server. This means that we also need to invest in server equipment, which in turn requires us to consider the internal rate of return on the initial investment. (Interview)

Any staff member can come up with a new idea. However, sometimes new ideas are not necessarily ready to be commercialized:

There are some creative people with a very keen sense of market and commercialization, but not necessarily all of them. And the momentary decision is very critical in this digital content market because everyone moves so quickly and the market changes every day. So although everyone can suggest their ideas, decisions are usually made by the CEO and the board of directors. As I explained before, the decision making takes a lot of factors besides the content itself. It is certainly a complex process. . . (Interview)

Upon approval of the idea for development, the team prepares an official request with a new-solution development plan for new-solution development to the internal research center at Company A. Company A relies heavily on its internal research center for new-idea and product development. According to my interviewee,

We have our own research lab and we can cover the entire product development. To guarantee the independence of the research activities and reflect the different behavior of researchers and developers/marketing workforce, the research center is located on a different floor from the rest of the company organization. It is also helpful to keep secrets of new product development by having a separate research lab with a different entrance.
(Interview)

The production organization of Company A is based on project teams. Each project team is led by a chief developer who is in charge of new-idea development, communication among the team members, and product development. At the same time, it is also the team leader's responsibility to communicate with other teams and with upper level decision makers. Figure 5-2 illustrates the internal firm organization of Company A. The basic communication organization is the project team, which is the organizational unit that develops new ideas that have been suggested. To facilitate communication among different project teams, frequent meetings among different project teams are encouraged, and meetings, seminars, and conferences take place whenever needed. For instance, to facilitate communication among themselves, team leaders meet every Monday morning.

Interfirm Relationship. As of 2005, Company A has clients from Asia, North and South America, and Europe such as Motorola, China Mobile, China Unicom, KDDI, Sanyo, Orange, Kyocera, Hutchison, and Qualcomm (see Figure 5-3). Within Korea, its clients include Samsung, a global mobile phone manufacturer, and the "Big 3" Korean mobile phone service carriers, SKT, LGT, and KTF.

I revisited Company A about seven months (in January of 2006) after our first face-to-face interview to see whether there had been any changes. Surprisingly, this company underwent an organizational change to adjust to a market environment change. The interviewee described the change as unexpected and very fast. As large corporations started servicing digital content product in full and as the wireless

Internet become commercialized, corresponding to the growing market, there had been a surge of digital content start-up firms. In turn, market competition had become more intense. Therefore, Company A had to rearrange its internal organization.



Figure 5-2. Internal Firm Organization of Company A. Source: Company A Web site.



Figure 5-3. Global Clients of Company A. Company A has built a global network by devising business strategies; now Company A provides solutions to more than 400 companies in 19 countries worldwide. Source: Company A Web site.

Company A re-created its organization with specialized squads for each publisher (i.e., SKT, LGT, and KT) and visits clients three or four times a week. Because of the competition among small firms as content creators, after they develop their ideas, they have to “lobby” their clients to get their products selected:

No digital content creator sits in the office any more nowadays. Everybody is on-site and lobbies and sells. Our sales partners are big 3 mobile phone carriers including SKT, LGT, and KTF. It is important to show them how our mobile solution works and that our data transmission is efficient. In fact, these solutions are going to be installed in mobile phones, which means that the final decision makers are mobile phone manufacturers. However, because these mobile phone service companies hold enormous power over the entire mobile market, it is very important to have a positive acknowledgment from these mobile phone service providers in order to sell our solutions to manufacturers.

What they do is discuss. Each team creates ideas and suggests them to SKT. In other words, we come up with some ideas for a new digital content product or embedded software and show SKT. If SKT likes the idea, then it becomes a project. Sometimes it is an individual project or sometimes it can be a joint project, too.

Meetings that take place on-site at SKT are very important. Depending on how we make an impression with our ideas, the possibility of funding is decided. I think that they meet with each other quite often. Maybe 3–4 times? (Interview)

Once these content developers visit a mobile service partner’s corporate building, they stay at the building for several hours meeting with various working partners. For instance, SKT currently has six different digital content teams covering personal Web pages (cyworld.com), digital music, mobile pictures, mobile games, and other forms of entertainment. Content developers stop by each digital content business team to talk about different business items and to develop ideas.

Employee Retention. Co-location of large and small firms in Teheran Valley has spillover effects in terms of sharing a large labor pool. However, the situation is not entirely favorable for small firms, as the following quote indicates:

There is competition between large and small firms for qualified creative workers because the supply of well-trained and experienced workers is limited. Therefore, to retain key creative workers, content creators pay almost the equivalent of what large firms pay, if not the same amount. (Interview)

In the process of idea creation and experimentation, compatibility among team members is one of the factors critical to ensuring product quality. Therefore, such firms seldom hire part-time workers or freelancers. Instead, as the following interview with a digital content development firm suggests, they tend to retain required workers—as long as and as many as they can afford:

First, solution creation is a creative process. It means that creative people are the most important source. So we'd like to retain the quality of team members instead of hiring freelancers or part-time workers. Second, if team members change frequently, it is hard to maintain team dynamics and this directly affects product quality control. If someone drops out in the middle of the project because he/she may not get along well with other team members, that affects the outcome of the project. In that case, the delay of the schedule is a minor problem. If the head of the project team leaves the company, the fate of the project itself will become endangered. (Interview)

This also provides underlying reasons for the distinctively high rate of full-time workers in Teheran Valley. As in other creative work in the digital content industry, the division of labor is determined by task specialization, e.g., graphic development, sound and special effects, and technological support. One project team consists of workers specialized in various subfields that the whole process requires: creative ideas, technological inputs, and problem solutions. The project leader is often the person whose vision determines the direction of the digital content. At the same

time, he/she facilitates communication among team members so that the project process is ensured.

We prefer to hire full-time workers who can work together for a few to several years. We don't like changing team members frequently . . . In our company, except for a few clerical positions, everyone is full-time. (Interview)

Although there are many digital content workers out there, many of them have only entry level skills. It is extremely hard to find someone with skills and know-how to lead a project. So once we hire a person with desirable skill sets, we try to retain them as long as we can. (Interview)

E3Net⁶

E3net is a mobile game development company that was established in 2000 and, as of 2005, is 5 years old. When I met the CEO of the company, he was in a good mood and very nicely welcomed me. Although E3Net is a small mobile game developer with 40 employees (among them 30 researchers), this company recently gained great success in the mobile game market for a game called "Coin-stacking" (see Figures 5-4 and 5-5). As result, in 2004 this firm recorded sales of US\$ 2,380,000. This company's R&D investment is 20% of its total annual sales.

This company started as a system integration (SI) firm in 2000. However, the company saw better opportunities in the mobile game sector because the SI market was already full, and they found it necessary to develop a new business model. They started attending seminars, conferences, and exhibitions that took place in Teheran Valley through business associations, international ICT industry fairs hosted by governmental agency, and other educational programs run by various

⁶ This case is constructed based on the information I gathered from interviews with Gun-Yol Chung, the vice president of E3Net. I had total of 2 face-to-face interviews and 2 phone interviews. Each face-to-face interview lasted about 75 minutes, and each phone interview lasted about 40 minutes. Face-to-face interviews took place in his office in Teheran Valley. I recorded the interview with a digital voice recorder. For the phone interviews, I placed phone calls from my office and jotted down our conversation and created a script right after the phone interview so that I could capture most of our conversation while my memory was still fresh.

local/governmental institutions. Specifically, the Korea Game Industry Association and Mobile Game Business Association were helpful.

In 2003, the firm's SI sales represented 30% of its total revenue, and mobile games 70%. And in 2004, the company completely transformed its business model so that 100% of its revenue came from mobile games.

The interviewee also said that those opportunities to be exposed to new information and knowledge were one of most important advantages to being located in Teheran Valley.



Figure 5-4. The Game “Coin Stacking,” Created by E3Net. Unlike the online games shown previously, this mobile phone-based game is characterized by its simple story line and single-player-based simple task (stacking coins to save an endangered, kind-hearted alien). The screen is designed to fit the display window of a mobile phone. Source: <http://mgame.naver.com/skt/gameView.nhn?cid=01101066>

Interfirm Relationship. As mentioned above, there are active social activities among CEOs, member companies of business associations, various seminars, workshops, and exhibitions. However, in their game development, E3Net does not use outsourcing or cooperate with other firms except through marketing events (putting posters in restaurants and stores near elementary schools and posting advertisements on buses, etc.).

For small firms in Teheran Valley, specifically in the market that is rapidly expanding to embrace wireless Internet-based business models, maintaining

partnerships with large firms became more important for their business operations for the following reasons. First, as mentioned earlier, mobile service providers became the most important digital content distribution node. Because of the nature of digital content products, which remain in an electronic file form throughout most of the content creation, distribution, and consumption processes, there is little direct interaction with final users because they can download digital content products from a wired or wireless Internet connection.



Figure 5-5. Screen Capture of the “Coin-Stacking” Game Downloading Web Site. Mobile phone users can download this game from the Naver Web site directly to their mobile phone. This page shows that the registration date of this game on this site is October 14th, 2005, the cost is US\$42 per download, and the size of file is 404KB. Naver is the biggest Internet portal site in Korea and is serviced by NHN, which is the top Internet-related business in Korea and which started and grew up in Teheran Valley. Source: <http://mgame.naver.com/skt/gameView.nhn?cid=01101066>

What is critical for reaching the end user is a presence on Internet Web sites where many users can find and download desired items. In the mobile digital content market structure, the only possible route to achieve this is through wireless Internet Web sites operated by mobile phone carriers (interview with the CEO of a mobile game company).

Mobile service providers “hang” items on their wireless Internet Web pages so that users can have access to them. When users download an item, payment occurs. Mobile service providers take 30% of the payment for a mobile game publication on their wireless Internet network. The rest of the price, 70%, goes to the content creator. Therefore, copyright ownership of the digital content product remains with the content creators. The more exposure, the more profit. Second, mobile service providers become important parties in deciding which products will be out in the market and which ones should come to market earlier. These are important decisions affecting digital content product sales. And, third, under the heightened market uncertainty, market information obtained from mobile phone service providers such as future market predictions, consumer behavior, or even future projects of major corporations is a valuable resource for small firms to cope with the fast-changing market.

In fact, cooperation with large firms is a risky strategy for small content creators, in view of possible important know-how leakages and other competitive conditions among content creators and mobile service providers. However, partnering with mobile service providers brings more stabilized content product distribution by piggybacking onto powerful brand names in the market, which in turn increases product recognition and helps small firms survive in a very competitive market. (from an in-depth interview)

Employee Retention. When I visited this firm, I had an especially hard time finding the building; it was a three-story small-venture building in the middle of small buildings in the commercial district, one block behind those that face Teheran Valley. The setting was a bit unexpected, as other companies are mostly located in buildings

facing the major road, Teheran Road. I had the chance to hear about why E3Net ended up locating in the current building.

The rent was very cheap at that time. There was no apartment building around here and no other office buildings within this small block. And this is the back row! We like the fact it is still inside of the Teheran Valley but rent was incomparably cheap. (Interview)

Later this location became a strategic choice to retain workers.

Being located in Teheran Valley helps us to recruit high-end workers, as many skilled and experienced programmers and content creators continuously rush into Teheran Valley. Due to the name value of Teheran Valley as the Mecca of the ICT industry, many talented young people try to get a job here. They prefer this area for many reasons. It would have been hard for us to hire good designers and programmers if we were located elsewhere. These young people buy the image of Teheran Valley.

I personally want to move to another place where I can even buy my own office space. Teheran Valley is now too expensive. But our workers like to be here. Young people like to hang out here with their friends. It is also important for them to show their business card with the address of this Teheran Valley area because it looks cool. (Interview)

I also asked about the labor turnover rate. The interviewee noted,

There are three or four people leaving this firm every year. They usually move to online game firms. Compared to online games, mobile games are much smaller in size and capacity and less challenging in terms of technological caliber and skills. So to retain our workers, we try to diversify business models to new fields such as IP television games or digital television games. Our company is the first one that tries out these things.

I asked whether they had to pay workers to keep them from moving to other companies.

Payment? Of course, for the core work force, for instance game designers, we pay more than other large corporations, such as Samsung, pay their workers who have the same years of experience. (Interview)

It was interesting to see that workers move to online game developers but not to bigger corporations. Why?

Game developers are a different type of human being. They like playing and creating games. They have learned about games by playing them and have developed a desire to be a creator of a game in a way to reflect what they have learned. They don't fit into the corporate culture. The huge hierarchical organization is not the best environment for them to be creative. (Interview)

This also suggests that skill training is heavily dependent on an individual's enthusiasm and devotion. In fact, many game developers acquire knowledge and skills by playing games and participating in discussions with other people in "game mania groups." With the boom of PC bangs,⁷ the game-player population increased explosively, and there are now different types of game players' communities for video games, board games, and online games. Since mobile games require less competitive skills, it is easier for an entry level game creator to start his or her career in mobile games as a stepping stone.

Institutionalized game design education began just a few years ago, and the supply of skilled workers could not match the expansion of the market. Therefore, the worker turnover rate in this industry sector is much higher (according to my interview, a person moves every one to two years). To retain mobile workers, one strategy a firm can take is to provide skill training.

We recommend our workers to attend workshops or game developer academies as part of skill training. But not all of them want to attend those education programs. Some people, especially computer programmers, prefer to study by themselves. (Interview)

⁷ A PC bang (room) is a form of Internet café in Korea. These are equipped with cutting-edge computers and high-speed Internet networks. Much literature (cite) identifies the PC bang as one of the important factors in the development of the Korean game industry because PC bangs provided the ideal technological environment for game players.

