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EDUCATIONAL SCIENCE AND TECHNOLOGY OF BEHAVIORAL
SCIENCES

THE RELATIONSHIPS BETWEEN ORGANIZATIONAL CULTURE,
KNOWLEDGE PRODUCTIVITY AND VALUE CREATION

Meng Li

Researcher

Meng Li (s1426044)

m.li-1@student.utwente.nl

Supervisors

Prof. Dr. Joseph Kessels

J.W.M.Kessels@Utwente.nl

Dr. Ruth van Veelen.

r.vanveelen@utwente.nl

Name of external organization

Shaanxi Coal and Chemical Industry Group

Title

The Relationships between Organizational Culture, Knowledge Productivity, and Value Creation

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Abstract

In the current knowledge economy, the competency to collect information and to apply knowledge for improvement and innovation plays an important role in business activities. Many organizations make great efforts in improving knowledge productivity and value creation through creating a strong organizational culture. Organizational culture, which refers to shared values, norms and practices, can influence people's behaviors of learning, sharing, and generating knowledge in their daily work and can inspire people's abilities for innovation, which may lead to high value and corporate reputation. Employees working in an open, people-oriented and challenge-seeking environment can cultivate feelings of ownership and accomplishment. However, people in some Chinese enterprises are not aware enough of the importance of a supportive organizational culture and do not know clearly how to increase their knowledge productivity and value creation. Therefore, by means of three surveys accompanied by interviews in one of the Chinese State-Owned Enterprises, Shaanxi Coal and Chemical Industry Group (SCCIG), this study investigates the characteristics of and relationships between organizational culture, knowledge productivity and value creation, and develops a set of guidelines for building a strong organizational culture in order to achieve high value creation and knowledge productivity through learning and development. This study is partially a replication study of a similar study in a South Korean context.

Keywords: *organizational culture, knowledge productivity, value creation*

I. Introduction

1.1 Background of the Study

This study discusses the organizational culture, knowledge productivity and value creation in the context of Chinese State-Owned Enterprises (SOEs). As China is moving to a knowledge-based economy, where the application of knowledge outweighs traditional elements of capital, raw materials and labor as the main means of production (Kessels & Keursten, 2002), the sustainable competitive advantage of a company is determined by people's ability to acquire, share, and apply knowledge in the workplace (Dahlman & Aubert, 2001). Organizations with high knowledge productivity can gradually improve and radically innovate their work process, products and services (Kessels, Verdonschot & De Jong, 2011). Producing knowledge in organizations is an ongoing process in the day-to-day work environment, where people from all levels can participate (Kessels & Keursten, 2002).

Research shows that a company's ability to learn more effectively and be adaptive in rapid changing market is favorable for developing competitive advantage and gaining sustainability (Goodall & Warner, 1999). As the emergence of the domestic private sector, as well as increased global competitions, Chinese SOEs have faced severe challenges to become more effective and competitive. In the SOEs, traditional organizational structure and culture, which are featured with centralized training and development practices, are not effective enough to meet the increasing competitions and the customer needs for high-quality products and services (Zhang, Zhang, & Yang, 2004). The trainer-centered approach pays less attention to stimulating employees' innovative ideas, critical thinking and self-directed learning in the workplace, employees are not expected to take autonomy and responsibilities in learning (Zhang, 1999). Also, most Chinese SOEs are inflexible in changing markets and have a low level of future-orientation, which results in less economic success and low employee motivation (Wong, Ngo & Wong, 2006). Such culture and learning practices do not adapt to the needs in the changing marketplace. Therefore, to gain sustainable development and competitive advantages, it is imperative for Chinese SOEs to build an organizational culture that can stimulate employees' creative thinking and active learning in the workplace so that they can continually develop their knowledge, skills and cognitive abilities to keep up with the competitive environment.

