

**LABOR REQUIREMENTS, ORGANIZATIONAL PRACTICES,  
AND INNOVATION IN THE DIGITAL CONTENT INDUSTRY**

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**Keywords: labor requirement, organizational practice, innovation, digital content industry**

**\* First draft. Please do not circulate or cite.**

## **ABSTRACT**

Are mobile creative workers mainly responsible for innovation in the creative industry because they mediate knowledge transfer and spill-over that are critical in creating new ideas? This paper explores the labour requirements of digital content production. Drawing on 323 digital content (DC) firm samples located in Seoul, South Korea, this paper explores the causal relationship between human resource practices and innovation. A logistic regression of the data reveals that the additive index of a set of organizational practices that aim to foster internal labor pool including selective hiring, retention, and R&D investment is a statistically significant predictor of innovative capacity of the digital content firms in Seoul. However, the additive index of incentive-based HR practices including high compensation and job security did not show a significant relationship with the innovative capacity of firms. This study provides preliminary evidence on the significance of internal organization, and in particular of the role of internal labor pools, in innovation. This study suggests that the leaders of creative industry firms, particularly those in the digital content industry, should carefully choose between exploitation and exploration in managing their creative workers and creative capacity, since these practices may shape the firm's competitive advantage.

## **INTRODUCTION**

The organization and management aspects of creative industries is the focus of a new, interdisciplinary research agenda (Jeffcut and Pratt, 2003; Jung, 2007; Cohendet and Simon, 2003; Lampel, Land, and Shamsie, 2000; Heydebrand and Miron, 2002) which complements existing studies focused on aspects external to organizations (Currid, 2007; Currid and Williams, 2010; Stolarick and Florida, 2006), and individual agent-based approaches (Markusen, 2006). This paper aims to broaden our understanding of the labor requirements, corresponding firm strategies, and the effects of those strategies on firm performance by focusing on the digital content industry. The dominant view of the literature on innovation in the creative industries finds creative capacity to be embodied in personality traits. Talented, self-expressive, and bohemian creative individuals are the key element in creative work and innovation. Thus, the mobility of creative individuals through transaction-based or informal social interactions is the essential mechanism of knowledge diffusion and spillover, which, in turn, contributes to innovation. Therefore, a high density and diversity of creative people is critical, because such conditions will generate more frequent face-to-face interactions among creative individuals, leading to more learning (Stolarick and Florida, 2006; Heydebrand and Miron, 2002).

While this framework offers a valuable perspective for understanding the important elements and mechanisms of innovation in creative industries, recent findings in the organizational aspects of those industries suggests that this approach may highlight one side of a continuum in which creativity and innovation are strongly influenced by internal organizational factors – i.e. internal skill pools and workplace culture—as well as the external social and economic conditions within which firms operate. This view may carry considerable implications for managing creativity in certain industry sectors. If the individual is the pivotal element in the creation of value, the key to success is finding or developing such individuals. If on the other hand, success arises from something beyond arithmetic aggregation of individuals (such as system or social capital), then less emphasis should be placed on individuals, and more on developing structures, processes, and cultures that facilitate new value creation.

Another important observation is that some regions that have not been powerful magnets for creative nomads, such as Seoul, have in fact become leading regions in new

creative industry sectors, such as the online game industry. This suggests that we have to question the strength of the currently popular external framework.

Despite the potential of organizational structures in facilitating new knowledge creation and innovation, it has not been thoroughly explored in the creative industry. Recently, a robust sprout of scholastic investigation has grown away from this dualistic debate and developed a reconciling perspective that there is an important symbiosis between creative individuals and the organizations where those creative individuals reside (Collins and Smith 2006). Some scholars expanded out the scope of studies to organizational aspects of the creative industry and have started grappling with the complexity of organizational efforts to balance ‘free agents’ and organizational goals (Christopherson, 2008; Eisenmann and Bower, 2000; DeFillippf, Grabher, and Jones, 2007). However, there still remains an important omission in the discussion: the effects of certain organizational practices on the firm performance.

Studies have demonstrated a causal relationship between commitment-based human resource practice and firm performance in manufacturing (Shipton and West, et al., 2006), service industries (Batt, 2002), and high-tech industries (Collins and Smith, 2006). These studies argue that commitment-based human resource practices empower workers and increase their attachment to the organization, which in turn contributes to the formation of firm-specific knowledge, an important source of organizational competitiveness. However, the effect of commitment-based HR practice in the creative industries has yet to be tested.

This study uses qualitative narratives and logistic regressions drawn from interviews with top HR managers of digital content creators in Seoul and the 2004 National Software Industry Survey in South Korea to extend this research agenda to Digital content creators in Seoul. Countering the epiphenomena of the creative industry-- mobile worker-based and short-term project based work organization—these businesses heavily rely on internal labor pools and in-house production systems. In order to establish internal organizational capacity, these digital content creators practice organizational strategies that are known to have effects on creation of high performance work systems, including a high rate of investment in R&D, a high proportion of full-time workers, and high compensation. This shared practice among digital content creators aims at fostering

firm specific knowledge and thus competitive capacity by increasing the investment in human capital and social capital, rather than lowering production cost. The logistic regression results partially prove that there is causal relationship between those high performance work system and innovation in these digital content creators. Interestingly, when an individual independent variable (single high performance practice) was tested against to the dependent variable (innovativeness) in control of other factors, the effect was non-significant. However, the additive indexes, capturing the synthetic effects of a number of single high performance practices, show a clear positive and significant relationship with innovativeness.

Because the digital content industry is so young, even within the information and communication technology (ICT) sector, the lack of clear-cut sector boundaries makes it difficult to analyze. In this research, the term ‘digital content industry’ applies to those industries where traditional content and ICT converge: their product uses broader technical applications than do companies in the conventionally recognized multimedia and new media sectors. Digital content can expand well beyond CD-ROMs or the World Wide Web, as it is backed up by rapid technological developments, such as post-computer, home automation, interactive television, and digital mobile broadcasting. The convergence of conventionally independent fields, while stimulating the diversification of creative industries, makes studying creative industries more challenging. The industry sector-centric approach provides a researcher with a chance to tackle the complexity of technology, market structure, and production organizations in an in-depth manner, providing us with a richer understanding of the sector. This understanding, in turn, will expand the grounds for understanding the similarities and differences lying across different subsets of creative industries.