M Game

M Game is an online game developer established in 1999. In 2004, the company's sales were US \$2,000,000. A total of 200 employees work for the company, whose age distribution is around the late 20s, and, of those workers, 160 workers are in research and game development. M Game started as an online game developer from the first with the name "Wizagate." In 1999, the company expanded its business to Internet portal and online game publication and changed its name to M Game. The company is in its mature stage; its sales and growth rates have stabilized. In fact, M Game is one of the oldest game developers in Korea. Figure 5-6 shows M Game's game "Holic" Web site.



Figure 5-6. Screen Capture of "Holic," Created by M Game. Compared with the mobile game "Coin Stacking," Holic offers much more elaborate visual presentations and game-play features. Source: http://holic.mgame.com/community/community.mgame?rtype=S&message_id=189381

Location Choice. M Game is located in Seo-Cho dong, which is about 20 minutes away by public transportation from the Teheran Road area. However, this area was once considered part of Teheran Valley. The company settled in the current building because it is owned by the second CEO of the company. I asked whether there were any advantages to being located outside of Teheran Valley and whether there were any plans to move elsewhere. Two factors were considered beneficial: the first was the location's proximity to public transportation for the convenience of commuting employees, and the second was proximity to partner companies or access to other places where the company's partner firms are located.

Online game development doesn't necessarily have many clients. So for us, our employees and partner firms are more important (in terms of spatial access). And we don't necessarily communicate with other firms to obtain new information.

If we were located in Teheran Valley, our partner firms would have not been able to locate close to us because Teheran Valley is way too expensive right now.

If we ever move, we will consider Guro (Digital Valley), Pankyo (new town), and Bundang (new town), after building a big building to accommodate our partner companies too. We do not borrow the image of a place such as Teheran Valley; however, we don't want somewhere too far away or a nameless place because it would be difficult to hire new employees. Although the industry has grown, there are still some companies that go bankrupt, and one of the indicators is where the company is located and in which type of building.

Yes, in this business, location can tell us the stability and growth potentiality based on the location. (Interview)

It is clear that M Game perceives working with other firms differently. Online games, especially MMORPGs (Massive Multiplayer Online Role Playing Games), require a more diverse set of technological skills and artwork. As desktop capacity came to exceed console game capacity, the technical complexity, audiovisual presentation, and

game scenarios became much more complicated than before. This also means that the game development process requires a more diverse set of skills and team management.

We have our 3–4 “game designers.” They are the ones who are project managers in their 20s or 30s. Game development is no longer the work of a few maniacs working day and night in a small dungeon. As the industry grew, things have changed. The production process has been systemized.

Initial game planning takes 3–6 months. Game development is done by a project team, and one team consists of a game developer, graphic designer, client programmer, and sub programmer. Once the game plot is created, the graphics are developed. When the graphic parts are done, we create a demo version game that runs on the existing game module. (Interview)

Game development takes a total of about two years. If things are not coming along as planned, sometimes the team abandons what they have worked on so far and starts over again. In that case, game development takes an additional year.

The cost of game development has increased from 200 million to 300 million US dollars because labor and marketing costs have increased. At the same time, following the desktop computer capacity improvement, the cost outside the game itself such as graphical presentation and sound became more important. These are also factors that increase the cost of game production. (Interview)

Online game developers also have adopted in-house production systems similar to those of Company A and E3Net. However, online game development requires more cooperation and collaboration with other firms because of the complexity and much bigger size of game development projects. Interestingly, their co-work requires very intensive face-to-face human interactions. It was hypothesized that a weightless economy such as the game industry can be done through remote communications by creating a “virtual software factory” (Pratt, 2000). However, what I observed in M Game was strikingly different from this hypothesis.

Sometimes we need to work with other game developers because there are firms with very specialized technologies and know-how that we don’t currently

have. In that case, we try to locate the firm physically close to us. In fact, there are a few partner companies that we regularly work with that moved to the same neighborhood. When we work on the same project—it happens only a few times in a year—we even share the blood, which means we fund these firms until the game development is completed and try to create a coherence among team members (from our project team and the partner project team) to make sure the communication goes well among team members. They need to work as one team seamlessly to facilitate the game development process. They eat, sleep, and hang out together all the time. (Interview)

Employee Retention. Worker mobility is gradually increasing as the number of game developers increases. By moving to a new workplace, a worker can increase his or her salary and obtain different types of skills.

I think that a company's vision is important to retain workers. If they see more opportunities in this firm, they will stay here longer, period. Other conditions, such as stock options or rosy dreams chasing jackpots from creating killer-items, are also important factors that retain talented young people in small firms. (From in-depth interview)

3. Cross-Case Analysis

In this section, I construct a cross-case analysis based on 14 firm interviews regarding production systems, business community culture, knowledge transfer, and interfirm networks, and the implication of a strong vertical interfirm network for SMEs in Teheran Valley.

Creative Input

As I have suggested in my hypothetical model-of-creativity map (see Figure 2-1), it was found that the process of digital content work is the process of combining and integrating different sets of skills. This characteristic is equally applicable to both software production (in the case of Company A) and digital content production (in the case of E3net and M Game) in the initial stage of a project.

The development of a new product, whether it is software or digital content, starts with an inspirational trigger—the “aha!” moment. However, this inspirational trigger is, according to many interviewees, the result of research such as information gathering on consumer tastes and watching consumers’ behavior with regard to technological use (how to use their mobile phone, online vs. mobile Internet use, use of different data or content according to different types of platforms).

However, in the course of product development, the types of creativity inputs differ. For instance, the software development process requires a more detailed understanding of technological aspects of incorporating new ideas into a software program. On the other hand, content product development needs a more complex set of artistic creativity and analytical and technological skill integration to create the narration of the content, the audio-visual expression of the narration, and the corresponding technological support (computer coding, animating, and so forth).

Figure 5-7 is a conceptual diagram of creativity input in each part of the production process of a digital content product. The diagram offers a simplified production process that is common to all types of digital content development. At the planning stage, cultural creativity is the dominant input, whereas decision making about commercial viability is based more on economic and managerial knowledge and know-how, which I have termed “commercial creativity.” During the content development period, the combination of cultural and technological creativity is critical because this process is about the visual presentation of inspirational ideas, the technological enabling of visual presentation, and problem solving. At the distribution stage, the combination of commercial and cultural creativity is important to capture consumers’ attention.

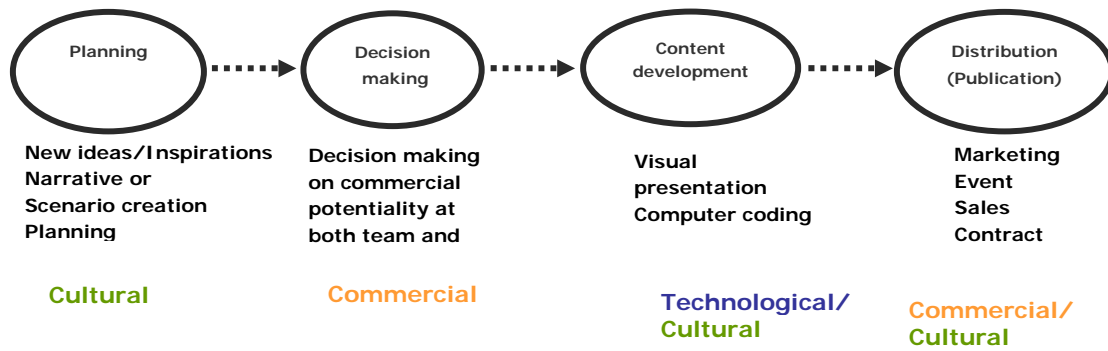


Figure 5-7. Concept Diagram of Creativity Input Throughout the Production Process.

The combination and the degree of creativity inputs may vary according to the type of product. In particular, the content development process is more complex and may take more time depending on the type of content being produced; for instance, one mobile game takes a few months, while MMORPGs take approximately two years.

Organizing Creativity

In-house Production

Most firms in Teheran Valley, regardless of the business model and type of product, have internalized their production system instead of outsourcing to or cooperating with other firms. The in-house function, based on its various project teams, reflects the distinctive self-contained character of Teheran Valley content creators and also extends to the organization of production. In contrast to their counterparts in Silicon Alley, in New York City, or Multimedia Gulch in San Francisco—regions characterized by short-term, project-based work systems and the intensive use of temporary workers—digital content creators in Teheran Valley accommodate most of their production processes in-house. According to an interviewee,

We handle most of the process of creating a new mobile game: from new idea and concept planning to creating main characters and animation, developing a demonstration program, and evaluating marketability. Sometimes, for some

work that we cannot perform in-house, for example, fancy special sound effects, we contract the work out to a highly specialized studio. There are many of them in Teheran Valley, as there are many film studios. Other than that, we try to do most of the work with our own people. (Interview)

The in-house integration of most of the content-creation process is an interesting contrast to the vertical disintegration and collaboration among small firms often described as a basis for innovation and flexibility (Keeble and Wilkinson, 1998; Oinas and Malecki, 2002).

Why, then, do Teheran Valley firms prefer in-house production systems to outsourcing? I found that because of the intense competition among digital content creators, firms prefer to work on their own. First, when the market moves very quickly, developing new ideas and distributing them to the market before anyone else does is one of the most important strategies in maintaining a firm's competitiveness; keeping information about their new product from other competitors is also critical.

Second, an in-house production system makes sense for them because of the long production period required for digital content creation. Unlike event planning, Internet Web page creation, or the system integration of intra-networks, which usually take from a few to several months, digital content creation—especially online game creation—takes two to three years on average. Third, an in-house production system is also advantageous in terms of facilitating and sustaining the processes of collective learning and knowledge diffusion among organizational members—important steps in new-knowledge creation.

The Semi-symbiotic Internal Firm Organization of Production

The internal firm production system is most often organized in the form of a project team consisting of one team leader (whose main role is to function as the idea developer and team organizer), computer programmers, and graphic designers. The number of workers assigned to each task varies according to the size of the project.

The most important tasks and the quality of the product are dependent on the team leaders' capacity to demonstrate cultural sensitivity, technological understanding, organizational skills, and commercialization ability.

However, the boundaries among project teams are loose so that the mobility of team members is not strictly limited, a structure I term "semi-symbiotic" (see Figure 5-8). If there is a sudden need for extra labor, the work force within the firm moves around to supply the necessary and short-term labor instead of hiring a short-term temporary workforce. The advantage of improvisation of the existing internal work force is reducing the risk of disturbing the existing organizational order and human relationships, which might occur if temporary workers, who often have little sense of the organizational culture, are hired. At the same time, relying on the regular workforce reduces the risk of leaking critical information about new products. This has resulted in strict firm boundaries and competitive relationships among digital content creators. I will discuss this aspect further in the following sections.

In the multimedia and new media literature, it is argued that the project-based work organization is the consequence of the short turnaround times of multimedia and new media projects. However, my finding shows that the project-based work organization is still persistent even in long-term projects in the digital content industry; my findings suggest that the project-team-based organization of production is preferred in order to facilitate communication among workers who have different skill sets to increase the degree of integration of different creativities.

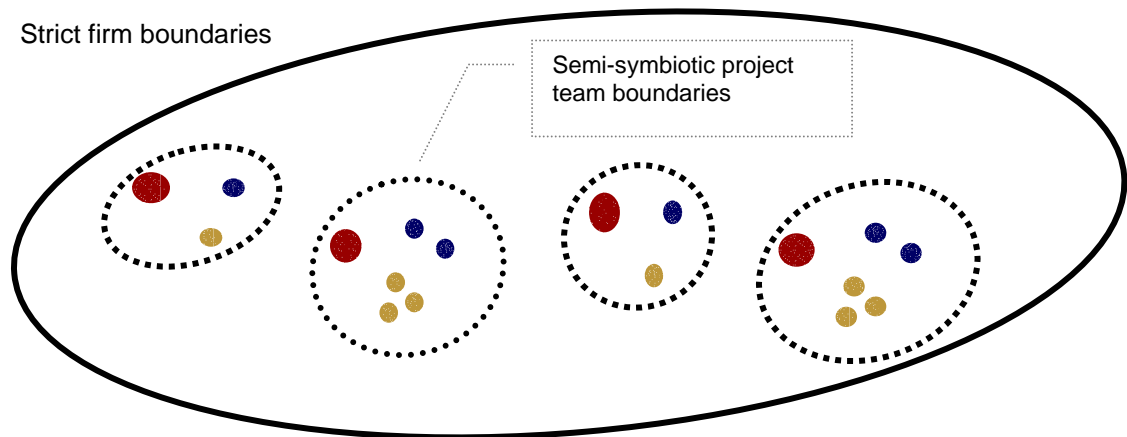


Figure 5-8. Symbiotic Project Team-based Internal Firm Organization. The dotted lines illustrate the semi-symbiotic nature of internal firm project teams. The boundary of a firm, on the other hand, is strict (solid line).

The Decision-making Process

In most cases, digital content developers in Teheran Valley have multiple levels of decision-making processes. The first decision is made at the level of the project team. Through regular team meetings, a project team develops new ideas for digital content items. Although the procedural aspects may vary, usually two or three more steps of decision making are necessary: department level, managerial level, and CEO level decision making. One can see the different levels of product development in Figure 5-7.

Labor Retention

One of the most challenging issues digital content creators face is retaining their skilled workers for as long as they can, which is reflected in the high rate of full-time workers in these firms. Firms' strategies include offering stock options, diversifying

business models into new fields to provide better future prospects to workers, and paying higher salaries.

Digital content work is the combination of technology and cultural work, and the abilities and skill sets required to be the director of a project team transcend computer coding and graphical understanding. As in the case of E3Net and M Game, game developers (project managers) in particular are more likely television show producers or commercial advertisement directors who understand consumers' cultural preferences very well and who have the ability to combine artistic expression and commercial success.

These workers with higher qualifications are, however, in many cases self-taught through personal devotion to game-playing and computer-related work and have developed their careers into those of game developers. Therefore, the supply of skilled worker is too limited compared with the speed of market expansion and diversification. Although the government has institutionalized skill-training programs, the training programs generate only entry level workers.