Recognizing the drawbacks of traditional organizational culture in Chinese SOEs and the significance to promote innovation and sustainability, the Chinese government has taken efforts to transform into a strong organizational culture. A strong organizational culture can create such a working environment in which employees' ideas are respected, open communication and freedom to be creative and innovative are prioritized and encouraged (Kang et al., 2014a,; 2014b; Mobley, Wang & Fang, 2005; Deshpandé, Farley & Webster Jr, 1993). In recent years, the Chinese government and large Chinese enterprises have paid

great attention to organizational culture building. The bonus systems were improved aiming at stimulating employees' motivation and satisfaction through fairly rewarding performance (Chen, 1995). In 2005, the Chinese State-owned Assets Supervision and Administration Commission of the State Council (SASAC) issued a regulation that required Chinese state-owned organizations to "strengthen and build" their organizational cultures (SASAC, 2005). In 2006, the Ministry of Labor and Social Security approved a new professional designation of Corporate Culture Officer, which is meant to encourage large Chinese enterprises to provide various resources to staff members to help them get insights into the importance of organizational culture and obtain relevant qualifications. Moreover, the Chinese government has also sponsored various conferences about organizational culture nationally and locally, and subsidized organizational culture training for thousands of the Chinese corporate executives (Hawes, 2011). Likewise, 90% of Chinese SOEs have set up organizational culture programs with included references on their websites (SASAC, 2015). With these reform efforts to change Chinese SOEs organization culture, the working environment of SOEs is changing from stable and static to dynamic and challenging (Ralston et al., 2006).

The transformation of organizational culture in Chinese SOEs is aiming at achieving independent innovation and sustainable development. As it is expected that a strong organizational culture can significantly affect a company's ability to learn and innovate, which is important for increasing value and sustainable growth (Kang et al., 2014a). Such an organizational culture can inspire employees' talents, motivate employees to be innovative and creative, and to share knowledge, which lead to a sense of accomplishment (Hutchings & Michailova, 2004). Besides, a strong organizational culture promotes open communication and encourages employees' active participation in decision-making, which result in mutual trust and long-term commitment to the company (Linnenluecke & Griffiths, 2010). Employees working in such an environment tend to cultivate an ownership spirit as the vision and strategies are shared within the company and their opinions are respected. Thus, employees are willing to do their best for the company (Tosi, Misangyi, Fanelli, Waldman & Yammarino, 2004).

Although the notable significance of building a strong organizational culture in increasing knowledge productivity and value of a company, most people are unaware of the importance or cannot recognize their organizational culture until it is challenged, or it is made explicit through a new cultural model (Cameron & Quinn, 2011). Additionally, in some SOEs, the general environment remains characterized by a bureaucratic culture with formalized rules and principles (Deshpandé & Farley, 2000; 2003). Employees are not taken initiatives to do work beyond their job descriptions and tend to avoid taking risks (Bruton et al., 2000). These kinds of enterprises are organized in a centrally planned way, whose primary goal is to keep stability and production. In addition, standardized procedures and regulations, and multiple levels of management rule these enterprises. Promotions are based on knowledge of and obedience to the policies (Ralston et al., 2006). Thus, the strong organizational culture is not always favorable due to people's deep-rooted mindset and long lasting, traditional ways of management operations.

1.2 Objective of the Study

There are two goals set for this study. First, this study will gain insights into the characteristics of organizational culture in one of the Chinese SOEs, SCCIG and its relationship with knowledge productivity and value creation. Second, this study will develop guidelines for HRD in SCCIG to help them achieve high knowledge productivity which is expected to lead to high value creation. This study will only focus on investigating what characteristic of organizational culture is positively or negatively related to knowledge productivity and value creation, but not further examine the interrelationships among these three variables. Therefore, for statistical analysis, only correlation analysis will be conducted.

1.3 Context of the Study

This study is partially a replication study of a similar study in a South Korean context, which focuses on investigating the relationships among leadership, organizational culture, knowledge productivity and value creation in four leading Korean companies (Samsung Electronics, LG Electronics, Shinhan Bank and Woong-Jin Group) (Kang et al., 2014a, 2014b, 2014c). In order to expand the database and explore the influence of organizational culture in different contexts, this research will be conducted in one of the large Chinese state-owned enterprises, Shaanxi Coal and Chemical Industry Group (SCCIG), a leading enterprise of coal and chemical industry in China. However, due to the constraints of time and request from SCCIG, this study only focuses on the variable of organizational culture related to knowledge productivity and value creation.