In the following sections, I will review theories emphasizing internal organizational capacity and human resource (HR) management practices as important elements of organizational competitiveness and then lay out the characteristics of the digital content creators in Seoul. Next, I will test the theory in this setting by exploring the causal relationship between high performance HR practices and innovation using survey data from the digital content industry in Seoul, Korea.

## **THEORIES AND HYPOTHESES**

### **Limitations of the Contingent Workforce-based Organization**

During industrialization, characterized by Taylorism and Fordism, the practice of using a contingent workforce was combined with the deskilling of the production process through understanding the core of the each unit of work and making it simple. This enabled a firm to hire lower skilled, part time or contract workers who brought immediate short-term financial benefits to the firm. Ironically, contingent work has become an increasingly integral part of the world of work in the post-industrial economy (Pratt,2002; Batt, Christopherson, Ned, and Van Jaarsveld, 2001) where the knowledge and skills embodied in individual employees are considered to be the critical raw materials for new idea creation. Behind the prevailing contingent workforce practice, lies a complex production organization constructed on the interlocking and complementing mechanisms of thin organization and flexibly organized skilled workers. It has been argued that firms can gain short-term financial benefit and increase strategic flexibility by reducing fixed labor costs and being able to respond swiftly to fluctuating market conditions. Beyond the economic benefit, some studies argue that contingent work practices also affect firms' abilities to accumulated knowledge, create value, and establish competitive advantage through 'learning by hiring.' In this framework, the fast turnover of knowledge workers is thought to facilitate knowledge exchange and diffusion which in turn contributes to knowledge accumulation and new knowledge creation (Stolarick and Florida, 2006; Heydebrand and Miron, 2002).

Capturing the pervasive neoliberal doctrine, many of the initial studies of the creative industry in the 1990s described project-based lean production systems and a high proportion of contingent workforce as distinctive characteristics of creative industry sectors, such as new media and advertisement. Historically, however, project-based organization has been an important form of work for various industries, including cultural work, but also for construction shipbuilding and film, etc. More recently, project-based organization has diffused rapidly and widely to industries not typically part of this group, such as telecommunications (Grabher, 2002; Sydow, Lindkvist and DeFillippi, 2004). As project organization has become the hallmark of organizational practice in the post industrial economy, in particular in the creative industry, much emphasis has been placed

on the way in which fluid and temporary work organizations adapt to rapidly changing technology and market conditions. In a constantly evolving and self-coordinating project environment, mobile creative individuals are the key element of creative work. Working as 'free agents' in order to enjoy 'creative freedom', these individuals show a more self-organizing and entrepreneurial attitude: they typically work as an independent contractors (freelancers) or part-time in temporary project settings while collaborating in multiple projects simultaneously (Pratt, 2000; Christopherson, 2002).

In the world of project-based, temporary work, where companies pursue disinvestment in human capital and organizational capacity, in order to save on organizational sunk costs and maintain organizational agility, heavy reliance on the existing knowledge of contingent workers and locally/regionally available producer services is widely accepted as a common practice (cite a few people). Self-organizing creative workers are the ones who glue together the thin, fragmented production system of knowledge-based organizations by bringing the requisite skill levels to the point of hiring (Dess and Shaw, 2001) and providing the necessary flexible workforce. These atomic workers are connected through locally or regionally embedded dense social networks in which they obtain information about jobs, new technology, consumer taste, and new products, etc. Because of the lack of structural and organizational protections and the resulting importance of occupational social networks, these creative workers identify less with organizations than with their professional groups.

In such a context, knowledge spillover and learning occurs through short-term contractual work and informal interactions between individuals with high human capital (Lucas, 1988), and encounters that create such individual connections are more likely to occur in regions with higher density and diversity. Given the importance of tacit knowledge in innovation, such individuals must be proximate for the spillover of knowledge and learning that precedes innovation to take place.

However, despite the currency of this account, it has not held up well under critical evaluations of the effects of contingent workforce-based work organization on firm performance. Efforts to confirm the validity of the account have attempted to test the impact of contingent work organization and flexible production systems on firm performances. There is growing evidence that neither flexible work organizations nor

contingent workforce practices are associated with innovation. Research testing the effect of contingent workers on such measures of performance as productivity and innovation has proved the contrary. Among many studies, Dess and Shaw (1990) showed that in the rapidly changing and highly competitive markets in knowledge-based service industries (i.e. financial industry), a high rate of voluntary turnover of key human capital plays a disproportionately negative role in firm performance. It is because workers in knowledge-based organizations carry role beyond human capital (knowledge, skills, and learning capacity) embedded in individuals. Knowledge workers tend to form strong social ties with their colleagues which in turn helps the knowledge transfer and learning. The role of social capital increases when knowledge transfer occurs in the realm of tacit knowledge: strong ties allow repeated interactions promoted knowledge acquisition and shortened project complete times (Argote and Ingram, 2000). As such, social capital may yield exponential performance benefits for organizations, but it also increases the potential downside risk to the loss of key network members. In the same vein, research demonstrates that individuals in long-standing group develop a system called 'transactive memory', a shared memory phenomenon for encoding and storing information in social system, where people can identify relevant information faster and develop high trust to others' expertise (Anand, Manz, and Glick, 1998; Akgu'n, Byrne, Keskin, Lynn, Salih, and Imamoglu, 2004). However, the effects of the social capital and the temporal dimension required in building the organizational social dimension has not received enough attention from scholars in the creative industry literature.

On the other hand, the exclusive emphasis on the contingent workforce practice has crowded out efforts to discuss other patterns of organizational practices in the creative industry. While some sectors are more self-organizing, others remain embedded within economic institutions such as firms and markets. For instance, while some creative industries rely heavily on exploiting an individual's expressive capacity (i.e., painters, sculptors, and playwrights), some subsectors still mass produce consumer goods or cultural commodities (i.e., the toy and furniture industries and the music industry) and some rely entirely on 'weightless' production systems (for instance the electronic form of production, distribution, and consumption in the new media and the digital content

industry), thus require organizational capacity to mobilize and combine knowledge and skills embedded in individual employees.

In reaction to the exclusivity and shortcomings of the current framework, some scholars expanded out the scope of studies to organizational aspects of the creative industry and have started grappling with the complexity of organizational efforts to balance 'free agents' and organizational goals. However, there still remains an important omission in the discussion: the effects of certain organizational practices on the firm performance. There is increasing evidence that human resource practices can affect workers' attitudes towards sharing knowledge and experience in the best interest of the organization. However, this approach has yet to be extended to creative industry sectors.