Rivalry and Interfirm Relationship among SMEs

There is a strong correlation between the self-reliant characteristics of Teheran Valley firms and the cultural orientation of the business community. Most interviewees said rivalry or competition best describes the business community culture in Teheran Valley. Because of the rivalry, firm boundaries are very strict, which results in weak interactions among SMEs in Teheran Valley.

Some interviewees interpreted Teheran Valley's competitive social characteristics within the wider context of Korean society, which is competitive. Another frequently mentioned reason is the owner centered perspective of firm

organization than their counterparts in Silicon Valley. One interviewee said, in a mildly sarcastic tone,

Even though the firm structure is becoming more flexibly organized and the horizontal relationship is more emphasized, there is still a very strong concept of “ownership of the firm” belonging to the founder or the current CEO. Although bottom-up idea suggestion is encouraged, the ultimate decision is made at the CEO level. In most firms, CEOs hold the ultimate decision making power to decide what to develop and what to sell. (Interview)

Determining whether the Korean hierarchical culture or the competitive market environment and the long-term production process is at the foundation of the self-reliance of Teheran Valley firms is rather complicated. However, one clear point is that those two factors are intertwined and that both contribute to a certain degree to the high self-reliance of Teheran Valley firms.

Reciprocal Interfirm Relationships between Small and Large Firms

Then, how do small firms maintain their ability to innovate their products while relying heavily on internal resources? Teheran Valley’s social organization also reflects the self-reliance of firms. Teheran Valley firms rely heavily on internal resources for new information and technology development. While digital content creators in Teheran Valley are more self-reliant in developing their ideas, they have a very active interfirm relationship with publishers (large firms) to ensure publication routes, additional information, and co-work.

Although the KIPA survey results show that Teheran Valley firms maintain local-based interfirm interactions with 4.9 firms on average, whereas they maintain linkages with only 0.75 non-local firms, the interview data confirm that firms are more self-reliant even in new technology and knowledge development, which is again correlated with the weak social ties of Teheran Valley firms.

Then, what do the 4.9 local-firm linkages mean? Based on in-depth interviews, most firms acknowledged the importance of maintaining a relationship with publishers. Reasons, shown in the case of Company A and E3Net, are sharing important consumer information, getting feedback on their products, lobbying for better exposure of their products to consumers (deciding where to put the link on a Web site), learning about large firms' future business directions, etc. When I asked about the advantages of maintaining close relationships with large firms, the most frequently mentioned answers were the following: obtaining new information, including information about changes in consumer tastes, direction of new business of large firms, and product sales.

The digital content industry is a comparatively new industry sector that is still expanding and diversifying. As one of my interviewees testified, however, there are no established successful business models or products. Because of the uncertainty of the market and fierce competition among SMEs, digital content firms strategize to cooperate with large firms.

However, not all digital content firms follow this route. There are variations in terms of the level of dependency of digital content firms on large firms. As the case of M Game suggests, firms do not rely on mobile phone service carriers for the distribution of digital content products. Is this, then, the end of the story? Are digital content creators and publishers bound only by the market structure for transactions? I explore this question in the next section by constructing the story between digital content creators and publishers.

Factors for Locational Choice

Teheran Valley as a location for digital content firms is important in terms of attracting workers and maintaining relationships with their major clients (large firms) in Teheran Valley. Besides the proximity to the large firms, the image built upon the

name of “Teheran Valley” or “Kangnam area” still appeals to younger workers who prefer “coolness” to “authenticity” or “economy.”

4. Cooperation Between Small and Large Firms in Teheran Valley

Case Study on Publisher: SK Telecom Game Business Section

SK Telecom (SKT) is the leading mobile phone service provider and digital content provider in Korea. SKT became one of the most important players after it joined a consortium that included the government (the Ministry of Communication, later the Ministry of Information and Communication), a research institute (Electronics and Telecommunications Research Institute [ETRI]), and the private sector (SKT) established in 1992 to commercialize Code Division Multiple Access (CDMA)⁸ technology. The consortium succeeded in commercializing the technology in 1996, and Korea became the first country to adapt CDMA as the standard technology for its mobile phone industry.

SKT undertook a successful expansion of its business model to include an Internet portal service by merging with Cyworld.com⁹ through SK Communications,¹⁰ a subsidiary of SKT. Cyworld’s main business model is based on providing “mini-hompy” services, i.e., personalized, small-sized Internet homepages featuring pre-designed photo galleries, message boards, a guest book, and a personal bulletin board. In fact, the mini-hompy is a very unique Web page model compared with other Web sites in that they generally aim to provide and exchange information. Essentially, the mini-hompy is designed to replicate and enhance real-world human networks (see

⁸ CDMA is a signal transmission technology developed by Qualcomm.

⁹ Literally translated, “Cyworld” is the combination of two words: “Cyber+World,” means “Another world–Cyber World.” “Cy” is also a play on a Korean word for “relationship,” “sah-yi.”

¹⁰ Besides Cyworld, SK Communications also provides services such as NATE.com (www.nate.com), a Web 2.0 portal; NATE-ON (nateon.nate.com), a messenger service; Tong (www.tong.co.kr), a new type of blog-hosting platform; and etoos (<http://www.etoos.com>), an education portal (from the SK Communications company Web site). The mini-hompy service became a big hit in 2003.

Figure 5-9). Therefore, people in a close relationship in the real world replicate their relationship in the cyber-world by forming a type of buddy relationship called “Il-chon” (the first relationship). Mini-hompy owners in buddy relationships with each other can obtain almost real-time information in other buddies’ mini-hompy sites, which can attract them to log into the Cyworld site several times per day—to check what is new in others’ lives (From an in-depth interview).

The mini-hompy service model and Cyworld.com were founded by a group of graduate students at KAIST. The motivation was to prepare a “human relationship” (or networking)—centered online Web site as a thesis project in 1999. This group subsequently established a legal body and started the Cyworld service. In 2001, they started the mini-hompy service.

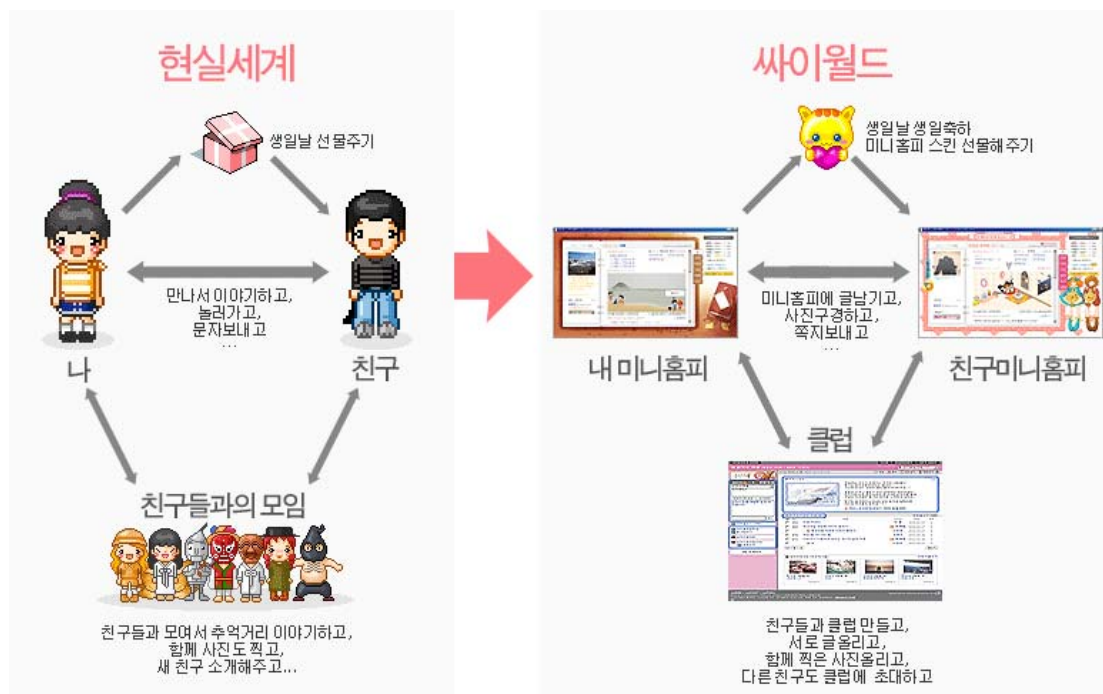


Figure 5-9. Diagram of a Cyworld Mini-hompy Networking Function. This diagram shows how Cyworld replicates real-world human relationships. The left side captures a human relationship in the real world. Friends exchange presents on special occasions and can belong to a group of other people, as well. On the right-hand side, the Cyworld mini-hompy represents each individual, which has embedded functions to

network with friends, exchange presents, and participate in club functions as a cohort group. Source: <http://cyworld.nate.com/common/main.asp>

In 2003, Cyworld started looking for large companies to merge with. Because the number of users had increased swiftly, the company needed better servers and technological assistants to stabilize the system; however, the company did not have adequate financial resources. Therefore, the CEO, one of the founding members, Dong-Hyung Lee, started thinking about selling the company to bigger ones. He says,

The only way to get funding without getting more investment from outside was selling the company to a larger one. . . Of course, there were people (among Cyworld.com employees) who opposed the idea of merger. And some people agreed with it since at that time I couldn't even pay their salaries. . .

The most critical part was about which company to merge with. . . I had started offering to companies like NHN or DAUM¹¹ which had kind of a similar culture with Cyworld.com. (Quote from Pressian interview. Translated from Korean to English by the author.¹²)

Mr. Lee also explains the reason for choosing SK Communications as the merger partner:

SK Communications had two of the most important potentialities. One is, this company had enough financial resources to invest in what Cyworld.com needed (system stabilization). Second, I thought it would be a better environment for Cyworld.com workers, too. First of all, this company would provide better salaries and still avoid internal competitions. If merging with NHN or DAUM, the competitive atmosphere would get in between their workers and our Cyworld.com workers, since NHN or DAUM already had specialty in our business area. However, SK Communications lacked Internet business specialists, which I thought would be a good opportunity for Cyworld.com workers to demonstrate their capacity.

When we negotiated the conditions of the merger, SK Communications first suggested putting Cyworld.com as a subsidiary organization under

¹¹ Both are Internet portal companies.

¹² The interview appeared as a news article on September 10th, 2004. It was an interview conducted by Yang-Gu Kang, a journalist of Pressian, an Internet-based newspaper. <http://www.pressian.com/>

Nate.com.¹³ But I suggested keeping the independence of the Cyworld.com team in SK Communications, and the managers of the company accepted it. Therefore, there is a difference in culture between the Cyworld.com team and the Nate.com team (although they now exist under the same roof). . . SK Communications' culture is not strictly hierarchical or conservative. This aspect is also helpful . . . I think that the merger has been successful so far. (Quote from Pressian interview. Translated from Korean to English by the author.)

After the merger between Cyworld.com and SK Communications in 2003, the number of users increased dramatically. There are some coincidences regarding the gain in popularity of the mini-hompy and Cyworld.com. First, the popular usage of digital cameras, camera phones, and MP3 music files among Internet users (netizens) was accompanied by an increasing desire for self-expression on the Internet. Thus, Cyworld.com's one-person-oriented mini-hompy sites (photo gallery, music, and posting board service) became an important method for users to realize that they wanted. Second, around 2003, many Internet portal companies transformed their free services to paid services (Lee, 2004). This includes such services as Freechal.com, which at that time was the top Internet portal company in Korea, providing the largest Internet community service. Many Internet portal users opposed this change and moved to Cyworld.com (Lee, 2004).

In Figure 5-10, the first arrow indicates the transition from a free community to a fee-based community, but this shock does not accelerate the already downward trend in Freechal.com users. By contrast, SK Communication (the bottom line in the graph) kept the mini-hompy service totally free and created an income-generating business model by selling various items to decorate the mini-hompy such as wallpapers, music, and other gift items.

The success of Cyworld's business model is important because it is the first case of a large company (SK Communications) successfully entering the Internet

¹³ Internet portal service company owned by SK Communications.

business sector. However, it was possible that Cyworld.com pursued the option of a friendly merger to secure funding resources and a working environment.

It represents the case that Sternberg (1998) describes as the role of large firms in a relationship with small firms in Munich, i.e., that large firms function as a financial resource for small firms, but do not dominate small firms' organization or creativity so that small firms can maximize their capacity in the market.

To draw more profit from their existing infrastructure (wired and wireless Internet networks), network carriers strive to transmit and sell more digital content products through their lines. When mobile service providers first entered the digital content market, they started to buy up small and profitable digital content firms. The Cyworld.com case is a good example of this.



Figure 5-10. Comparison of Number of Average Users Per Day between Freechal.com (downward line) and Cyworld.com (upward line). The first arrow represents the transition of Freechal from a free Internet community to a fee-based Internet community. The second arrow represents the merger between SK Communications

and Cyworld.com. Source: <http://cyworld.nate.com/common/main.asp>

I interviewed a team director of a game business section at SK Communications. He testified that

although SK Communications is a good example of the successful entrance of a large firm into Internet business areas, it was a case that became possible only by absorbing Cyworld.com under its wing. However, we cannot catch up to small firms in the digital content creation part. We don't have the necessary workforce.

I asked whether they had tried to buy up game development firms. The interviewee said,

Merging is not easy either. Game developers have a different kind of cultural orientation that is not quite compatible with this type of big company, like other creative artists. And game developers don't want to work here. We offered positions to some people before, but they have refused the offer, even though we suggested competitive salaries. They want to be with similar kinds of people.