SCCIG is a leading enterprise of coal and chemical industry in China. Since 2005, SCCIG has expanded its business market domestically and gradually increased its competitiveness through introducing new products and improving services. They have fully recognized the importance of organizational culture in business activities. With the support and encouragement in improving the organizational culture from the provincial government, SCCIG has been making great efforts in transforming its way of management. Also, it stresses the organizational culture construction in its next “Five-Year-Plan” by means of building a learning environment, creating outstanding experts teams, encouraging employees to participate in the enterprise reform in order to reach high knowledge productivity and value creation. Since constructing organizational culture is a long-term management practice, SCCIG is seeking ways to investigate how to improve its organizational culture and how to relate it to knowledge productivity and value creation, all of which is just consistent with the goals of this research.

As a student of the Human Resource Development program, I have been motivated to develop guidelines for improving organizational culture in SCCIG through optimizing its regulation of workplace learning and the supporting corporate curriculum.

1.4 Research Questions

In order to complete the research tasks, the study on the characteristics of organizational culture and the relationship with knowledge productivity and value creation in general and in SCCIG in specific, two main research questions are raised:

Research question 1: What are the relationships between the characteristics of organizational culture, knowledge productivity and value creation?

Research question 2: What are relevant guidelines for SCCIG to improve its organizational culture, which is favorable for learning and development and achieving high knowledge productivity and value creation?

The answer to the first question will be based on the study of the following sub-questions:

- (1.1) What are the characteristics of the organizational culture, knowledge productivity and value creation in SCCIG?
- (1.2) What are the commonalities and differences of SCCIG's organizational culture compared with that of the four leading Korean companies, which are regarded as the reference companies for this research?

The answer to the second question will be based on the study of the following sub-questions:

- (2.1) How are organizational culture, knowledge productivity and value creation as perceived by the employees related?
- (2.2) What guidelines can be put forward for SCCIG on the basis of the answers to research question 1?
- (2.3) What problems will be encountered when implementing the guidelines?

1.5 Research Outline

1.5.1 Overview of Sections

This section gives an overview of the outline of this research. In general, the research approach starts with a background introduction, and ends at a conclusion and discussion.

This thesis consists of five sections. Following the introduction (Section 1), which introduces the nature of the study, objective and contexts of the study, research questions and research outline, Section 2 presents a review of the literature in the field of organizational culture, knowledge productivity and value creation. This information leads to the conceptual framework with three main variables included. Section 3 discusses the quantitative study, followed by Section 4 which discusses the qualitative study in this research. Finally, Section 5 concludes the study through an articulation of the research findings, a discussion of the findings and a presentation of a set of guidelines for Chinese HRD professionals.

1.5.2 Significance of this Study

In this research, organizational culture in the context of a Chinese state-owned enterprise will be thoroughly discussed with the reference of the previous research in four leading Korean companies, which will definitely be helpful for finding out what factors will influence an organizational culture in Chinese state-owned companies.

In addition, previous empirical studies on the organizational culture have mostly been based on the western contexts (Kang et al., 2014b), which may not adequately reflect the reality of organizational culture in the Chinese enterprises. Therefore, this research will get insights into the development of organizational culture in a Chinese context and figure out how previous researches can contribute and what the limitations are. Both qualitative and quantitative methods will be used to provide the enterprise an external insight in improving organizational culture and in the problems that may occur in practice. The previous research results from a Korean context will be valued much when practical suggestions for the improvement of organizational culture are made.

II. Literature Review

This section presents a review of relevant literatures for this study. This review discusses the concept of organizational culture, especially its different characteristics. After that, it discusses knowledge productivity, which can lead to radical innovation and sustainable development. Following that, the concept of value creation is discussed with explanations of characteristics. This section is concluded with a conceptual framework that presents the main three variables and their relationships.