### **Organizational Capacity in Knowledge Creation and HR Practices**

Indeed, creative ideas are inherently embodied in individuals. However, organizations have advantages in pooling, managing, maintaining, and combining existing knowledge and creating new knowledge (Hargadon and Fanelli, 2002; Osterloh and Frey, 2000). Importantly, firms in rapidly changing industries derive their primary competitive advantage through the ability of their employees to create and manage knowledge. This issue is important in developing a renewed theoretic framework that reflects the characteristics of contemporary creative industries where industries are gravitating towards the use of some of combination of technology and cultural creativity to generate and sustain their competitive edge; these industry sectors largely rely on the combination of varied knowledge and skills to introduce of new products and maintain firm performance. As March (1991) famously put it, 'maintaining an appropriate balance between exploration and exploitation is a primary factor in system survival and prosperity' (P 72). The point is that it is possible to assume that under conditions of fluctuating technology and markets, firms might choose an organizational form and HR practices that are focused more on the exploration than exploitation because creation of new knowledge through exchange and combination of the existing knowledge involves exploratory processes rather than exploitation. This assumption was addressed and supported by Bosch et al. These authors suggest that in different knowledge environments, stable or turbulent, firms focus on one of the two different modes of

adaptation and learning suggested by March (1991), *exploitation* and *exploration*: in a stable knowledge environment, firms focus on the exploitation of currently existing knowledge. On the other hand, in a turbulent knowledge environment, such as an emerging industrial complex, firms are likely to dedicate their efforts to *exploration* of new knowledge, which is more closely related to tacit knowledge dimension.

Tacit knowledge is the concept that certain aspects of knowledge are fundamentally embedded in social and institutional practice and reside in the tacit experiences that are critical for new idea creation and innovation (Polanyi, 1958). Polanyi identified two dimensions of knowledge. While explicit knowledge is readily communicable and exchangeable, thus exploitable, some dimension of knowledge will always remain tacit because certain ideas are not readily communicable. Such knowledge and capacity may remain effectively hidden from individual actors but be accessible and sustained through their interactions (Spender, 1994). The tacit dimension of knowledge is useful in explaining the more than arithmetic aggregation of individual knowledge when different sets of knowledge are combined together under specific organizational conditions. The organization studies literature has further developed the concept that a firm is 'a social community specializing in the speed and efficiency in the creation and transfer [of tacit] knowledge' (Kogut and Zander, 1996: 503). While some studies searched for organizational forms likely to encourage such knowledge transfer, the studies in human resource management have striven to understand the mediatory role of social capital in knowledge exchange and combination and to determine what kind of and how human resource practices are generative of organizational social capital. This perspective argues that firms have distinctive advantages over other institutional arrangements such as markets, in creating and sharing knowledge (Nahapiet and Ghoshal, 1998) through strategic human resource management in order to shape the firm specific work force, which in turn will have an economically meaningful effect on firm performance. Nahapiet and Ghoshal (1998) argue that organizations are conducive to the development of high levels of social capital that in turn encourage knowledge exchange and combination.

Indeed, there is growing evidence that human resource practice is an important predictor of organizational performance. The high performance systems literature may

provide a meaningful theoretic framework for this study. The high performance work practice literature argues that in the knowledge-based economy, the role of a skilled and motivated workforce has become more prominent (Pfeffer, 1994) than technology and R&D investment. A considerable number of empirical studies proved the positive effect of high performance practice in manufacturing, services, and high technology settings (Argote and Ingram, 2000; Shipton, West, Dawson, Birdi and Patterson, 2006).

The high performance human resource literature argues that by implementing a system of HR practices, an organization can both increase its knowledge stock and facilitate the social environment for idea exchange and combination. High performance human resource is the concept that effective HR management systems can facilitate employee behaviors important to crafting the competitive edge of a firm. High performance HR practice is broadly defined by its goals more than by specific practices. For instance, Arthur, 1992; Tsui et al., (1997) emphasize compensation practices that focus employee motivation on group and organization performance indicators, training programs and performance appraisals that emphasize long-term growth, team building, and the development of firm specific knowledge. Pfeffer identified 16 HR practices including selective hiring, high pay, pay-performance linkages, employees ownership, information sharing, empowerment, an emphasis on team structure and training, and promotion from within, among others. Studies that take a systems perspective in effect approach entire HR systems as bundles of integrated practices intended to make the labor force a strategic asset. This paper follows Batt's categorization of high-involvement systems (2002). She proposes that there are three dimensions of high involvement system in general: 1) relatively high skill requirements; 2) work designed so that employees have discretion and opportunity to use their skills in collaboration with other workers; and 3) an incentive structure that enhances motivation and commitment.

These new strands of literature speak to the need to revisit the epiphenomena of the creative industry--mobile worker-based and short-term project based work organization—and expand our theoretic and practical understanding of the important elements of innovation *within* organizations, in particular in relation to the organizational capacity of knowledge creation and what kinds of strategies firms adopt to meet the challenges of continuously changing technological and market environments. In the

following, I will review theories emphasizing internal organizational capacity and human resource (HR management) practices as important factors for shaping organizational competitiveness. Next, I will test the theory in the context of the creative industry by exploring the causal relationship between high performance HR practice and innovation using the survey data from the digital content industry in Seoul, Korea.

### **Work organization and labor requirements in the digital content industry in brief**

In order to identify HR practices important in meeting the labor and innovation needs of the digital content industry and develop robust measures for HR practices, we must understand the industry, its work organization and labor requirements. In this process, both industry specific and regional contexts are important. Organizations choices in allocating resources and improving the balance between exploitation and exploration are complicated not only by market conditions (which determine the rate of returns) but also by non-market factors such as labor relations, institutional environment, and government interventions. Therefore, in the following sections, I will review the characteristics of the digital content industry in general and the more specific characteristics of digital content creators in Seoul.