Even if we merged with a game developer company, if they have to act as part of a bigger organization like us, it would not be favorable for their creative work. Therefore, I think, although things could change in the future, as of now the best is buying digital content from digital content creators.
(Interview with SKT Communications)

Although SKT expanded its business to include Internet business, its capacity for creating digital content is limited. One important reason for this is that the company lacks talented people. Few talented and experienced workers want to work in large firms; they prefer risk-taking, creative work environments. As with most other cultural products, the most important developmental resource is creativity. At the same time, for some items such as mobile games, it is important to understand what kinds of features are appealing to game players. These attributes are not easy to grasp unless

the person himself/herself is actually a “game maniac” (SKT interview). Therefore, small digital content firms are a necessity for big firms’ digital content business.

Despite all of the sharply conflicting interests and competitive positions of service providers and content creators, there are common interests that can provide an impetus for the two parties to cooperate. In the next section, I will map how the social relationships between service providers and content creators shape and contribute to innovation.

The Large–Small Firm Relationship: A Tiered and Reciprocal Relationship

I found the relationship between digital content creators and publishers is unevenly developed and tiered (Figure 5-11). Competitive firms have developed close cooperative relationships with publishers but not necessarily an exclusive business partner relationship with one publisher (selective cooperation). In this case, the interfirm relationship transcends economic transactions (supplying digital content products). They share critical information such as future market/consumer information and exchange specific know-how. Sometimes, digital content creators and publishers create a co-project. In this case, the publisher provides financial and technical opportunities for the digital content developer.

Firms with less strength enjoy less advantageous relationships with publishers. The decision about which level of relationship to seek is made by the publisher, depending on what the content creator can bring to the cooperative relationship, especially economic benefit. However, the business relationship is not solely determined by publishers. Digital content creators with strong capacity have more liberty to choose their interfirm relationship, even with large firms.

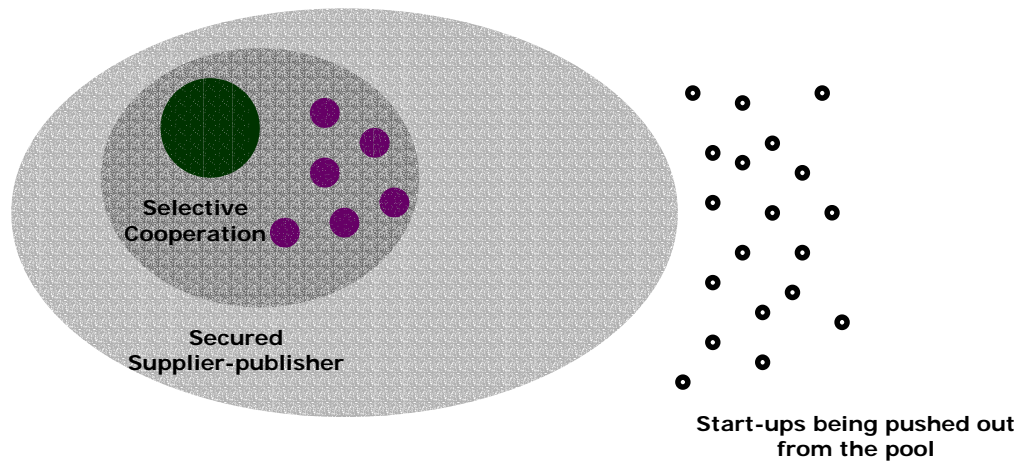


Figure 5-11. Tiered Small and Large Firm Network.

What is interesting in the interactions between content creators and mobile service providers in Teheran Valley is their intensive interpersonal face-to-face communication. In the U.S. digital content industry market, intermediary institutions called syndicators work between large publishers and small content creators. Syndicators play a role as wholesalers in the digital content market: They buy digital content products from content creators and publish them through their Web sites or sell them to other Internet portals or mobile service providers.

They also provide business consulting services or add value to a digital content product by processing it according to market demand. However, in the Korean digital content industry, the role of the syndicator has not yet fully developed.¹⁴ Therefore, both content creators and mobile service providers transact directly, with no middleman between them. Instead, content creators and mobile service providers show very intensive face-to-face interactions. In this context, the spatial proximity because as an important factor.

¹⁴ It is hard to define whether the underdevelopment of syndicator sector in the Korean digital content industry is the matter of evolutionary path of the industry or is locally specific and unique structure of the digital content industry only found in Korea. For further clarification, comparative study is required.

Figure 5-12 shows the co-location of small and large firms. Most large firms are located alongside Teheran Road, the major arterial. Digital content creators are much more spread out, but they are still located in road-facing buildings because of the linear commercial zoning area limited to those blocks immediately adjacent to the roads.

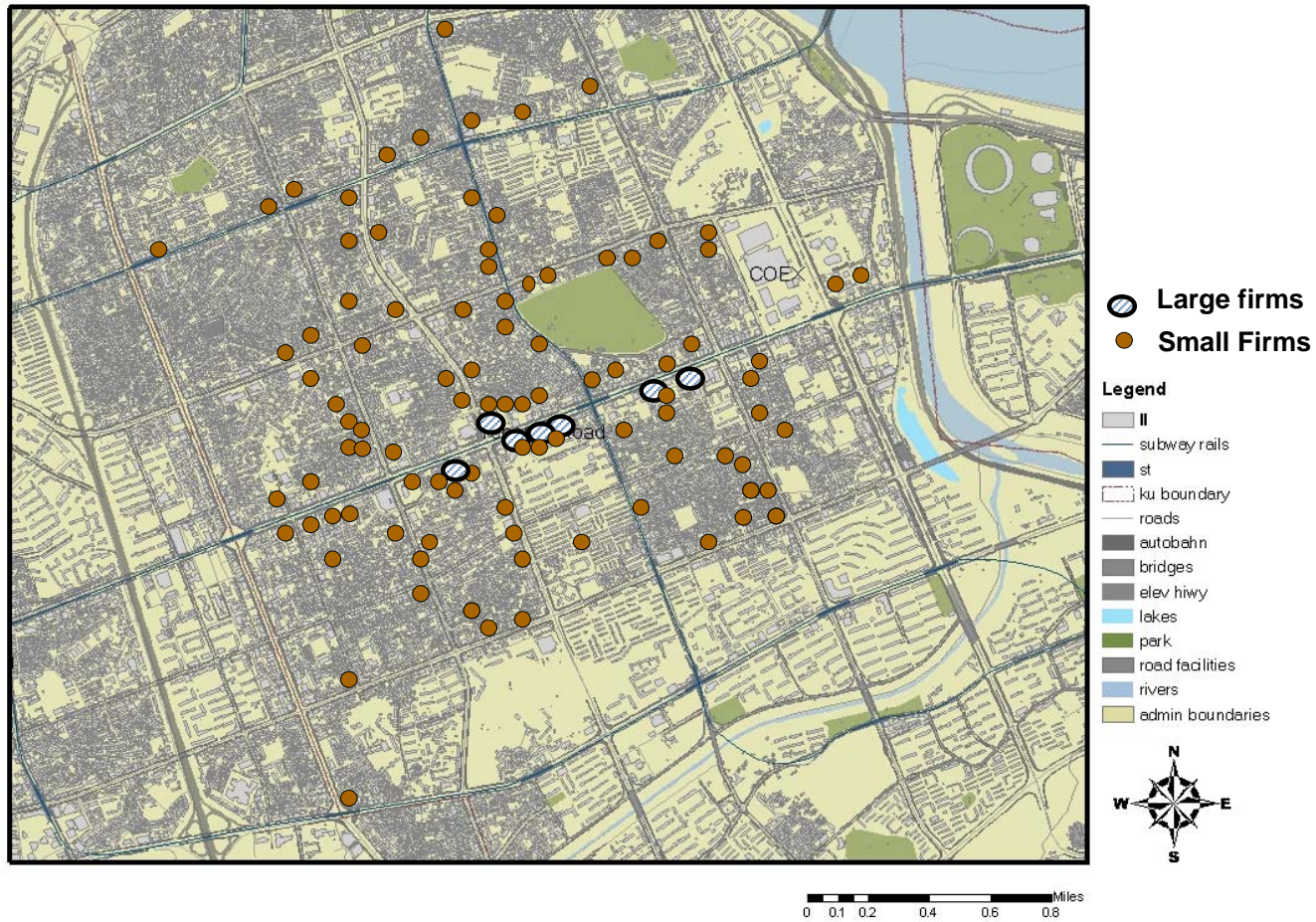


Figure 5-12. Spatial Dimension of Small and Large Firm Cooperation. Source: Map created by the author based on data from 100 firms from KIPA 2004.

CHAPTER VI: THE ROLE OF GOVERNMENTAL POLICIES

1. Is State Policy Important to the Local Industry Cluster?

In the previous chapter, I showed that the economic strength and resilience of the digital industry cluster known as Teheran Valley lies in its in-house production systems for content creation, the small and large firm cooperation that facilitates information exchange, new technology adaptation, and collaborative problem solving; and the informal social organization of digital content creators that helps to protect their know-how and skills. I also discussed the notion that the distinctive form of the production systems and social organizations of Teheran Valley is, in fact, the result of adaptive strategies taken by digital content creators in the face of heightened market competition, especially after large telecommunications corporations expanded their business models to the digital content industry sector, which was formerly dominated by small firms.

This firm-centered, local level investigation of an industry cluster illustrates only a part of the whole picture. Most studies of creative industry clusters examine local level institutions and governance as one of several important factors in creating and operating industry clusters. However, the forms and operational mechanisms of local industry clusters are in fact forged by national level regulatory controls because national level industry policies influence the growth of specific industries, interfirm relationships, and the operation of particular industry transactions.

In placing the mechanisms of a local industry cluster in a broader context, I focus on the interactions among different scales of governances including the supranational, national, and industry levels: a multi-scalar approach. A multi-scalar perspective of economic liberalization contends that economic liberalization is not

simply shaped by supranational pressure, but also is constituted by the actions of other social actors (Bae, 2003). In particular, the perspective emphasizes the significance of the role of the nation states and their interactions with supranational pressures in shaping the changing geography of the global economy.

I have shown the role of social actors at the local industry cluster level in Chapters 4 and 5. In this chapter, I focus on actions taken by the Korean national government in the face of international pressure to liberalize the Korean economy. There were three critical historic events that vividly showed the geopolitics of economic liberalization and that affected the initial formation and the growth of the Korean ICT industry and the digital content industry: trade conflict with the United States in the 1980s, a financial crisis in the 1990s, and the advent of the WTO regime in the 2000s.

To cope with the economic liberalization pressure, the Korean government has gradually adjusted its role from that of a protectionist and interventionist state to a more indirect and complex engagement with private-sector economic activities. However, Korean industrial policies have never reached the stage of the Anglo-American liberal market system. Instead, by re-scaling and flexibly adapting the role of the state, the Korean government has strived to mediate the economic liberalization pressure from the supranational level and has redistributed it to domestic actors (actors in the ICT and digital content industries) in various ways.

The time frame of this chapter covers the three decades from the 1980s through the 2000s. However, my investigation specifically focuses on three historic events imposed by supranational structure list above and the Korean government's reaction to those pressures. This reflects the historical institutionalism and structure-agency interaction of my analytical framework. In this chapter, I discuss the consequences of these supranational and national activities on the Korean ICT industry, especially their

impacts on building broadband infrastructure and shaping the telecommunications market.

The sectoral analysis will enable me to present policy direction changes chronologically and to address how the Korean government responded to international market competition and the pressure to liberalize its domestic market. In this way, one can observe how national governmental policies penetrate into different levels of economic activities and social organizations. This approach also shows how the Asian developmental state for the industrial era has transformed itself to bring about a “new economic order” under post-industrialization in the global economy. The scope of governmental policies that affected the ICT and digital content industries cover firms, labor, technological standards, and consumer supports that affect industry supply and consumer demand (See Table 6-1).

I argue that in the face of economic liberalization; this period of institutional re-arrangement brought critical opportunities for small firms to grow strong during the rupture of large corporation oriented economic and industrial policies. Second, the promotion and diversification of the digital content industry sector facilitated the entry of large firms into the already established digital content market.

2. The 1980s: Technology Capacity Building and Trade Conflict with the United States

During the 1980s the Korean government started to redirect its economic structure from a manufacturing-oriented industry structure to a post-industrial one. Therefore, the Korean government increased the concentration of its financial and organizational support to breed technological capacity to transform its economy to a high-technology-oriented one.

Table 6-1. Governmental Policies that Affected the Growth of the Digital Content Industry in Korea.

Type of policies	Policy Programs
Economic Reform Policies	<i>Chaebol</i> Reform, Financial Market liberalization, Venture Promotion
Industrial Development Plan	The Framework for Building Electronic Network, 1985 Usage Promotion and the Master Plan for National Electronic Network Building, 1987 The Framework Act on Informatization Promotion, 1994 Cyber Korea 21, 1999 E-Korea Vision 2006, 2002
Organizational reform	Creating the Ministry of Information and Communication, Designating SMBA as the leading governmental organization for SME sector promotion
Controlling actors	License controlling of mobile phone service carriers
Setting up the technological standard	CDMA designation as the national technological standard for the third generation telephony (mobile telecom)
Securing financial resources for SMEs	Creating venture capitalist market Establishment of KOSDAQ market
Subsidies	Venture start-up fundings
Legal settings	Venture Promotion Special Act, 1996 Software Industry Promotion Act, 2000 Online Digital Content Industry Promotion Act, 2002
College education/ Labor vocational training	Establishment of advanced science and technology educational institutions Encouraging community colleges to establish course on online digital content
Creating consumer demand	Internet literacy program Redistributing old computers in rural areas

Transformation into a Knowledge Based Industry

In the early 1980s, after the development of its manufacturing sectors such as shipbuilding, textile, and white electronics, Korea's state planners continued to transform its economy into a knowledge-intensive one through technological

innovation (Korean Economic Planning Board, 1980, 5th Economic-Social Development Plan). During this period, the Korean government still strongly influenced industrial sector development and strived to create the foundation for further informatization by establishing various legislations and institutions (Kim, 1997) and providing subsidies.