2.1 Organizational Culture

Organizational culture is a powerful but invisible social force. It refers to a set of shared values and beliefs, which provide people with norms of organizational functioning and expected behaviors to follow (Schein, 1992). It reflects the interaction of people in their workplace and can shape people's behaviors (Zhu, 2013). Pettigrew (1979) described organizational culture as a sum of languages, symbols, procedures, and beliefs within an organization. Schein (2004) defined organizational culture as a pattern of shared assumptions, which are built overtime as people solve problems of external adaptation of growth, survival and internal integration of keeping daily functioning and learning. These assumptions can be passed on to other new members within the organization to help them view things and act accordingly. Since a specific organizational culture emerges as an integrated mechanism, it informs organizational process and guides people's behaviors.

Researches have shown that different characteristics of organizational culture lead to various values and norms of an organization, which result in different behaviors in learning and

sharing knowledge (Hogan & Coote, 2014). The characteristics of organizational culture are defined and measured by different typologies. Cameron and Quinn (2011) developed the organizational culture assessment instrument, OCAI model to assess organizational culture profiles, which includes four distinct cultures, clan, adhocracy, hierarchy and market. Denison and Spreitzer (1991) identified four organizational culture traits as a group culture, a developmental culture, a rational culture, and a hierarchical culture. These two typologies of organizational culture share a set of similarities, for instance, they both recognize the hierarchical culture, which emphasizes on stability. Adhocracy culture and development culture focus on external environment and emphasize on innovation. Clan culture and group culture are characterized by internal teamwork and participation. Market culture and rational culture are goal and results oriented.

However, as a result of rapid evolution of organizational culture in recent years, the characteristics of organizational culture are becoming more diversified and complicated. The organizational culture in current society can be interpreted with a combination of various characteristics. Therefore, in order to reflect the diverse and complicated characteristics of organizational culture in current business context, Kang et al. (2014a; 2014b) conducted a research in four leading Korean companies, and advocated four characteristics of organizational culture, namely, people-oriented (OC1), high-challenge-seeking and innovative (OC2), low-challenge-seeking and status-quo (OC3), and bureaucratic and top-down (OC4). Comparing with previous organizational characteristics, this organizational typology shares some similarities with previous ones. For instance, the bureaucratic and top-down culture is similar with hierarchical culture which emphasizes centralized control. Different from previous typologies, Kang et al. (2014a; 2014b) clearly describe the current organizational culture characteristics in the context of Korean companies, and highlight the feature of people-orientation, which is seldom discussed before.

In order to investigate the characteristics of organizational culture in one of Chinese SOEs today, which may share some similarities with the companies in the Asian country, Korea, this study will use the typology of Kang et al. (2014a; 2014b) with the support from other theories. The definition of the four characteristics of organizational culture will be explained in the following part. With these characteristics as the cutting points, the two research goals are approached within the context of the Chinese enterprise, SCCIG.

People-oriented

A people-oriented organizational culture regards people as the most important asset of a company. The organization values members' professional development and provides various opportunities and resources to stimulate their best practices (Kang et al., 2014b). It highlights the importance of belonging, trust, interpersonal relationships, professional development, team cohesion, and employee morale (Cameron & Quinn, 2011). The motivational factors can be interpreted as ownership, membership, and cohesiveness (Denison & Spreitzer, 1991). Leaders tend to understand employees' talent and appropriately utilize the human resources. Moreover, the leaders can support and facilitate the interaction among people and units (Denison & Spreitzer, 1991; Kang et al., 2014b).

High-challenge-seeking and innovative

A high-challenge-seeking and innovative organizational culture emphasizes change, innovation, and adaptation to external environment (Denison & Spreitzer, 1991). It encourages and stimulates people to try new approaches, to create new products and ideas, and to feel free to apply new technologies (Schein, 2004). Leaders have the awareness of entrepreneurship and are willing to take risks. They are also equipped with creative thinking and able to share a vision of the future (Kang et al., 2014b).