A brief review of the characteristics of the digital content industry is in order. Studies of digitized cultural content were an international phenomenon in late 1990s and early 2000s with the success of dot.coms in Europe, North America, and some parts of Asia. These studies mostly focused on firms that provided services to create online websites and consultation for businesses for advertisement, marketing and consumer service (cite). Digital content (DC) resides in a turbulent knowledge environment because the industry itself is still relatively new and rapidly diversifying in response to the continuous technological advancement and market fluctuation. The DC industry, like many other cross-breed new industry sectors, such as bio-technology and nano-technology, creates novelty by combining previously unconnected fields. Thus, work in the digital content industry frequently demands the exploration of new knowledge and heuristics. Together with technological sophistication, the content which was much lower importance than the Internet or telecommunication technological development at its initial stage became an industry sector with its own profit generation. For instance, the

online game industry, a subsector of the digital content industry, became an important export-based industry sector. The fact that the industry is still rapidly diversifying in response to the fierce international competition in Internet and telecommunication related technology and handheld devices (for instance, the introduction of faster and higher capacity network systems, and corresponding competition among mobile phone manufacturers such as Samsung, Motorola, and Apple, etc.) also creates a demand for a continuous supply of updated and advanced digital content products (for instance, the new mobile phone requires a new operation system as well as applications and customized content).

The DC industry favors a project-based production system. Within a project team, the division of labor is determined by task specialization e.g., graphic development, sound and special effects, and technological support. Thus, one project team consisted of workers specialized in various technologies and more diverse sets of cultural content. The production takes, depending on the kind of product, from several months to a few years. Mobile phone based applications and content is produced quickly, whereas high capacity contents products such as animations or online role playing game (MMORPGs (Massive Multiplayer Online Role Playing Games) require a more diverse set of technological skills and artwork and a longer production period.

The DC industry makes extensive use of technical artifacts in the major processes of digital content production, such as idea development, technological enabling, and the incorporation of visuals, sounds, and narration, as well as marketing, are all conceived and created through interactive human processes (Jung 2007). In this process, product innovation is as much a matter of a heuristic and incremental innovation process as of first-in-history ground-breaking discoveries or inventions. The commercial success of the digital content product also depends on when a new product is introduced to the market, because in a rapidly changing technological environment and an increasingly competitive market one can claim the competitive edge by introducing new products earlier than competitors. The fluctuating production environment, the many skills needed and the long production cycle pose serious managerial challenges to digital content creators. As such, together with the fluctuating production environment, the multiple skills input and a

long production period pauses managerial challenges to digital content creators. Existing literature

If firms located in a region rely on knowledge brought in by contingent workers (whether they are locally grown or imported intellectual resources), the regional industry cannot sustain its innovative capacity, for there will be no distinguishably unique ideas in the region unless firms have a mechanism to reconfigure, intergrate or combine the knowledge from outside of the organization. How then, can a firm avoid such congruence with other firms in the same area? In the production of digital content, compatibility among team members is one critical factors. What does an organization do to narrow the knowledge gap among the different disciplines in a team? New product development also requires a process to determine the commercial potential of the new idea, which requires sharing information and knowledge beyond one project team to a higher level of decision making. How does a firm achieve such a level of coherence within an organization? Then, how do digital content creators in Seoul resolve the tension to balance the creative activities of workers (flexible specialization) and constructing organizational coherence with mobile and atomic creative workers?

The information derived from the descriptive statistics from the survey data and In-depth interview data from top HR managers of digital content creators in Seoul are illuminating. Digital content creators are small in size, with an average of 10.05 workers per firm and a range of from 1 to 123. The mean firm age is 5.74 years, with about 70% less than six years old and 90% under ten.

Unlike the stereotype that the creative sectors are largely organized around on mobile workers and temporary project teams, digital content creators in Seoul show high investment in internal labor pools and in-house production systems. Despite their small size and short existence, these firms show high self-reliability and on average, reinvest 30% of net profits into research and development. Both survey data analysis and in-depth interviews showed that, in most cases, Teheran Valley firms utilize internal resources in development of new technology (69.04%). When in search of new information, firms rely primarily on the internet (58.82%) and newspapers and magazines (8.04%) rather than face-to-face interactions (34.12%) including informal social networks, exhibitions and seminars. These distinctive attributes of content creators in Teheran Valley have

important implications for social organization among SMEs. The proportion of companies started as independent enterprises (not spin-offs) is 83.9%, which well outnumbers the proportion of spin-offs (11.14%). Thus, these firms begin with a weaker social ground for collaboration and strong ties.

The in-depth interview data support what these statistics suggest. These digital content creators handle most of the production process in-house and rely on internal labor pools. The firms interviewed stated that they rely on internal resources in order to keep novel ideas from their competitors. This is an important strategy for maintaining a firm specific product in a competitive market environment where the introduction of a new product in time is key to successful firm performance (from the in-depth interview).

In order to establish their internal labor pool, these firms rely on rigorous hiring standards. As a result 12.5% of employees have a master's degree, 82.47% have a bachelor's, and 4.2% graduated from high school. Together with the selective hiring, DC firms also practice incentive-base HR practices such as job security and high compensation. Of 94.2% of employees are full-time on average (much higher than the average rate of fulltime workers around 30% from other studies). Compared to other DC firms in South Korea, DC firms in Seoul pay higher wage (13.8K won in Seoul compared to 12.3 Kwon in other parts in Korea).

For these firms, low turnover rate is critical as is fostering the internal labor pool's efforts to create firm specific knowledge. Losing a team member is not only the loss of human capital (knowledge and skills embedded in the individual worker), but also the loss of the social networks established around the worker and the social capital stored in the social network. When team members change in the middle of the production process, it is hard to maintain team dynamics and this directly affects product quality. If someone drops out in the middle, it can delay the production schedule or it can endanger the fate of the project itself. Therefore, these digital content creators strive to retain workers by providing job security, paying higher wages and providing other incentives such as educational and training opportunities and stock-options. This HR practice brings stability to the production process.

This narrative reveals a reality strikingly different from what has been documented in the literature. This suggests that the organizational practice of the creative

industry does not converge with practice in the content workforce. Rather, the organizational practice of the creative industry may be path-dependent on existing industry characteristics specific to a regional and national economy, institutional settings, and industrial and labor relations practices. It remains to ask whether this internal organizational resource-centered and commitment-based HR practice based approach is positively related to firm performance among digital content creators in Seoul. To test the effect of these human resource practices, I will determine the causal relationship between the knowledge stock-based HR practice and the commitment-based HR practice and innovation.

### **Hypotheses**

A review of the literature on knowledge and organizational management and information derived from the descriptive statistics and in-depth interviews suggests at least two organizational practices that should impact innovation in the digital content industry in Seoul. First are a set of practices that influence the increase of organizational knowledge stock. Second are incentive-based HR practices, which help in retaining skilled workers and facilitating social connections within the organization.