Technical education is the most basic infrastructure for informatics development, and Korea has excelled in its expansion. Evans (1995) elaborated on the Korean government's efforts to reinforce national technical education and R&D investment by comparing the growth in these two areas with Brazil and India. According to him, in the late 1980s, although Brazil's population was three times that of Korea's, Korea had one-and-a-half times the number of postsecondary students studying mathematics, computer sciences, and engineering.

He also identified two institutions set up by the Ministry of Science and Technology (MOST) as leaders of this change in Korea: the Korean Institute of Science and Technology (KIST), at the graduate level; and the Korea Institute of Technology (KIT), at the undergraduate level; both located in Deaduk Science Town, the state-sponsored technopolis. Pohang Institute of Technology (POSTEC), which was established in Pohang by the state-owned steel corporation, later joined these leading institutions of advanced science and technology educational institutions.

Over the course of the 1970s and 1980s, Korea's investment in R&D moved from a level typical of developing countries to one that challenged those of advanced industrial countries. The contrast between Korea's evolution and that of Brazil and India is striking. In relation to R&D, all three countries started out with less than one-half of one percent of GNP in 1970. Korea soon pushed up toward two percent, while India remained at half Korea's level and Brazil was mired at an even lower level (Evans, 1995).

At the beginning of the 1980s, when local firms began producing PCs, the government provided them with an initial domestic market by ordering a large number of machines for educational use and also issued a decree protecting them from foreign competition. In 1983, the domestic market was still only about US\$100 million, and the government had already put forward a special developmental plan for the informatics sector (Evans, 1995). The Framework for Building Electronic Network and Usage Promotion and the Master Plan for National Electronic Network Building were enacted in 1985 and 1987, respectively.

During this period, the localization of advanced telecommunication technology became an important policy issue. The Ministry of Communication (MIC) came up with a plan to build a nation-wide direct distance dial system. However, building this new system required a massive investment in new switching equipment, which was produced by only a handful of transnational companies. Korean policy makers saw that localizing the automatic switching system would be an important moment to secure the domestic technological development and growth of local companies (Hyun and Lent, 1999; Evans, 2000). Therefore, the Korean government organized a project to develop a new automatic switching system through the Electronics and Telecommunications Research Institute (ETRI), which was the key research organization of the MIC (Evans, 2000). As a result, the TDX-10, a locally developed digital automatic switching system, was successfully adopted into the building of a nation-wide direct distance dial system.

International Trade Conflict

Because of its technological advancement and price competitiveness, the TDX-10 became an important export commodity for the Korean economy, and the major buyers were U.S. telecommunications service carriers (Evans, 1995). At that time, U.S.

long-distance telecommunications service carriers faced fierce competition after the full-scale telecommunications market liberalization and were seeking equipment such as the TDX-10 based on price competitiveness (Evans, 1995; Hyun and Lent, 1999). In 1988, for example, the U.S. market was flooded with Korean products, absorbing about 40 percent of them. The U.S. trade deficit with Korea, in telecommunications equipment, reached more than US\$100 million in 1985 and a record US\$443.7 million in 1987 (Hyun and Lent, 1999). And this situation later caused serious trade conflicts with the United States.

In 1989, Korea was identified as a priority foreign country (PFC)¹ by the United States, and after a series of negotiations, the U.S. Trade Representative (USTR) Carla Hills and the Korean government made a comprehensive agreement in their tenth round of negotiations. (Hyun and Lent, 1999; Evans, 1995). The agreement required Korea to lift investment restrictions on U.S. value-added network businesses from 1994 and to open government procurement bidding at the level of the GATT. Based on this agreement, 8.8 billion won out of the total 21.6 billion won worth of the telecommunications sector in government procurement and 39.7 billion won out of 49.7 billion won worth of Korea Telecom's procurement were open to U.S. businesses in 1992 (Hyun and Lent, 1999).

The international pressure to open the Korean domestic market, especially the telecommunications market, continued into the 1990s with the WTO Basic Telecom Agreement in 1991 and with Korea's identification as a PFC by the USTR once again in 1996 (Hyun and Lent, 1999; Jho, 2003). For the second PFC designation, the Korean government started reacting strongly against the U.S. stand, which led to a compromise and withdrawal of the case, after a "successful WTO Basic Telecom

¹ Section 137 of the Omnibus Trade and Competitiveness Act of 1988. Problems cited included discriminatory procurement practices, "buy local" policies, lack of transparency, and trade secret protection (USTR, 1995).

Agreement” that again put the Korean government in a position to open its domestic telecommunications market to foreign investors and service carriers on a wider scale by 1997 (Hyun and Lent, 1999; Jho, 2003).

3. The 1990s: The Financial Crisis and Breeding SMEs and the ICT Industry Sector

The Financial Crisis and Economic Reform

Shrinkage of the developmental state in Korea became more dramatic after the 1997 financial crisis. The Korean government responded to the external shock by making drastic changes in its industrial policies that would lead to a free market system.

Following financial crisis in South Asian countries in 1997, the Korean economy ran into an official financial crisis in November of 1997. The ensuing turmoil of the economic shock brought major changes in the Korean economic structure. The Asian financial crisis discredited the Korean government’s policies and reduced the public’s faith in its ability to secure economic development through the state’s traditional regulatory arrangements and promotional policy. The IMF believed the financial crisis in Korea was a result of the shortcomings of state-guided development. To resolve the structural problem of the Korean economy, the IMF stated that, as a condition for obtaining its bail-out loans, Korea had to adhere to the economic programs it prescribed, which consisted of three elements: (1) macroeconomic retrenchment, (2) market opening, and (3) structural reform (Shin and Chang, 2003).

As part of its economic restructuring program (more specifically, corporate reform), the Korean government also strived to promote SMEs. The *chaebols* were condemned as overly-diversified groups of inefficient firms surviving on low profit only because they could borrow more than they deserved on the basis of their

collusion with the state and banks, and because of “unfair” intra-group transactions. Therefore, the *chaebol* structure became the major target of reform, because it was accused of being the cause of the “over-expansion without accountability” that led to the crisis. The *chaebols* were made to radically reduce their debt-equity ratios, which rose far above 400 percent at the end of 1997, to 200 percent in less than two years’ time. Loan guarantees and internal transactions among the *chaebol* affiliate firms were prohibited. The *chaebols* were also requested to concentrate on core businesses. The reform of corporate governance was particularly predicated on the perception that the dictatorial management by the owner families was the root cause of their reckless expansion and the consequent national financial crisis. Together with corporate reform, the Korean government initiated the promotion of small and medium-sized firm sectors as part of its economic restructuring programs (Shin and Chang, 2003).

Besides the Korean economic reform as the condition of the bailout, the Korean government mapped out strategies to rehabilitate the devastated Korean economy. One of these was promoting the ICT industry sector to assist the transformation of the economic structure to a post-industrial one (Joo, 2003).

Small and Medium-Sized Enterprise Sector Promotion and Venture Boom

Coinciding with the Korean financial crisis in late 1997, this program became a powerful economic-restructuring policy program. With the rising skepticism surrounding government-led large corporation centered economic development model, the idea of promoting venture companies was applauded by both the public and private sectors. There had been several initiatives by previous Korean governments to promote SMEs. However, the support for SMEs through the subsidization of “venture business” and of venture capital by Kim Dae-Jung’s government after the financial crisis was unprecedented in several respects such as governmental subsidies for start-

ups, creating a venture capital market, legal support, and venture buildings (Shin and Chang, 2003).. In the following section, I discuss the elements and characteristics of SME promotion policies.

The Organizational Concentration of Venture Promotion on the SMBA

The venture promotion policy consisted mainly of three important components. First, the government promoted the Small and Medium Business Administration (SMBA) to a separate vice-ministerial level organization and put it in charge of the new, comprehensive scheme to promote SMEs. Previously, the SMBA was under the direct control of the Ministry of Industry, Commerce, and Energy (MOCIE), in which the view of large business used to be more dominant. However, by making the SMBA directly accountable to the president, the Kim government gave it considerable power. The Kim government made the MOCIE itself accept the promotion of SMEs (in collaboration with the SMBA) as one of its key tasks (from an in-depth interview with a governmental official at the SMBA).

Governmental Subsidies

Second, an unprecedented amount of public money was poured into supporting venture businesses. The government launched the 100 billion-won Korea Venture Investment Fund with co-investment by foreign investors in 1999. Public funds spent in supporting the establishment of new SMEs, mainly by investing in or leading to venture capital and venture companies, increased 35-fold, from 34.3 billion won (\$28.7 million) in 1997 to 1,237 billion won (\$1,030.8 million) in 1999 (SMBA Web site). One of the problems associated with the start-up and growth of an SME is finding funding resources.

The Korean economic system had not seen venture capital emerge based on a market system. Therefore, the Korean government decided to create a loan investment

fund for venture capital companies. This was an indirect way of subsidizing venture start-ups. After the institutional reform, in which regulatory and advisory governmental policy measures were eliminated, SMEs found ways to inject money into the ICT venture sector without providing direct subsidies (Shin and Chang, 2003; from an in-depth interview with a governmental official at the SMBA).

Legal Support

Third, the government enacted several laws specifically designed to support venture businesses and provided those businesses with an array of tax and financial benefits. For instance, those certified as venture companies or “venture capitalists” by the government were either exempt from or received a reduction in income and sales taxes. Income from stock swaps among venture companies also was exempted from capital gains taxes. Various incentives for encouraging spin-offs from universities and research institutes also were introduced. Existing regulations on the KOSDAQ (the Korean version of the NASDAQ) were substantially eased so that start-ups could be more easily listed in the KOSDAQ. Even de-listing from the Korea Stock Exchange and re-listing on the KOSDAQ was encouraged (Shin and Chang, 2003; from an in-depth interview with a governmental official at the SMBA).

Venture Buildings

One proactive policy was the provision of venture buildings at the national and municipal levels. To support start-up companies the national and city governments rented some building spaces, such as Seoul Venture Town, Seoul Venture Incubator, Korea Soft Start Up Consulting, and E-biz Holdings (Seoul City internal document). These spaces were designed to support start-up firms with comparatively lower rents with other amenities such as communal conference rooms, educational facilities, and commonly shared technological equipment. Being in a venture building also brings

other funding advantages because the process to get into the venture building itself is a competitive one—winning the opportunity suggests that the company is already strong enough. However, as discussed in Chapter 3, the overheated venture boom finally ended its short life after the KOSDAQ crash in 2001 (for further discussion about the dot.com crash, refer to Chapter 3).

The Initiation of the ICT Industry Promotion: Creating the Ministry for the 21st Century

The major ICT industry development effort started with the consolidation of decentralized governmental functions for ICT industry promotion into the Ministry of Information and Communication (MIC). This ministry was created from the former Ministry of Communication (MOC) through governmental organizational reforms in 1994 that integrated telecommunications-related functions from other ministries such as the MOTIE, the Ministry of Science and Technology (MOST), and the Ministry of Public Information (MPI) (MIC, 1995 White Paper). The MIC increased its jurisdictional functions over software areas, which were formerly under the jurisdiction of the Ministry of Culture (currently the Ministry of Culture and Tourism).² As a result of this organizational reform, the MIC succeeded in taking jurisdiction over telecommunications equipment and software, as well as all communication networks. Since then, the MIC, also called the “Ministry for the 21st Century,” has become the principal governmental agency regulating the marketing and promotion of the ICT industry (Jho, 2003).

² This jurisdictional expansion later caused intergovernmental organizational competition and conflict, especially with the Ministry of Culture and Tourism over the authorities on software and cultural digital content.

Five-Year Plans: Creating Visions and Institutional Infrastructure

The 1994 Framework Act on Informatization Promotion introduced by the MIC was critical in that it provided the basic framework for the informatization of Korean society. This law requires the central government to establish phased informatization programs every five years, such that the content of the plans should be comprehensive enough to address informatization strategies across different industries, governmental organizations, educational institutions, and workforce development plans.

To promote the ICT industry, the MIC created three five-year industry promotion plans, in 1994, 1999, and 2002. These plans are the Informatization Promotion Basic Plan, Cyber Korea 21, and E-Korea Vision 2006. In these ICT development plans, the MIC envisioned the direction of economic development and structural changes (specifically, economic development toward a knowledge-based economy), identified the roles of ICT industries, and proposed strategies to achieve goals. The proportion of the Gross Domestic Product that ICT industries occupied was 8.6 percent in 1997 and 14.9 percent in 2002 (MIC, 2002).

Among these, the Framework Act on Informatization Promotion in 1994 provides the basic framework for the informatization of Korean society and delegates governmental authority over informatization to the MIC. This law requires the central government (MIC) to establish phased informatization programs every five years, such that the content of the plans should be comprehensive enough to address informatization strategies across different industries, governmental organizations, educational institutions, and workforce development plans. The MIC also established the Informatization Promotion Fund, grounded on this law, outside of the regular governmental budget for funding various governmental projects. The Korean government invested a total of \$11 billion in broadband services between 1998 and

2000, and it also provided \$77 million in loans at the prime rate for investment in access networks by Internet service providers (Chang, 2005).

Building a High-speed Internet Infrastructure

The Internet infrastructure market was monopolized by the Korea Telecom Authority (KTA), an MIC-owned enterprise. As part of the telecommunications market liberalization, the MIC decided to transfer the rights to building the high-speed Internet network by issuing licenses to a limited number of private corporations such as LG (with LGT), SK (with SKT), Daewoo, and KT (Jho, 2003). Many governmental reports and research papers indicate that this market structure change accelerated the construction of high-speed Internet infrastructure.