Low-challenge-seeking and status-quo

A low-challenge-seeking and status-quo organizational culture emphasizes stable and productive development rather than taking high risks for rapid growth (Kang et al., 2014b). The management of the organization behaves as a facilitator to encourage people to share their thoughts (Cameron & Quinn, 2011). Leaders tend to involve themselves in decision-making for long-term orientation and objectives of the organization (Kang et al., 2014a; 2014b).

Bureaucratic and top-down

A bureaucratic and top-down organizational culture focuses on formalized rules, procedures, policies, and structures that are created to govern people's actions (Cameron & Quinn, 2011). It emphasizes stability and efficiency in organizational operations (Ralston et. al., 2006). Leaders tend to be conservative, cautious and execute regulations (Denison & Spreitzer, 1991).

2.2 Knowledge Productivity

The development of an organizational culture is serving for improving a company's learning and innovative ability, stimulating knowledge sharing in the workplace, which is expected to be favorable for improving the knowledge productivity in a company.

2.2.1 The Importance of Knowledge Productivity

In the knowledge economy, knowledge is regarded as a key factor for sustainable development, and determines the growth of value creation and success of an organization (Kang et al., 2014a). As the growing importance of knowledge, organizations are shifting their focus from developing physical labor and the ability to coordinate and regulate to the ability to learn, generate and apply knowledge in new situations (Kessels & Keursten, 2002).

Human resources and individual's learning capability are considered as the two main factors of knowledge productivity (Kang et al., 2014c). Knowledge work, which is characterized by inherent learning, is replacing the routine work gradually. In order to complete the job and increase the added value, knowledge-workers have to find solutions for new problems

through continuous learning and transforming knowledge in their day-to-day workplace (Keursten, Kessels, & Kwakman, 2003). Drucker (1999) argued that knowledge-worker productivity is the biggest challenge of the 21st century management. The ability to learn in the daily workplace can stimulate knowledge workers' ability and productivity. Effective utilization and application of knowledge in day-to-day workplace lead to great productivity in organizations (Kang et al., 2014c). Therefore, an organizational learning culture is essential for stimulating workplace learning and increasing the learning ability of individual and organizations. Effective utilization of such knowledge assets is important for companies to reach high business performance.

2.2.2 Knowledge Productivity

Knowledge productivity refers to the ability of individuals and organizations to gather information, generate new knowledge, disseminate and transform the knowledge to reach improvement and radical innovation (Kessels, 2001). The process of knowledge productivity is regarded as a continuous learning process which not only concerns collecting information, analyzing problems, generating knowledge and applying it to specific problems, but also closely relates to the competence of individuals and organizations to gradually improve the rules, analyze new situations, and improve understanding of the mental and learning processes (Kessels, Verdonschot & De Jong, 2011). Furthermore, knowledge productivity is meant to radically innovate operating procedures, products and services to maintain sustainable development of the future growth of organizations (Keursten, Kessels & Kwakman, 2003). Kessels, Verdonschot, and De Jong (2011) claim that knowledge productivity contains two dimensions: the improvement and innovation of products, services, and work processes (KP1), and the sustainable ability to improve and innovate in the future (KP2). In this study, the results of knowledge productivity will be measured on the basis of these two dimensions.

Different from the concept of "knowledge management", knowledge productivity stresses empowering people more freedom in their learning processes, rather than managing and controlling knowledge. The underlying assumption of knowledge productivity is that management does not direct employees' learning process and set specific goals, but give autonomy in their own development (Kessels, 2004). This requires the support of an open organizational culture, where employees can freely exchange information and propose creative ideas. Organizations need to understand the process of knowledge productivity and create a productive learning environment within the organization and support employees in their learning. This is essential for improving and maintaining a knowledge-productive organization. Thus, in recent years, organizations are changing their organizational culture into more people-oriented and non-bureaucratic so that people can have more freedom to propose their ideas and design their way of learning (Kang et al., 2014c). Such changes in organizational culture stimulate people's motivation to learning in their daily work and promote knowledge creation and application in organizations.

2.3 Value Creation

A strong organizational culture allows a company to develop the capability to be innovative and sustainable in the future. Besides, an open and challenge-seeking company will bring more opportunities for employees' development and considerable benefits, which lead to higher value creation.