#### ***Organizational practices focusing on establishing internal knowledge stock***

There have been diverse approaches to understanding the sources of innovation. The external factor-centered approach considered R&D investment, cooperation with local suppliers and customers, and collaborations with research institutes and universities to be critical sources of new information and knowledge (Capello and Faggian, 2005). On the contrary, the view that emphasizes internal organizational capacity holds that employee's abilities, intelligence, and skills acquired from formal education and job experience (human capital, intellectual capital, or creative capital) constitute a key to an organization's creative capacity (Becker, 1964). The importance of prior knowledge in absorbing outside knowledge is also emphasized by Cohen and Levinthal (1990) and Bosch et al (1999).

In this sense, educational attainment and work experience can be robust measures of the knowledge stock. Hiring employees with higher general knowledge and an ability

to continuously learn and predict the outcome of problem solutions or new products accurately will help the firm greatly. Glaser (1984) argued that changes in knowledge base through education can produce sophisticated changes in cognitive performance. Education helps individuals improve their understanding of what they know, more accurately predict outcomes, better manage time and resources, and monitor results. In effect, education provides new explicit information and knowledge that greatly influences an individual's cognitive reasoning skills. This theoretic assumption was proven correct through empirical studies by Smith, Collins, and Clark (2001). This paper continues that research by testing whether educational attainment is in a positive relationship with innovation in the creative industry.

The experience of workers is also an important factor that has a positive impact on overall organizational knowledge stock (Smith, Collins, and Clark, 2005). Some researchers have argued that workers who have extensive work experience in an industry will have greater expertise and thus more relevant knowledge to bring to the exchange and combination process. In addition, more experienced workers have the ability to locate knowledge needed for problem solving faster than would novices. These previous findings are of special relevance to the digital content industry, where already established knowledge industry wide knowledge is not substantive because of its short history and continuously evolving industry sectoral characteristics. In a new industry where knowledge has not yet been consolidated into academic programs, much important information has to be developed within firms. For instance, information about customers and markets for digital content are not readily available or taught at school. Such information and knowledge is the basis both for new ideas and more realistic and practical directions in production, marketing, and other business processes. Therefore, we can use the years of operation of a firm in this industry as an important proxy for knowledge accumulation within the firm.

On the other hand, while experience is an important source of practical knowledge, it comes with a cost: past experience does not always play a positive role in the creation of new ideas. For instance, as Audia and Goncalo (2007) pointed out, when people have experienced success with a particular strategy, they often become narrowly focused on implementing that particular strategy to solve new problems. Therefore, as

success increases the likelihood of future contributions, the new ideas developed tend increasingly to follow on old lines. This finding points to the importance of an explorative capacity in counteracting the negative effects of past experience in the creative process. This discussion has important repercussions on HR practice. It suggests that creative people can be stimulated to continue developing new ideas if they are surrounded by people with a capacity for continuous learning and an emphasis on exploration. Thus, this research combines two measures in testing the causal relationship between the knowledge stock and innovation in the digital content industry. On the other hand, many prior studies have shown that R&D investment can also increase the internal knowledge stock of an organization (Capello and Faggian, 2005; In this paper, I assume that three organizational practices, including: 1) emphasizing learning capacity rather than skill specificity, 2) worker retention and 3) R&D investment, together bring additive effects to increase organizational knowledge stock, which in return contributes to the performance of a firm in the digital content industry.

*Hypothesis 1: The combination of educational attainment, job experience, and R&D investment will be positively related to more innovative firms.*

### ***Incentive-based HR Practice and Innovation***

As discussed previously, while the knowledge stock itself is an important raw material for new idea development, knowledge exchange and combination is a critical process in generating new knowledge. Such knowledge exchange, combination, and learning are better facilitated under trust-based social relations. Certain HR management practices encourage knowledge transfer and combination among workers by stimulating social conditions that are thought to be facilitative of knowledge exchange and combination. Collins et al. suggested trust, collaboration, and shared codes and languages among employees have an important meditative role that promotes knowledge exchange and combination among workers because these qualities provide the organization with a common base of understanding through which individuals with disparate experience, knowledge, and backgrounds can transfer and integrate new ideas (Szulanski, 1996). The notion of ‘transactive memory system’ also argues that group memories stored in

organizational social relations enhance workers performance by increasing accuracy and productivity of group work and trust in other team members' expertise (cite).

Studies have shown that commitment-based HR practices induce an organizational social environment by motivating employee behavior and capabilities that contribute to a firm's competitive advantage (Bowen & Ostroff, 2004; Collins and Clark, 2003) and act in the best interest of their firm rather than only in their individual interest (Rousseau, 1995; Tsui et al., 1995' Batt, 2002). The incentive-based HR practices that are known for enhancing motivation and commitment include job security, incentive compensation, training, and employee participation (Huselid, 1995; Pfeffer, 1998). In this paper, I hypothesize that by providing job security, high compensation, and educational opportunities, the digital content creators increase the motivation and commitment of workers, which in turn contributes to innovation.

*Hypothesis 2: Commitment-based HR incentives will be positively related to more innovative firms.*

## **MEASURES AND METHODOLOGIES**

### **Samples**

Samples are drawn from a national survey<sup>1</sup> of software firms conducted by the Korea IT Industry Promotion Agency (KIPA) a subsidiary organization of the Ministry of Information and Communication (as of 2004), in 2004. For the purpose of this analysis, I chose 353 firms located within six digital content clusters in Seoul, Korea. I used this data because the survey contains information about the characteristics and HR practices of digital content creators in Seoul<sup>2</sup> that coincided nicely with my study goal. The KIPA survey<sup>3</sup> data analysis included 358 small- to medium-sized digital industry-related firms. 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 those 3,187 surveys sent to the selected firms, 443 surveys were returned properly. Of

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1 . KIPA is a subsidiary organization of Ministry of Information and Communication (as of 2004).

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.

unreturned surveys, 1,086 were returned with notations that the firms had closed or with markings that indicated a delivery failure. Another 452 firms declined to participate in the survey. Another 103 survey attempts failed for unknown reasons. And the rest of surveys failed due to a mailing address error. Among these 443 responses, 358 responses fell within the boundaries of the six digital content industry clusters in Seoul.