For instance, the introduction of multiple actors in the Internet infrastructure market also led to fierce competition in Asymmetric Digital Subscriber Line (ADSL)³ construction. In 1998, the KTA planned to provide ISDL following the Japanese model. However, Hanaro Telecom, a latecomer to the high-speed Internet infrastructure market, announced that it planned to provide ADSL, or the so-called broadband high-speed Internet network. This was Hanaro's market-entrance strategy to increase its share in the high-speed Internet infrastructure market, which the KTA had already monopolized. Upon Hanaro's challenge, KTA finally changed its plan from Integrated Services Digital Network (ISDN)⁴ to ADSL. As a result, since the late

³ "ADSL is a form of DSL, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide. It does this by utilizing frequencies that are not used by a voice telephone call. A splitter or micro filters allow a single telephone connection to be used for both ADSL service and voice calls at the same time. Because phone lines vary in quality and weren't initially provisioned with ADSL in mind, it can generally only be used over short distances, typically less than 5 km." Source: <http://en.wikipedia.org/wiki/ADSL>.

⁴ "ISDN is circuit-switched telephone network system, designed to allow digital transmission of voice and data over ordinary telephone copper wires, resulting in better quality and higher speeds than that which is available with the PSTN system. More broadly, ISDN is a set of protocols for establishing and breaking circuit switched connections, and for advanced call features for the user." Source: http://en.wikipedia.org/wiki/Integrated_Services_Digital_Network

1990s, ADSL has been the dominant technology in the Korean high-speed Internet network infrastructure market (In-depth-interview; Lee and Chan-Olmsted, 2004).

Upon the introduction of a private company into the infrastructure market, the MIC also attempted to ease the infrastructure construction processes. Before this liberalization, the KTA was in charge of building and maintaining the telecommunications infrastructure, which had generated a great deal of profit for the MIC. Under its monopoly structure, the KTA had an authority exceeding that of any local municipality. Therefore, the use of public land and the public utility conduit were not subjects of dispute between the KTA and local municipal governments. As the Korean government transferred the rights to build high-speed Internet networks to private network carriers, it was expected that there could be many conflicts and disputes between private carriers and local municipalities. Therefore, to facilitate the building of the network by reducing conflicts and disputes, the Korean government also authorized private carriers to use public lands and public utility conduits to install their high-speed Internet lines (Informatization Promotion Act, 1994).

Controlling the Structure of the Telecommunications Market: Monopoly, Duopoly, and Oligopoly

From Monopoly to Duopoly. After its designation as a PFC in 1989, the Korean government reluctantly introduced competition into the telecommunications sector. Both the introduction of a duopolistic system in the international and wireless service markets and the granting of permission for complete competition in the value-added service market were the initial steps of Korean policymakers reacting against the U.S. demand for market opening (Hyun and Lent, 1999).

The new policy was designed “to improve the competitive edge of the domestic industry three years ahead of a full-scale market opening under the new world order of the WTO” (Kim, 1995, page number??). Immediately following the

introduction of Shinseghi, which created a duopolistic market, the MIC confirmed a second-round restructuring plan that further initiated “deregulation” and “competition” in the telecommunications market in 1994 (MIC, 1994).⁵

From Duopoly to a Competitive Market. According to the 1991 WTO agreement, the Korean government was supposed to fully open the domestic telecommunications market by 1997. In 1995, in order to prepare for the upcoming changes, the MIC established a comprehensive competition system in telecommunications with numerous service carriers. Despite strong opposition in the National Assembly, restrictions on foreign ownership were reduced ahead of the market opening agreed to under the WTO agreement in 1996 (MIC 2005).⁶ Table 6-2 shows changes in the number of carriers participating in each telecommunications market at different times. After the mid-1990s, each market subsector had more than two carriers.

With the massive opening of the telecommunications sector to new service providers in 1997, there was no longer duopolistic competition in any of the telecommunication service sectors except local and long-distance services. As a result, the Korean telecommunications market experienced ‘fierce domestic competition’ (Jho, 2003).

⁵ With the new policy, the government planned to select about 30 new service providers in seven different fields, such as international telephone service, personal communications service (PSC), paging codeless telephone-2 CR2, trunked radio service (TRS), wireless data communications, and private leased circuits (Lee, 1995). Almost all *chaebols* also started to review their master plans to enter the telecommunications service market, to form a consortium of companies, and to seek technical assistance from foreign telecommunications companies (Lee and Lee, 1995).

⁶ The MIC allowed 27 separate operating licenses in the PCS market, Trunk Radio Services, CT-2, leased-line facility rental, international telephony, radio paging, and wireless data transmission in 1996. The government licensed the second local telephony carrier, Hanaro, in which DACOM is the largest shareholder.

Table 6-2. Number of Carriers Participating in Each Telecommunications Market, 1990–1998.

Period	Carrier category						
	Local	Long-distance	International	Mobile phone		Leased-line	Radio-paging
				Cellular	PCS		
1990	1	1	1	1	-	1	1
1990–96	1	2	2	2	-	2	11
1996–98	2	3	3	2	3	6	13

Source: Ministry of Information and Communication, www.mic.go.kr

Holding the License Limits to Avoid Oligopoly by Big Firms. However, the competitive market mechanism was still in the hands of the MIC. Instead of opening up the market to full competition with no entrance limit, the MIC held the “telecom business carrier license distribution” card. Therefore, the process of liberalization involved intense political struggle amongst corporate and governmental officials because the MIC prevented the Korean *chaebols* from entering the mobile services market in order to keep the telecommunications market from being dominated by an oligopoly of a few big firms. At that time, Korean telecommunications manufacturers (e.g., Samsung, Daewoo, the LG group, and Hyundai) rushed to join the telecommunications services market, and they pressured the MIC to relax ownership regulations on Korean manufacturers for telecommunications services.

The MIC had to fight not only Korean *chaebols* but other ministries that supported the entrance of the *chaebols* into the telecommunications services market, such as the Economic Planning Board (EPB), and the MOTIE. In disputes over the matter, the Korean *chaebols* were discouraged from managing service companies, and small and medium-sized firms such as Hanaro and Dacom gained the right to participate in the mobile services market.

Creating a Critical Mass to Cope with Global Competition. However, later, as the WTO-related regulations moved forward, Korean officials stressed that having “national champion” operators in the mobile phone market, with financial and operational scale, was important for successful participation in the global market (Jho, 2003). They strongly recommended the restructuring of operators through strategic alliances or through mergers and acquisitions (M&As), and the telecommunications companies were vigorous in their efforts in this regard because the reduction of competitors in the market helped them expand their market control. As a result of serious negotiations, three mobile phone service carriers, including SKT, KTF, and LGT, remained.

Triggered by the introduction of new competitors into the PCS market, price competition began. Price competition led to a sharp reduction in the price of mobile phone handsets. And the much-lowered price led to a rapid diffusion of mobile phones. In fact, there had been considerable demand for mobile phones since the mid-1990s; however, because of the high price of handsets, potential users had hesitated to use the service. As new PCS service providers entered the market, in order to catch up to existing cellular providers these newcomers lowered handset prices by providing subsidies to new subscribers. Therefore, despite the poor economic conditions that resulted from the financial crisis, the mobile phone market generated an explosive growth for a short period. The number of mobile phone subscribers rose more than threefold, from 6.8 million in 1997 to 23.4 million in 1999 (Jho, 2003).

Setting Technological Standards

Technological standard compatibility is vital for telecommunications, where equipment must match the network. A standard is a technical specification that ensures compatibility so that products can be traded (Saloner, 1985; Lassner, 1995). It establishes the principles and frameworks for the operation and interconnection of

related technologies and products. The existence of technical standards provides manufacturers and service providers with the advantages of compatibility so that they can avoid the difficulty of meeting complex requirements to connect to the network. Beyond this, by setting a higher technological standard, Korea could cut some steps in the informatization process and successfully increase the number of Internet users.

Korea was the first market in the world to adopt the CDMA format as the standard for its national wireless telecommunications infrastructure. Although CDMA technology was developed by a U.S. firm, Qualcomm, in 1991, it had not yet been commercialized. In 1993, the Korean government decided to employ CDMA technology for the domestic PCS phone market to take advantage of being a first-comer in the world CDMA market and to achieve technological independency (Joo, 2005). At the same time, because this technology provides a much larger capacity than other commercialized technologies, it is also able to contribute to accommodating a large number of users. The technology was developed by the Electronics and Telecommunication Research Institute (ETRI), one of the research arms of the MIC. The ETRI led the project to develop CDMA technology in cooperation with SK Telecom. The government concentrated on providing research manpower and capital while sharing the burdens of the initial investment and the risk of failure (Jho, 2003).

Because the Korean government designated CDMA as the mandatory technology for the Korean wireless telecommunications market, local firms had to adjust to this if they wished to enter and participate in the market. Setting up a unified technology standard increased compatibility among multiple manufacturers and mobile phone service providers. As a result, Korean firms currently dominate 80 percent of the international CDMA market (Jho, 2003).

Creating a Strong Domestic Market by Boosting Consumer Demand

To stimulate the domestic ICT market, the Korean government also implemented various public policies aimed at increasing consumer demand. Two of the most important and effective policies were Internet education programs and Internet literacy programs for housewives, farmers, and soldiers. The increase in Internet user groups and supplies of affordable computers boosted high-speed Internet subscriptions. The chain effect, along with the Internet gaming boom, the increase of PC bangs, and increased number of personal Web pages, also contributed to the rapid Internet boom in Korea.

During this period, the number of Internet users grew even more dramatically than the number of mobile phone users, increasing 5.1 times within 2 years—from 1.6 million in 1998 to 10.8 million in 2000. Since commercial Internet services were first introduced in Korea in 1994, the number of Internet users increased gradually until 1997, when it stood at 1.6 million. The number of Internet subscribers reached 27.8 million by the end of May of 2002, and personal computer diffusion reached 77.6 percent of households at the end of January of 2002.

Price competition was triggered by the introduction of new competitors in the PCS market. It led to a sharp reduction in the price of mobile phone handsets, which led to the rapid diffusion of mobile phones. There had been considerable demand for mobile phones since the mid-1990s; however, because of the high price of handsets, potential users hesitated to use the service. As new PCS service providers entered the market, these newcomers lowered handset prices by providing subsidies to new subscribers to catch up with existing cellular providers. Therefore, despite the poor economic conditions that resulted from the financial crisis, the mobile phone market generated an explosive growth for a short period. Within two years, the number of mobile phone subscribers rose more than threefold, from 6.8 million in 1997 to 23.4

million in 1999 (MIC, 2005). Following its introduction in 1986, commercial mobile phone service grew slowly until 1996, when the number of subscribers stood at 3.2 million. At the end of March of 2002, however, the number of mobile phone subscribers exceeded 30.3 million out of a total population of 47 million. This contributed to the rapid increase of mobile phone subscribers despite the severe economic downturn after the financial crisis.

4. The 2000s: Digital Content Industry Promotion Centered on SMEs

In early 2000, the ITC industry promotion policy changed its direction. Previous ICT industry promotion in 1990s was mainly intended to create jobs to overcome economic devastation; hence it focused on the generation of new start-up companies in the digital content industry. However, beginning in early 2000, the policy direction began to foster higher quality digital content to meet increased market demand.

With the advancement of data transmission technology such as high-speed Internet networks and broadband telecommunications, and with the explosive increase from the late 1990s in Internet and mobile telecommunications subscribers, the domestic demand for digital content in both wired and wireless networks increased dramatically.

On the other hand, advances in ICT technology expanded the convergence of digital technologies and traditional content into a wider variety of fields such as governmental civil service, medical service, education, home automation, and various types of entertainment. The diversification and expansion of the digital content industry provided an important opportunity for economic development.

The Digital Content Industry as a Strategic Industry

After achieving a higher penetration of advanced technological standards in the ICT industry and in network infrastructure construction, the Korean government turned its interest to value-added industries beyond hardware production and infrastructure construction, such as the software industry and the digital content industry. This direction became visible and active beginning in early 2000 and resulted in the growth of star players that have a competitive advantage in the global market.

Responding to the Cyber Korea 21 plan, the MIC enacted the Software Industry Promotion Act (2000) and the Online Digital Content Industry Promotion Act (2002). The latter, in particular, establishes an institutional system to support the digital content sector as an independent industry sector. This law also designates the Korea IT Promotion Agency (KIPA) as a principal governmental institute that collects basic data on the digital content industry and workforce, envisions digital content industry development plans and implements actions plans, and helps digital content businesses enter international markets such as China, Japan, and the United States. In doing so, the program aims to develop and support small-sized digital content creators. These governmental efforts succeeded in increasing the number of small and medium-sized digital content creators.

In 1999, the MIC followed up on the first-phase informatization plan, the Basic Framework for Informatization, by creating the second-phase plan, Cyber Korea 21. In this plan, the main goal shifted from establishing a basic institutional framework and infrastructure to creating a knowledge-based economy. This second plan aimed to 1) advance the existing information infrastructure to shift the Korean economy to a creative knowledge-based one, 2) enhance overall national productivity utilizing the knowledge information infrastructure, 3) promote value-added business models, and 4) create new jobs in the ICT industry sectors. In part, the plan was also implemented

to resolve the extraordinarily high unemployment rate that resulted from the 1997 financial crisis; the promotion of new industries would lead to further informatization and would maximize job creation (MIC, Cyber Korea, 21, 1999).

Among its various action plans, the MIC addressed the importance of the continual growth of Internet-based businesses in rehabilitating the Korean economy. Therefore, the MIC introduced the following action plans to promote Internet-based businesses, which are mainly small and medium-sized businesses: the facilitation of electronic commerce, the vitalization of the software industry and ICT venture businesses, the support of spin-offs from universities and research institutes, and the promotion of cultural industries (games, animation, images, and recording) (MIC, Cyber Korea, 21, 1999). The mobile phone, Internet portal, and high-speed Internet infrastructure markets mainly consisted of large firms benefiting from economies of scale.