Value creation is considered as one of the most important objectives for organizational development. It helps an organization maintain sustainable growth and allows it to fulfill social responsibility. Besides, it allows people to have visions and dreams for the future and encourages them to do their best for the company (Kang et al., 2014a). Value creation is closely related to innovation and occurs when organizational resources are combined in a different way to improve the potential productivity and added value of those resources (Husted & Allen, 2007).

Value creation includes tangible and intangible assets. Tangible assets, which refer to an organization's revenue, net profit growth, and market value, are determined by the financial performance and stock market value of an organization (Kang et al., 2014a; Carayannis, 2004). Companies create value by scale-based manufacturing to expand market, and by reducing the cost of input to maximize net profit (Bansal, 2005).

As the competition among companies intensifying globally, many companies have to continuously introduce new products and improve their services and management to keep competitiveness. Knowledge, therefore, has become an important source to make products and services different (Mizuta et al., 2009). To be successful in the knowledge economy, products need to contain more information or intangible value (Sullivan Jr & Sullivan Sr, 2000). For instance, the chemical machines contain self-diagnose systems.

Intangible assets are related to corporate social and intellectual capital, reputation, image and corporate social responsibility, employees' satisfaction with work environment, financial benefits, and sustainability (Kang et al., 2014b, 2014c; Carayannis, 2004). The development and sustainability of a company relies on growth of market value, profit and satisfaction of customers and employees.

Tangible and intangible assets are not completely independent. They coexist within an organization and are influenced by the whole organizational culture and management (Carayannis, 2004). Traditionally, the value of a company is mainly measured by a company's financial performance and market value. In recent years, the rapid development of information technology has shifted the industrial world into a new information era, where the value of intangible assets has become an import predictor for estimating the value of a company (Mizuta et al., 2009). However, there are few researches related to intangible assets and most companies lack the opportunity and ability to characterize and measure these intangible assets. Therefore, based on the study of Kang et al. (2014c), this study will provide an approach for measuring the intangible assets, which include corporate reputation, image,

and corporate social responsibility (VC1), employee satisfaction with work environment (VC2), employee satisfaction with financial benefits (VC3), and sustainability (VC4).

Corporate reputation & social responsibility

In recent years, the increasing importance of constructing corporate reputation and corporate social responsibility has been recognized by many companies (Brammer & Pavelin, 2006). Corporate reputation is an overall estimation of a company's performance. It varies from the appealing of workplace, financial performance, to the leadership and corporate social responsibility. Companies with sound reputations not only lead to high financial performance, but also promise long-term sustainable growth (Jones et al., 1980). As an important element of corporate reputation, corporate social responsibility emphasizes the voluntary involvement in solving various social issues and making contributions to the society (Brammer & Pavelin, 2006). An increase in social responsibility may improve the image and reputation of a company's management and thus increase the satisfaction and trustworthiness of stakeholders and customers. In contrast, if a company acts in an irresponsible manner, stakeholders may decrease their confidence and doubt whether the company can meet their demands. Government officials may also propose more strict regulations to force the company act in a socially responsible manner (McGuire, Sundgren, & Schneeweis, 1988). These may bring negative effect to companies and hinder the sustainable development of companies.

Employee satisfaction

Employee satisfaction represents the extent of what employees expect from their jobs and what employees feel about their receiving (Wright & Davis, 2003). This can contain elements such as employees' contentment with their organizational culture, work environment and financial benefits. Employees who are happy with their work environment and satisfied with financial benefits are likely to show more loyalty to the company and provide better services to customers. This will lead to lower turnover and thus a better financial performance due to the decrease of cost on recruiting and training new employees (Chi & Gursoy, 2009).

Employee satisfaction can be enhanced through enriching tasks, specifying job objectives, promoting professional development, and providing considerable benefits (Wright & Davis, 2003). Research shows that employees who experience various tasks allowing them learning and applying new knowledge and skills and thus enhance their satisfaction (Stimson & Johnson, 1977). Specific job objectives positively affect employee satisfaction in which employees clearly recognize their role and understand what the company expects from them so that tasks can be successfully completed (Wright & Davis, 2003). Moreover, employee satisfaction increases when they see their future career growth, opportunities to develop skills, and obtain considerable benefits (Sherman & Bohlander, 1992; Wright & Davis, 2003).