### **Dealing with missing values**

This study uses a combination of list wise deletion and the multiple missing data imputation techniques. There has been an increasing acknowledgment of the importance of dealing with missing values because there may be valuable information in the data that are missing. As most statistical procedures rely on complete-data methods of analysis, keeping the missing values will likely cause a biased result. Deleting records with missing values (list wise deletion) has been a common practice for dealing with missing values. It is simple and can be a robust method, if the deletion of cases does not significantly lower the sample size. In certain cases, deleting cases will decrease sample size, which will in turn decrease the power of the analysis. In this study, among the 358 respondents, five cases had many missing values in variables that I included in my analysis. I sought any common characteristics among these five cases and found that these firms are not closely correlated in terms of such firm characteristics as age, size, number of employees, and % of R&D investments. Therefore, I ruled out the possibility that there was a pattern to the missing data among these five cases. After eliminating the five cases, the pattern of missing data became much simpler; missing values were concentrated in 1 variable (average wage).

From this point, I used the multiple imputation (MI) method embedded in the SPSS. First, the SPSS MI method determines whether the manner in which missing data are distributed (missingness) is random or not: the process determined that the missingness of the data was not random. It suggests that deletion of the remaining cases will skew the analysis. Therefore, I used multiple missing value imputation to generate a likely estimate of missing values drawing from the predictive distribution of missing values given the observed data (cite). Other techniques for missing data imputation have serious shortcomings. For instance, the mean value substitution will bias the variance and

covariance toward zero. The multiple missing value imputation method yielded imputations for the five sets of missing value.

## **Variables and Measures**

### ***Theory driven additive indexes (independent variables)***

This study follows the procedures used by MacDuffies (1995), Youndt et al., (1996), and Batt (2002) to aggregate the measures of HR practices. The use of additive indexes is based on important findings that suggest that firms can improve performance either by increasing the number of practices they employ within the system or by using the practices in an HR system in a more comprehensive and widespread manner. HR practices affect performance not individually but as interrelated elements in an internally consistent HR bundle or system. In the manufacturing setting HR bundles have been proven to contribute most to assembly plant productivity and quality when they are integrated with manufacturing policies under the organizational logic of a flexible production system. In flexible production plants with team-based work systems, ‘high-commitment’ HR practices (such as contingent compensation and extensive training, and low inventory) consistently outperformed mass production plants (cite). I elicit two aggregate indexes in reflection of the literature review and de facto practice by digital content creators in Seoul including (1) organizational practices to increase the knowledge stock (knowledge stock index) and (2) incentive based human resource practices (HR incentive index). In this paper, additive indexes are created based on the z-score index, a simple additive measure. To do so, I transformed the variables to z-scores and added them together. The additive index can hide information that each variable carries. However, this methods provides an advantage by combining a range of variables into a single, more easily understood dimension. Thus the index provides a conservative estimate that may underestimate the synergies or multiplicative effects of combining practices.

**Knowledge Stock Index** For the knowledge stock index, I used two measurements of selective recruitment practice the percentage of workers with masters degrees and the percentage of workers with high school diplomas. Organizational investment is measured by two variables. R&D investment is measured by the percentage

of net revenue reinvestment in R&D activities. Worker retention is measured by the average tenure of workers (Table 1).

**Table 1 about here.**

**HR Incentive Index** This study elicited practices that collectively demonstrate a long-term investment in employees, the creation of internal labor markets, and the development of firm specific knowledge. Those practices include job security, high compensation and investment in employees education. These practices are measured by % of full-time workers per firm, average wage, and the percentage of expenditure for education (Table 2).

**Table 2 about here.**

### ***Dependent Variable***

The dependent variable, innovativeness, is measured by the proportion of original software (inclusive of both software programs used to create content and the content itself) sales compared to total sales. In much innovation literature, patents have been used as a proxy measure of innovation. However, complications of dealing with patents as a proxy for innovation have been reported. For instance the count of patent does not reflect how recently the invention occurred. Many old firms own original patents but have not engaged in any recent innovation activities. More importantly, the nature of digital content creation is such that it takes a long time for a firm to develop a new character, content, and technology that are patentable, and firms that are in their early development may not have many patents. The many missing values in the patent question suggest that digital content firms located in Seoul are not focused on generating patents.

The original dependent variable is scale data. However the distribution of the variable was dyadic which violates the linearity assumption of the multiple linear regression (the first assumption) (Appendix Figure 1). Therefore, I transformed the

dependent variable into a binary variable (0=less innovative, 1=more innovative) by dividing it at the median value.

### ***Control Variable***

I included several control variables that have been found to influence HR practices. For example, larger firms are likely to invest more on HR practices because they have the monetary and organizational resources. However, there are cases of small firms with high performance and higher revenue. Therefore, I included total sales. There has been an ongoing debate on the effect of external institutional factors on innovation, and it has been found that the exact effects of institutional factors, such as subsidies, vary depending on industry sectors and national economic and institutional models. Given the traditionally strong influence of the Korean government on business activities and the effectiveness of its industrial policies, I have included two important government subsidies targeting small firms in high-tech industry sectors: venture company certificates and the privilege of occupying government-owned venture buildings.

**Table 3 about here.**

## **RESULTS: What distinguishes the more innovative firms in the digital content industry in Seoul?**

Table 4 provides the means, standard deviations, and 'pairwise' correlations of the variables. Two variables, PartTotal and BA\_P show high  $p$  value indicating the possibility of multi collinearity. The following collinearity test (SPSS generates variance inflation factor (VIF) value), both PartTotalP and BA\_P showed high multi collinearity (VIF>10) which are eliminated from model building. Table 5 reports the results of logistic regression analyses in which a firm's innovative capacity is the dependent variable. Overall, the results support the first hypothesis but not the second and the third hypothesis.

**Model 1 Knowledge Stock Index** With regards to the internal labor pool hypothesis, I found that the the knowledge stock index which measures effect of the combination of selective recruitment, R&D investment (sig=0.037); the firm age (sig=0.018), the amount of total sales (0.000), and the recipient of the governmental venture certificate (0.060) are statistically significant predictors of more innovative firms. This suggests that it is possible to predict that firms practicing selective hiring, providing job security, and investing in R&D are likely more innovative in the context of digital content creators located in Seoul. Thus Model 1 supports the Hypotheses 1 that the combination of educational attainment, job experience, and R&D investment will be positively related to the innovative capacity of a firm. The synergic effect of these HR practices and the relevance of using the additive index to capture the synergy can be highlighted from the comparison with the logistic regression with variables before aggregation (please see table 1 in appendix).