The Continuing Effects of SME Promotion Policies

Although the SME promotion policies after the financial crisis in late 1990s ended with the dot.com crash, their effects continued. First, although the dot.com crash hit high-tech manufacturing firms and Internet-based businesses, both of which were popular business models in the late 1990s, Internet portal companies such as NHN (a search engine and blog), DAUM (an Internet community), Freechal (an Internet community), GreTech (game and digital-content-related software), DreamWiz and NC Soft (online games), which had started as venture companies in Teheran Valley in the late 1990s, became very successful business in the early 2000s, despite the severe economic downturn after the dot.com crash.

One reason they survived the dot.com crash was that they diversified their financial resources. Many venture firms established to catch the dot.com boom in the

late 1990s were funded by speculative venture capital, which was an easy way to obtain funding (from an in-depth interview). Some venture firms aimed to earn quick money from venture capitalists and saw huge earnings from the KOSDAQ at one stroke. By contrast, these firms developed stable business models and grew their businesses gradually.

The Expansion of the Digital Content Industry Market

Responding to the Noh administration's industrial policy, the MIC proposed the "IT 389 Plan" in 2003. The IT 389 Plan is an action plan to accomplish the goals presented in IT Korea Vision 2007. More specifically, the IT 389 Plan is a strategic plan to promote and improve eight important services, including, for example, telematics and home automation. It addressed expansion of the digital content service market by utilizing already-established ICT infrastructure and technological development in various platforms.

Recently, the IT 389 Plan led to diversification of the digital content industry and to market structure change. Based on the growth of the ICT sector, the MIC envisioned diverse applications of ICT in home automation, telematics, and cultural industry sectors. The MIC envisioned a broader spectrum of new services based on mobile telecommunications venues such as IP television, Satellite DMB (digital mobile broadcasting), and Wi-Bro (Wireless Broadband Internet), all of which facilitated further convergence of digital technology and traditional content. In addition, the introduction of various platforms and services both increased demand within and expanded distribution channels for digital content products. These government induced market structural changes arguably created a political power shift in the digital content industry from service provider centric to digital content creator

centric. This in turn induced competition among large firms to recruit content creators (from an in-depth interview with a governmental official at the MIC).

To further facilitate digital content industry competitiveness, the MIC improved technological standardization, intellectual property ownership law, protection of content creators from illegal distribution, and so on. After the business environment in this industry sector improved, large corporations started expanding their businesses by buying up innovative, small content creators (from an in-depth interview with a governmental official at the MIC).

Supporting SMEs in the Digital Content Industry

The other important channel for market information and consulting services is governmental organizations such as the Korea IT Industry Promotion Agency (KIPA). KIPA was established in 1998 by the MIC. It was designated as the principal agency for promoting the software industry. Three different agents were created by the MIC to promote the ICT industries including the Korea Computer Program Protection Agency (1994), the Korea Software Promotion Center (1996), and the Korea Multimedia Content Promotion Center (1997) in accordance with the Software Industry Promotion Act. This act amended a five-year phased software-industry promotion plan, which created a budget for software industry promotion, institutional and organizational support, and so forth (MIC Web site: <http://eng.mic.go.kr>).

KIPA implements industry policies envisioned by the MIC. Its main areas of interest are software export promotion, the support of software start-ups, and the promotion and support of the digital content industry. It began to support the digital content industry upon enactment of the Online Digital Content Promotion Act in 2002.

More specifically, to assist software/digital content firms according to their different development stages, KIPA provides customized consulting services, such as

CEO leadership training and the creation of domestic and international marketing channels. KIPA also functions as a technology incubator and research lab by providing services for software processing and transferring assessment skills and software improvement technologies to software/digital content firms. As KIPA's mission statement clarifies, most of these activities are programmed for start-ups, particularly those with promising export potential (from an in-depth interview with a researcher at KIPA).

KIPA also performs as an information-processing intermediary institution by collecting and publicizing basic data on digital content businesses and the workforce. Such information is then open to the public free of charge.

5. Summary: The Role of Governmental Policies in Shaping the Digital Content Industry

Re-regulation of the Market

In this chapter, I argue that while digital content creators underwent an adaptive transformation in terms of how their main actors organize their production systems and social networks, governmental economic and industrial policies have also played a significant role in building markets and mediating the power relationship among actors. More specifically, I argue that the Korean government's redistributive and deregulatory industrial policy direction, stemming from economic liberalization and industrial restructuring, created space for small firm sectors to grow and gain their strength.

In order to understand the role of governmental policies, it is imperative to examine the economic and industrial policies that affected the growth and evolution of the digital content industry from three different levels: the macro, the mezzo, and the micro. In this way, one can observe how national governmental policies penetrate into

different levels of economic activities and social organizations. At the same time, this approach captures how the Asian developmental state in an industrial era has transformed itself to bring about a “new economic order”—post-industrialization and the global economy. The following summarizes my findings and argument.

First, the Korean government tried to reflect the free-market system in its economic structure and industrial policies by diminishing previous protectionist economic policies. This policy transformation is visible in the financial sector and the telecommunications industry sector, which operates under the considerable influence of the WTO Telecom Agreement. Second, one of the most important Korean economic reforms was the dismantling of the *chaebols*. Combined with this policy, the Korean government also launched an unprecedented scale and amount of small firm sector promotion that created a more stabilized economic, social, and cultural basis for strong small firm sectors in a short period of time. Considering that the IT venture sector grew three fold from 1997 to 2001 and that the Korean economic structure was geared toward breeding *chaebols* until right before the financial crisis, this small firm sector promotion policy has had a great impact. I also argue that the combination of the two policy directions created an structural foundation at the macro level for the growth of the small firm sector in the digital industry.

On the other hand, there are mezzo level economic policies that affected the shape of the current market governance and the interfirm power relationships in the digital content industry sector. The Korean government started adapting a more liberal economic system, wherein the MIC still held strong regulatory perspectives, aiming to facilitate the domestic market first before opening up the market in the telecommunications and Internet business sectors. Therefore, the MIC transformed the monopoly telecommunications/Internet infrastructure market to an oligopoly. However, regarding the control over infrastructure leasing, wireless Internet network

ownership through licensing made it easier for the MIC to control the domestic market. The limited number of actors participating in the infrastructure market allowed these actors to grow to competitive sizes such as those seen in KT, LGT, and DACOM.

While the MIC regulated the participants in infrastructure market competition, it also protected certain industries exclusively for small size firms such as Internet-based businesses, software, and the online digital content industry. Although the law did not prohibit the participation of large firms in such industries, the economic/industrial development vision addressed in IT industry development plans established by the MIC clearly states the governmental intention to invest governmental resources for small firms in such types of industry sectors exclusively.

These differentiated industrial policies formed the current two major actors in the digital content industry: the large and resource-rich infrastructure service carriers in Internet and wireless Internet services and the creative and strong small firm sectors.

CHAPTER VII:

CONCLUSION

1. Shifting Power in the Digital Content Industry Market

Because of the weightless nature of the digital content industry and the increasing market share of mobile Internet based digital content, the role of large corporations that dominate the Internet and mobile phone infrastructure has become increasingly important. These large corporations have much freedom to decide which content to publish, and when and how to publish it in the mobile phone, wireless Internet, and wired Internet dependent distribution channels of the digital content industry. This affects the sales of digital content products.

I was curious to learn how digital content creators strategize to remain competitive in this changing market structure. Are conventional theories of the social organization of production and the interfirm network still valid to explain how local actors organize the internal firm structure? Does the introduction of new technology and creativity inputs bring new aspects to those work processes and labor divisions? If so, then what will help us to understand the economic, social, and political aspects of these types of industries?

I have suggested an analytical framework to capture some of the unknown aspects of the digital content industry: defining creativity; the incorporation of creativity in the digital content production process; firm strategies for creating interfirm networks; and the interfirm interactions involving learning and the spatial manifestation of the interfirm relationship.

2. Organizing Creativity and Firms' Competence

Creative work involves intensive and locally specific technological support, and an understanding of cultural sensitivity. Despite the recent establishment of institutionalized educational and skills training programs, the skill formation of core digital content workers largely remains informal.

Unlike semiconductor venture companies or other Internet businesses that in large portion are spin-off firms from large ICT corporations, many digital content development firms, especially those specializing in online game development, were started independently by individuals who became very interested in computer programming, the Internet, and game-playing. Many digital content workers showed a high level of self-devotion and individualized path development patterns. As a result of the informal nature of the skill formation process, the retention of skilled workers became critical, especially given that the production of digital content takes more time. While the technological aspects¹ of digital content creation are standardized and relatively universal, the qualitative skills residing with particular individuals and the locally specific know-how render digital content production work much more akin to cultural industry.

In order to secure skilled workers for long periods of time and to capture their creativity, Teheran Valley digital content creators internalized the production process and relied heavily on in-house production systems. The internal firm production organization is characterized by a project team based work organization. It was formerly argued that this organizational structure is a result of the short turnaround time of multimedia and new media projects. However, digital content creators in Teheran Valley employed this form as a way to organize a set of different creative skills essential to the entire process of digital content production. The combination of

¹ Program coding, the use of game engines, and server connection protocols.

one team leader with a comprehensive understanding of technological, cultural, and artistic aspects; experts in computer coding; and visual artists is the fundamental element of digital content production. Within a single firm, the boundary of each project team is flexible, allowing workers to move among different teams, a relationship I term “semi-symbiotic.” This internal resource yields a self-reliant firm organization and results in weak social ties among digital content creators.

3. Relational Proximity Between Large and Small Firms

Teheran Valley digital content creators present a rivalrous culture and weak interfirm social ties. On the other hand, they maintain frequent interactions with the large firms who are major digital content distributors. However, the relationship is more complex than that represented by a traditional value chain.

Publishers are the leading firms in the telecommunications industry and in Internet businesses; therefore, their future business directions and choices about specific technologies become an important source of business information for digital content creators. Sharing critical information not only reduces uncertainty in a highly competitive market, but also increases potential opportunities for product innovation.

There is another dimension of small-large interfirm networks to consider: although the opportunities are limited to a selective group of digital content creators, SMEs and large firms create consortiums to develop high capacity and high performance digital content products. Digital content creators that create popular content products usually are in a better position to negotiate their share of sales income and to keep property ownership of their own products. This provides digital content creators with greater independence from large firms.

However, this reciprocal relationship is, in fact, unevenly distributed, a configuration I termed a “tiered interfirm network.” I found that those digital content

creators with a higher capacity for innovation (proven by the high economic return of their product(s)) have greater negotiating power.

4. Creativity as a Source of Power

It is reasonable to assume that locally specific knowledge and creativity, which I have termed “impenetrable qualities,” play a significant role in maintaining a relatively balanced power relationship. The SK Telecom interview shows that large firms have successfully expanded in those fields that require less specific knowledge. Because of the exclusive information circle based on informal networks and the individual based skills formation system, especially in the online game creation field, large firms have experienced difficulties in obtaining a competitive advantage. Mergers are not easily executed, because the organizational cultures of digital content creators are quite different from those of large firms. SKT’s Internet personal homepage service, Cyworld.com, succeeded because Cyworld.com retained its original culture and organizational character even after the company’s merger with SKT.

There is some debate about the role of large corporations in the current digital content market in Korea. For some digital content creators, working with large corporations is mutually beneficial because large corporations can fund product development and open up channels to export markets. When content creators secure a competitive advantage by obtaining know-how to create a specific content area that consumers want, they may be able to maintain a horizontal relationship with their large firm partners. Even though large corporations have distribution channels and the requisite financial resources, it has been difficult for them to fully incorporate (or imitate) highly localized and tacit knowledge unless they collaborate with content creators.

The convergence between new ICT technologies and cultural content has not only brought about new types of production systems and value chains, but also has led to the development of more complex large-small firm relationships. However, start-ups struggle within the oligopoly of the infrastructure and digital content publication market; they are at the mercy of large corporations and thus face intense competition.

5. Risks

The oligopoly of the infrastructure and digital content publication market has created a hostile market environment for new start-ups. Despite its short history, and because of its recent diversification and growth, the market segment is more established, and market entrance barriers have also been erected. Therefore, firms already within the pool have established exclusive knowledge, skills, and an interfirm network, and they enjoy various benefits. But for newly starting firms, survival itself is still a problem: governmental subsidies and other advantageous policy supports are based on performance evaluation records, rather than on firms' future potentialities or new ideas.

6. Spatial Proximity

As a result of the information-sharing, knowledge-diffusing, and collaborative aspects of small-large firm interactions, the spatial proximity between these two actors is important. One of the most important assets of Teheran Valley is its mixed land use, which allows small and large firms to co-locate so that they are within just a few minutes' walking distance of each other.

7. A Multi-Scalar Approach

Even at the local level, actors' choices do not depend solely on market processes. Public policy has played an important role in promoting the digital content industry,

determining its main actors, and influencing the structure of its market governance. The rescaling of national governmental policies occurred in response to supranational pressures to liberalize the economy. As part of economic liberalization, the Korean government maintained an arm's length relationship with the private sector in carrying out its policies.

For instance, Under the WTO regime, the Korean Telecom market was forced to open up widely. However, by holding regulatory control over licenses, the Korean government (more specifically, the Ministry of Information and Communication, MIC) successfully created the Big 3 Telecom companies (SK Telecom, KT, and LG Telecom), which now function as major digital content publishers (because of the licensing controls, Samsung had to remain in the mobile phone manufacturing sector, although they wanted to participate in this new industry sector). By choosing a national technological standard (CDMA) for domestic cellular telephony systems (commercialized in Korea for the first time in the world), the MIC also created practical barriers to the entry of foreign firms into the cellular phone service market.

In the Teheran Valley case, national scale policies such as those to promote venture promotion policy and small firm centered digital content industry promotion policy, manifested at the local level with unintended consequence², due to locally specific cultural orientation, available resources, and combined historic events. Therefore, instead of local versus national, the debate is more about the “balance between agency and structure.” The balance can be planned and designed. At the same time, the balance between local agency and structure can have unintended consequences.