Sustainable development

Sustainable development, according to the World Commission on Economic Development (1987), refers to a win-win situation that the development meets the needs of present without damaging the ability that future generations meet their needs. In knowledge-based and

innovation-driven economy, intellectual assets, such as research and development (R&D), organizational culture, and software, are also important in sustaining economic growth. A sustainable company, therefore, is one that delivers social and environmental benefits and invests in intellectual assets (Bismuth & Tojo, 2008). The capability to create sustainable value is related to a company's management decisions and organizational culture. For instance, in recent years, SCCIG fully utilize the policy support from the state government and government of Shaanxi Province to restrict their industry. They have adopted new R&D management practices that aim to update chemical technology and system to reach high production and construct recycling economic industry chain. Moreover, SCCIG start to open their market to closely cooperate with some advanced foreign companies, and do some investments in foreign markets. They regard sustainable and environmental development as their new vision and take efforts in exploring talents of employees to build their own expert team. These developments reflect their increasing sustainable capability and competitiveness.

2.4 Conceptual Framework

In the conceptual framework (Figure 1), the consistence and relationships between the three variables are shown as follows.

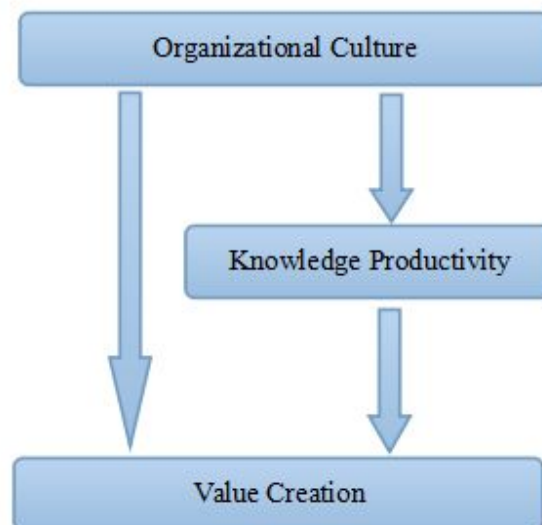


Figure 1. Knowledge productivity and value creation as related to organizational culture (Kang et al., 2014a)

III. Study 1: Identifying Characteristics of and Relationships between Organizational Culture, Knowledge Productivity and Value Creation

3.1 Research Design

Correlational research is carried out to determine if a relationship exists between two or more variables, and estimate the extent to which these factors are related (Privitera, 2013). In this study, correlational research is used to answer the first research question, in which questionnaires are used to investigate the characteristics of and relationships between organizational culture, knowledge productivity and value creation. The questionnaires provide an overview of the characteristics of the three variables. Then the statistic and correlation coefficient are used to measure the strength and direction of the correlation between those three variables.

3.2 Research Method

Quantitative research method is objective since it seeks explanatory laws and relies on numbers, proportions and statistical techniques (Shields & Twycross, 2003). It can minimize the researcher's bias which will influence the interpretation and reliability of the results. In order to answer the first research question, a generalized data needs to be collected. Therefore, quantitative method is applied in the first study. Questionnaires are delivered to a relatively large sample of employees in SCCIG to get statistical evidence to discuss about the relationships between the three variables.

3.3 Respondents and Procedures

The target population of this study is selected from the employees who work in SCCIG from the departments of technology, human resource, production, engineering and management. The participants are purposefully selected based on the criteria: (1) potential respondents need to work at SCCIG for at least one year to ensure that they know the company sufficiently, (2) potential respondents need to directly work for SCCIG rather than contract workers to ensure that they are fully involved in the daily activities and can provide their own feelings and understandings. Initially, 200 questionnaires were distributed to those five departments in the form of paper surveys. The reason for this is that not every participant has an e-mail account or uses a computer regularly. Finally, 160 employees responded, serving for a response rate of 80%. However, 11 out of the 160 questionnaires were eliminated due to missing data, which resulted in 149 valid questionnaires.