However, VTbuilding variable is a negative predictor of digital content firms innovation, which poses an interesting contrast to receipt of a government venture company certificate, which is a positive predictor of innovative capacity. To understand why two different institutional supports bring opposing effects on innovation, it is important to understand the targeted areas. The venture certificate program is designed to generate such longer term opportunities as tax breaks and increased visibility for the firm by adding intangible merits (reputation) that could be beneficial in obtaining future investment opportunities. Venture building access brings a short term financial benefit by saving the cost of rent and increasing access to shared conference space, equipment, and training opportunities offered by government organizations. Theoretically, it is possible that the government programs targeting short-term and direct impacts may cause a crowding out effect, which in fact discourages innovation among the recipients.

**Model 2 HR Incentive Index** Model 2 testing of the effect of HR practices aimed at motivating employees by providing incentive based practices including job security, high wages, and investment in employees' education does not support the hypothesis that assumed that commitment-based HR incentives will be positively related to innovation. In Model 2, two control variables including lgfirmage and venture are positively related

to innovation whereas *Igtotalsale* and *VTbuilding* are negatively related to innovativeness of the firm.

**Table 4 and 5 about here.**

## **SUMMARY AND CONCLUSION**

This research was designed to test whether high performance HR practice influence the innovation capacity of firms in the creative industry sectors. While there has been growing evidence that supports the argument that HR practices are predictors of firm performance, this theory has not been tested in the creative industry context. I first reviewed the theory suggesting that this perspective might be useful in understanding labor requirements and firm strategies in creative industries: the knowledge creation and the production processes are heavily dependent on organizational capacity to exchange and combine existing knowledge in which internal organizational labor pool and culture have advantages over transaction-based short-term interactions. I then used in-depth interviews with top managers of DC firms in Seoul to make a connection between this theory about HR practices and the empirical case. Finally, I constructed hypotheses to test whether organizational practices focusing on the internal labor pool and motivation are in fact significant predictors of innovation in DC industry.

The findings in this study can be summarized as follows: first, the combined use of organizational practice that are supposed to increase a firm's knowledge stock and learning capacity, including selective recruitment, R&D investment and worker retention are important predictors of innovation capacity in the DC industry. This result is also

consistent with the information derived from in-depth interviews with top HR managers that emphasizes the importance of establishing a firm's own internal labor pool and retaining employees longer, and developing the internal production system. Second, however, the incentive-based HR practices that are supposed to motivate workers do not show a significant relationship with innovative capacity, while other control variables such as  $\ln(\text{firmage})$ ,  $\ln(\text{totalsales})$ , venture and  $\ln(\text{VTbuilding})$  are significantly related to the innovative capacity of a firm. This finding does not support the feeling evident in the in-depth interviews and descriptive data analysis that firms try to exercise incentive-based HR practice in order to encourage the social bond among workers and the loyalty towards the firm so that the firm can secure the core workforce and in turn stabilize the production process.

In relation to the literature, these findings partially support the arguments of the high performance HR practice literature concerning the importance of organizational practices to maintain an internal labor pool where the organization specific knowledge and capacity of continuous learning is stored. This aspect has been disregarded at large in the literature on the creative industry. Instead, the short-term project based- and contingent workforce driven-work organization practice has been accepted as *the* dominant form. But this finding establishes the importance of extending our intellectual and practice exploration of the internal capacity for building firm specific knowledge and innovation, which has been neglected under the prevailing model.

Despite this positive finding, our study, like many others, has shortcomings. There was no strong evidence to support the idea that incentive-based HR practices play a meditative role in increasing the innovative capacity of a firm by encouraging social capital. Using general survey questions, such as the one used in this study, makes it difficult to find direct relationships between independent variables and dependent variables that are connected by mediative factors. For instance, as Smith and Collins (2006) presented in their study, incentive-based HR practice is mediated by social climate factors, such as trust, cooperation, and shared codes and language, that are important organizational conditions for better knowledge exchange and combination (the critical process in new knowledge creation and innovation). However, there are no close proxy measures for social climate in current survey data. To correctly measure the effect of

incentive-based HR practices on firm performance, it is necessary to design better customized surveys to understand incentive-based HR practices and how they affect organizational social capital and new knowledge creation.

In conclusion, this study provides preliminary evidence on the significance of internal organization, in particular the role of internal labor pools, in innovation. This study suggests that the leaders of creative industry firms, in particular the digital content industry, should carefully choose between exploitation and exploration in managing their creative workers and creative capacity, because these practices may shape the firms competitive advantage. There are some policy implications too. Many localities have focused on attracting creative individuals to their localities and regions in order to create diversity and depth within the local creative pool. However, this focus on individual creative people disguises the important role that already existing creative industry firms might carry in economic development. Existing firms can be an important source both of new jobs and, by changing their human resource practices, job stability.

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TABLE 1. Measures for Factors for Internal knowledge-stock Index

Variable name	Description
R&D	% of revenue the firm invest in R&D
MA_P	% of employees with master's degree
HA_P	% of employees with high school degree

Note: BA\_P (% of employees with bachelor's degree) was originally included in the independent variables but eliminated due to the high multi-collinearity.

TABLE 2. Measures for the Incentive-based HR Practice Index

<i>Variable name</i>	<i>Description</i>
FullTotalP	% of full-time workers per firm
Tenure	Average years of employees' year of tenure
AvgWa	Average wage
Ex_edu	% of expenditure for employee education compared to the total expenditure

TABLE 3. Control Variables

<i>Variable name</i>	<i>Description</i>
PartTotalP	% of part time workers per firm
LgFirmAge	Natural log of firm age
LgTotalSale	Natural log of total sales
Venture	Government venture certificate (0=no, 1=yes)
VTbuilding	Recipient of government operated venture building subsidies (0=no, 1=yes)
Ex_edu	% of expenditure for employee education compared to the total expenditure