² For example a sudden agglomeration of IT venture companies and the recent rise of the digital content industry cluster.

However, the government deserves credit for adapting policies to substantiate and reinforce local actors' initiatives such as sudden growth of IT venture sector after the financial crisis and announcing the government's vision of a small firm centered digital content industry promotion and designating KIPA as a governmental institution to support SMEs in the digital content industry sector.

The MIC also specified that SMEs should be encouraged to enter the domestic Internet business and digital content industry sectors. That is why, as I have argued, there are two strong actors—SME centered digital content creators and large firm centered publishers—in the Korean digital content industry market.

8. Policy Implications and Future Research Directions

Deriving policy implications from the case of Teheran Valley is not easy, because most governmental policies that address the digital content industry are indirect and imposed at the industry level, which covers national scale goals. Furthermore, I do not intend to attempt to lay out detailed policy programs that one can immediately adopt. Instead, I would like to derive important task domains that policy makers must confront in order to achieve not only economic competitiveness but also social equality and urban sustainability.

Creative Workers

Firm strategy choices are, in part, forged by national level policies. The rapid development of Internet infrastructure and the telecommunications industry created a backdrop against which the digital content creation industry was able to grow. This created a technological environment that fostered the rapid adaptation of advanced technological applications. A large number of technological geeks also grew rapidly in the cutting edge high-tech environment as a result of the use of technology in

everyday life (from elementary school education to shopping, entertaining, and governmental document processing). Those who grew up with digital technology found it easy to integrate into their everyday lives.

Despite the increasing importance of creative workers, we know little about how they become interested in this unconventional profession, how they gained their skills, or how they renew themselves to remain competitive. This is an important policy related research topic considering the lack of vocational education and the public education system's sluggish efforts to catch up with or understand the sector.

Public policy prescriptions do not yet reflect the fast changing nature of technology and the convergence between technology and cultural content. As a result, institutionalizing core skill training in the digital content industry has proven difficult and responsibility for vocational training remains at the private company or individual worker level.

A lack of proper vocational programs also contributes to a greater gender gap in the digital content industry, whose labor pool is dominated by male workers. The skill formation system is based on informal social group (such as the old boys' club) and reproduces gender inequality in the job market. At the dawn of information technology growth in the early 1990s, it was thought that the ICT industry sector would be gender neutral, that it would help correct gender inequality in the workplace as a result of the narrowing gender gap in higher education. However, gender gaps in employment persist.

Two possible policy recommendations stem from my research. First, understanding the social and technological setting and the process of informal skill formation in the digital content industry will help policy makers establish practical programs and ways to institutionalize vocational training programs.

Second, providing subsidies for individual workers to attend seminars and take time off for vocational training purposes will help reduce the gap between fast changing market conditions and institutionalized vocational training programs.

Balancing Urban Development and Sustaining Creative Industries

Spatial proximity still matters. However, neo-liberal urban policies often contradict the goal of sustaining the spatial configuration of innovation. At the municipal government level, property-led economic development and short-term oriented policy directions are easier to bring about. Through the rezoning of old manufacturing areas or low-rise commercial areas to high-bulk and high-end commercial corridors, municipal governments aim to attract financial sectors and biotech industries, thought to generate higher wealth per worker compared with other industries. Increased tax revenues are another reason municipal governments pursue property-led development.

However, this policy direction often contradicts with goals of sustaining the creative industry inside of the city, which requires an economy of scale, abundant cultural resources, and creative skilled labor. In the discussion about the relationship between land use and entrepreneurship, available office space for start-up companies is paramount. However, I argue that it is just as important to maintain mature firms, which provide more jobs and financial resources and serve as important sources of locally specific know-how. Indeed, some digital content firms are moving out of Teheran Valley now as a result of escalating rents.

Therefore, the relationship between urban land use and interfirm networks should be further studied to generate more “creative” and “sustainable” directions for urban development and land-use patterns.

Property Rights

In a weightless economy, the protection of property rights is critical to ensure the economic profit of the producer. I found that some high-capacity digital content creators maintain their property rights in their products. Therefore, when consumers download their products, 30 to 70 percent of the profit goes to the digital content creator, and the rest remains with the distributor. The stronger their negotiation power, the more returns they receive. However, smaller start-up firms exposed to a competitive market environment often give up their property rights to large firms as a condition for obtaining project funding. The trade of property rights based on mutual agreement written in a contract in the market is legal.

As the sector matures and the role of syndicators increases, this advantage may fade away, given the markets with highly developed syndicators, such as the U.S. digital content industry. Together with the continuing existing small firm supports such as market information supports, incubator programs, and communal research labs, public policy that support diversifying the distribution channel, especially the export channel, will help small firms maintain their property rights.

A more serious problem is counterfeiting. Many interviewees said their products (such as mobile or online games) are heavily imitated by Chinese firms. However, because lawsuits are costly and time-consuming, they are reluctant to take legal action. Counterfeiting is even more difficult to address if it takes place outside Korea. Securing property rights maybe an important key to a more balanced power relationship between small and large firms in the digital content industry in Seoul.

9. Concluding Remarks

Reframing the Small and Large Interfirm Relationship

In both academic literature and the public policy arena, the relationship between small and large firms is stereotyped as large-strong, small-weak; large-independent, small-dependent. On the other side of the spectrum, a line of literature emphasizes the vigilance and flexibility of small firms in the post-industrial system. The main argument of this dissertation is that the industrial world should not be as small and that large firms are always competing and exploiting (or exploited). Under changing technological and cultural conditions, the conventional firm relationship may become blurred and evolve into a different dimension: the reciprocal small-large interfirm relationship.

In the digital content industry in particular, the main factor influencing the quality of the interfirm relationship is the “creative skill input,” in other words, the organization of creative labor in the process of production. The reciprocal relationship itself is nothing new. Given what generates small firms’ power to compete or cope with large firms, however, this dissertation argues that it is not advanced technology but the organization of creative skills and knowledge that matters.

Creative Industry in the Context of Neo-liberal Policies

The multi-scalar approach is a popular analytical framework adapted by scholars in geography, political economy, and economic sociology. However, what constitutes a multi-scalar governance system differs from case to case. By examining the interactions among supranational economic liberalization pressure, nation states, and domestic industry levels, I capture the dynamic three-decade rescaling of the Korean nation state inscribed in policies aimed at the ICT and digital content industries.

Back to the Urban Context

I have focused exclusively on the social organization of production, the interfirm relationship, and institutional aspects in order to take advantage of an industry sectoral analysis that examines various aspects of the industry sector. However, one must “be put in the context of urban dynamic where cumulative causation and system-wide interdependencies are the order of the day” (Scott, 2006:12).

Teheran Valley transcends a mere physical space in which many digital content firms are agglomerated. The Teheran Valley area shows a more diverse economic structure and a greater concentration of knowledge-based industries than other urban centers that provide fertile soil in which creative industry can grow. The area’s dense urban fabric and mixed land use provides the physical stage for frequent face-to-face interactions (urban networks). Entertainment and pop-culture oriented local culture have also become an important attraction for many young creative workers.

The role of the urban center as a locus of cultural and creative work and experiments has long been recognized (see Zukin, 2000). Historically, the city has been not only the site of vibrant economic activities but also “the place where radical social thinkers and creative classes rubbed shoulders with marginalized and working-class populations” (Wilson, 1992, cited in Rantisi, Leslie, and Christopherson, 2006). Under economic globalization, the urban still continues to be an important site of new cultural experiments, a convergence of old and new, technology and culture, and other creative inspirations.

APPENDIX A:
KIPA QUESTIONNAIRE SURVEY QUESTIONS

This survey was conducted by KIPA in June of 2004 as part of an annual business survey. Listed are categories of questions and detailed attributes. Because the questionnaire is done in Korean and it is a long form (10 categories and 48 questions), translating the entire questionnaire form does not seem necessary. Instead, I have summarized the research questions important to my data analysis.

Questions	Detailed attributes
General aspects	Name of the company, address, name of the building, year of establishment, capital certified venture company, experience with governmental incubating system, IPO
CEO	Name, sex, founder, age, education, major in college, career, # of years of working in the SW industry
Classification of the company	Individual business, corporation, non-profit corporation, national/local governmental organizations, unincorporated businesses
Product	Main product
Performance	Domestic demand, export, SW vs. non-SW product, export record for each country, nodes of export, type of consumers of SW product, etc.
Sales	Locational distribution of domestic demand, sales for each type of consumer, etc.
Form of sales	
Outsourcing	Yes or no
Marketing	Factors attracting consumers
Financial affairs	Total expense and ratio of each item of expense, funding resource, public policy funding
Employment	# of paid regular employees, # of unpaid regular, # of temporary, average continuous service year of technology development personnel
Technology development	Proportion of R&D to the total sales, primary avenue of technology development, patent, certification, award-winning
Firm network	Type of cooperation with other companies, locational distribution of strategic cooperation, affiliated business associations and organizations
Enterprise backup	Enterprise backup service from outside organizations, desired enterprise backup service

Questions	Detailed attributes
Information exchange	Source of SW-related information, medium, frequency of information exchange
Education of employees	
Competitive environment	Product competition, major competing elements, major competitors and their location
Location	Factors affecting location decision
Difficulties	Causes of difficulties

Source: KIPA Survey Questionnaire.

APPENDIX B:
DIGITAL CONTENT INDUSTRY SUBSECTORS BY KOREAN
STATISTICAL INDUSTRY CODE (KSIC)

Sector	Subsectors	KSIC Classification	KSIC Code
Content	Publication	Book publication	22110
		Newspaper publication	22121
		Magazine and periodic publication	22122
		Periodic advertisement publication	22123
		Other publication	22190
	Recording	Phonograph record and other music recording publication	22131
		Other audio recording equipments sales	22139
	Movies Motion pictures	Movie and video production	87111
		Animation and video production	87112
		Commercial ad and video production	87113
		Movie and video production service	87120
		Movie distribution	87130
	Broadcasting	Broadcasting program production	87114
		Radio broadcasting production	87211
		Television broadcasting	87212
		Program distribution	87221
		Cable television broadcasting	87222
	Education	Visiting and broadcasting education institutes	80933
	Platform and Network	Platform	Computer manufacturing
Computer memory unit production			30012
Computer input/output equipment and other peripheral equipment manufacturing			30013
Electronic card manufacturing			32195
Liquid crystal panel manufacturing			32196
Wired telecommunication equipment manufacturing			32201
Broadcasting and wireless telecommunication manufacturing			32202
Broadcasting receivers and other image and sound equipment manufacturing			32300
Network		Wireless telephony	64221
		Wireless page and other wireless telecommunication	64229
		Reproduction of telecommunication business	64291
		Supplementary telecommunication business	64292
		Other electronic telecommunication business	64299
		Satellite broadcasting business	87223
Software	System related and production, management, distribution related software	Other software development consulting, development, and distribution	72209
Content creation	Creation and Online	Game software production	72201

Sector	Subsectors	KSIC Classification	KSIC Code	
and distribution	distribution	Database and Online information provide	72400	
		Electronic commerce	52811	
	Off-line distribution		Record duplication	22300
			Phonograph record and video wholesale	51471
			Computer and package software wholesale	51891
			Phonograph record and video retail	52513
			Computer and software retail	52631
Other supporting areas	Other supporting areas	Other computer maintenance business	72900	
		Movie theater business	87141	
		Video viewing room business	87142	
		Computer game room business	88912	

Note: Shaded area is the core sector of the digital content industry that is the focus of the questionnaire and interview data analysis of this research.

APPENDIX C:

SEMI-STRUCTURED INTERVIEW QUESTIONS

1. General characteristics of the firm

Year of establishment	Number of employees	Total sales for 2004	Total exports for 2004	R&D % of total sales	Number of researchers

2. Type of products/ service/ usages

3. Place of born and school of CEO

4. Information of employees

- a. Age distribution in average
- b. Birth place or school
- c. Place to live
- d. labor turn-over rate

5. Development stage of the firm

- a. start-up stage: initial product and service development stage
- b. initial development period: first product and service just started generating sales
- c. Rapid development period: subsequent product and service development, diversification of product and business model, continuous increase of return
- d. Matured stage: stabilized employment and sales
- e. Locked-in period: the rate of return slows down and preparing for a new path

6. Factors of location choice

- a. Place to live of CEO
- b. Place to live of employees
- c. transportation infrastructure and accessibility from/to other place
- d. Urban entertainment and leisure (restaurants, gallery, theaters, shopping centers, and other cultural and commercial environment)
- e. Parks and other environmental quality of the place
- f. proximity to clients
- g. proximity to supporting institutes
- h. support of local government
- i. labor pool (advantage of recruit)
- j. image if the locality (positive images such as cutting edge area or representation of business success etc.)
- k. relationship with the building owner

[Open-ended questions—Locational Advantage]

7. Does the location of your company provide any benefit for your business?
8. If so, please specify them in two categories: direct effect and indirect effect.
9. Does the urban cultural environment contribute to business capacity of your employees (such as idea development and establishing social network etc).
10. Does the image of this area contribute to your business in any way?
11. If so, which aspect of the image helps?
12. If there are any inconvenient aspects of the current location, what would they be?
13. Did you or do you have any relocation plans?
14. If so, what was/is the motivation(s)?
15. If you ever relocate, where would you want to consider to move?

[Business/Interfirm Relationship]

16. Does your business have close relationship with cultural industry (movie, photography, animation, cartoons, music industry etc)?
17. Where are your clients located?
18. Between the Downtown and Kangnam areas, where do those firms mostly locate?
19. Do you cooperate on projects with other firms?
20. How many times (number of projects) do the co-operation occur per year?

[Employment]

21. How do you recruit employees?
22. Do you ever use freelancers?
23. How do you find freelancers?

[Supporting Institutes]

24. There are various institutions (governmental organizations, research institutes, universities, and business associations, etc.) that support the digital content industry. Would you please list the names of these organizations?

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