Table 4. Means, Standard Deviations and Correlations

Variable name	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
1. FullTotalP	94.2101	14.322	1												
2. PartTotalP	5.7899	14.322	-1.000**	1											
3.R&D	30.8532	28.336	-0.018	0.018	1										
4.MA_P	12.5226	20.811	-.177**	.177**	.112**	1									
5. BA_P	82.4758	23.565	.110**	-.110**	-.087**	-.830**	1								
6.HA_P	4.2764	10.857	.073**	-.073**	-0.017	-.100**	-.367**	1							
7.LgFirmAge	1.7438	0.5517	-.048*	.048*	-0.034	0.041	-.050*	0.03	1						
8.LgTotalSale	7.0895	1.7178	-.070**	.070**	0.031	0.022	-0.017	0.023	.495**	1					
9.Venture	0.36	0.48	-.117**	.117**	0.032	0.03	-0.005	0.003	-.111**	-.085**	1				
10.VTbuilding	0.09	0.282	.055*	-.055*	.182**	.077**	-.073**	0.031	-0.044	-0.028	.070**	1			
11.Tenure	2.9783	1.1171	0.012	-0.012	.061**	-0.022	-0.017	0.025	.079**	0.028	-.058*	0.006	1		
12.AvgWa	13.8069	8.2613	.218**	-.218**	.219**	.119**	-.129**	-0.034	0.035	0.001	-.072**	0.017	.063**	1	
13.Ex_edu	1.89	3.2433	.084**	-.084**	-.085**	0.019	-0.01	-0.031	0.034	-0.034	-.084**	0.007	-.094**	0.036	1

N=323, \*  $P < 0.05$  level (2-tailed), \*\*  $P < 0.01$  level (2-tailed).

Note: BA\_P (% of employees with bachelor’s degree) and PartTotalP (% of part time workers) were originally included in the independent variables but eliminated due to the high collinearity.

TABLE 5. Results of Logistic Regression

Variable	Model 1			Model 2		
	B	P	Odd Ratio	B	P	Odd Ratio
Internal labor pool Index	.117*	.037	.163			
Motivational practice Index				-.049	.401	.097
LgFirmAge	.614*	0.018	.001	.674	.009	.001
LgTotalSale	.529*	.000	.003	-.523	.000	.001
Venture (1)	.482*	.060	.001	.521*	.045	.004
VTbuilding (1)	-1.065*	.022	.000	-1.139	.015	.001

APPENDIX

Table 2. Logistic Regression without aggregated indexes

Imputation Number			B	S.E.	Wald	df	Sig.	Exp(B)	Fraction of Info
Original data	Step 1 <sup>a</sup>	Venture(1)	.569	.261	4.758	1	.029	1.766	
		VTbuildina(1)	-1.203	.470	6.535	1	.011	.300	
		LnTotalsales	-.536	.094	32.473	1	.000	.585	
		LnFirmAge	.650	.258	6.335	1	.012	1.915	
		Full totalP	-.018	.009	4.330	1	.037	.982	
		Constant	5.171	1.180	19.190	1	.000	176.028	
1	Step 1 <sup>a</sup>	Venture(1)	.569	.261	4.758	1	.029	1.766	
		VTbuildina(1)	-1.203	.470	6.535	1	.011	.300	
		LnTotalsales	-.536	.094	32.473	1	.000	.585	
		LnFirmAge	.650	.258	6.335	1	.012	1.915	
		Full totalP	-.018	.009	4.330	1	.037	.982	
		Constant	5.171	1.180	19.190	1	.000	176.028	
2	Step 1 <sup>a</sup>	Venture(1)	.569	.261	4.758	1	.029	1.766	
		VTbuildina(1)	-1.203	.470	6.535	1	.011	.300	
		LnTotalsales	-.536	.094	32.473	1	.000	.585	
		LnFirmAge	.650	.258	6.335	1	.012	1.915	
		Full totalP	-.018	.009	4.330	1	.037	.982	
		Constant	5.171	1.180	19.190	1	.000	176.028	
3	Step 1 <sup>a</sup>	Venture(1)	.569	.261	4.758	1	.029	1.766	
		VTbuildina(1)	-1.203	.470	6.535	1	.011	.300	
		LnTotalsales	-.536	.094	32.473	1	.000	.585	
		LnFirmAge	.650	.258	6.335	1	.012	1.915	
		Full totalP	-.018	.009	4.330	1	.037	.982	
		Constant	5.171	1.180	19.190	1	.000	176.028	
4	Step 1 <sup>a</sup>	Venture(1)	.569	.261	4.758	1	.029	1.766	
		VTbuildina(1)	-1.203	.470	6.535	1	.011	.300	
		LnTotalsales	-.536	.094	32.473	1	.000	.585	
		LnFirmAge	.650	.258	6.335	1	.012	1.915	
		Full totalP	-.018	.009	4.330	1	.037	.982	
		Constant	5.171	1.180	19.190	1	.000	176.028	

Imputation Number			B	S.E.	Wald	df	Sig.	Exp(B)	Fraction of Info
Original data	Step 1 <sup>a</sup>	Venture(1)	.569	.261	4.758	1	.029	1.766	
		VTbuilding(1)	-1.203	.470	6.535	1	.011	.300	
		LgTotalsales	-.536	.094	32.473	1	.000	.585	
		LgFirmAge	.650	.258	6.335	1	.012	1.915	
		Full_totalP	-.018	.009	4.330	1	.037	.982	
		Constant	5.171	1.180	19.190	1	.000	176.028	
1	Step 1 <sup>a</sup>	Venture(1)	.569	.261	4.758	1	.029	1.766	
		VTbuilding(1)	-1.203	.470	6.535	1	.011	.300	
		LgTotalsales	-.536	.094	32.473	1	.000	.585	
5	Step 1 <sup>a</sup>	Venture(1)	.569	.261	4.758	1	.029	1.766	
		VTbuilding(1)	-1.203	.470	6.535	1	.011	.300	
		LgTotalsales	-.536	.094	32.473	1	.000	.585	
		LgFirmAge	.650	.258	6.335	1	.012	1.915	
		Full_totalP	-.018	.009	4.330	1	.037	.982	
		Constant	5.171	1.180	19.190	1	.000	176.028	
Pooled	Step 1 <sup>a</sup>	Venture(1)	.569	.261			. <sup>b</sup>	1.766	
		VTbuilding(1)	-1.203	.470			. <sup>b</sup>	.300	
		LgTotalsales	-.536	.094			. <sup>b</sup>	.585	
		LgFirmAge	.650	.258			. <sup>b</sup>	1.915	
		Full_totalP	-.018	.009			. <sup>b</sup>	.982	
		Constant	5.171	1.180			. <sup>b</sup>	176.028	

a. Variable(s) entered on step 1: Venture, VTbuilding, LgTotalsales, LgFirmAge, Full\_totalP.

b. No variance among imputations.