As shown in Table 1, among the respondents, 98 were males (65.8%) and 51 females (34.2%). 65.0 % of the participants were between 30 to 50 years old. Most of the participants were administrator (49.7%), followed by technical personnel (40.3%). Participants who had

worked at SCCIG for more than three years occupied 89.4%. The participants had different educational backgrounds, with the majority of them having followed vocational college (38.3%) and obtaining bachelor degrees (30.9%).

Table 1 *Demographic characteristics of the research sample (N=149)*

	Number	Percentage (%)
Gender		
Male	98	65.8
Female	51	34.2
Age		
Below 29 years old	36	24.2
30-40 years old	46	30.9
41-50 years old	52	34.9
Over 50 years old	15	10.1
Occupation		
Executive	3	2.0
Team manager	12	8.1
Administrator	74	49.7
Technical personnel	60	40.3
Tenure		
1-3 years	16	10.7
3-5 years	28	18.8
Over 5 years	105	70.5
Educational level		
Vocational or technical school	40	26.8
Vocational college	57	38.3
Bachelor degree	46	30.9
Master or above	6	4.0

The data collection took from 25th of April until 20th of May 2015. Initially, executives were asked for permission for approaching their subordinates. This was done by emails with explanation of the purpose, importance, and significance of the research. At the beginning of April 2015, the consent was sought from the executive of SCCIG to conduct research among employees. Management agreed to participate and employees from the five departments were notified of the research and its importance. Prior to the distribution of the final questionnaires, a pilot test was executed in order to estimate the time needed for responding and examine respondent interpretations to avoid ambiguities and other limitations of the statements in questions. Afterwards, an announcement was published to invite the respondents to participant in the research. This announcement introduced the researcher and described the significance of the research. The questionnaire was distributed on 25th of April 2015 to the participants from the five departments by placing the questionnaires on employees' offices and in boxes via managers. The languages of the questionnaire were both in English and Chinese. Data analysis was performed using SPSS 20.0.

3.4 Instruments

Questionnaire

The set-up of the questionnaire was derived from Kang et al. (2014b, 2014c). In their research, they developed several items to measure organizational culture, knowledge productivity and value creation. All items in the questionnaire could be answered based on a Likert scale, with answer possibilities ranging from “(1) totally disagree” to “(5) totally agree”. This results in the inclusion of 21 items representing organizational culture, which are based on Kang et al. (2014b). Knowledge productivity was measured through 29 items, based on Kang et al. (2014c). Finally, value creation was measured with 28 items (Kang et al, 2014c). The three questionnaires had the purpose of giving insights into the characteristics of organizational culture, knowledge productivity and value creation in SCCIG and of assessing the employee’s perceptions in those concepts. The complete questionnaires can be found in Appendix 1.

The items from the questionnaires were tested for reliable constructs through exploratory factor analysis based on principle component analysis. Direct oblimin rotation method was employed, as it expected some correlations among factors that allowed a more accurate and reproducible solution (Brown, 2009; Costello & Osboren, 2005). In terms of factor loading cut-offs, the commonly used value was 0.40, which was regard as the lowest acceptable threshold (Stevens, 2012; Matsunaga, 2010). Tabachnick and Fidell (2007) suggested more stringent cut-offs which going from 0.32 (poor), 0.45 (fair), 0.55 (good), 0.63 (very good) or 0.71 (excellent). For interpretative purposes, this study regarded 0.40 as the acceptable threshold.

The analysis confirmed that 4 factors could be extracted from the organizational culture (all eigenvalues > 1.00 and together explaining 56.513% of variance). These four factors were people-oriented (OC1), high-challenge-seeking and innovative (OC2), low-challenge-seeking and status-quo (OC3), and bureaucratic and top-down (OC4). Most factor loadings for these items were acceptable (>0.400). Two items (item No. 7, and item No. 12) were excluded due to the low factor loadings. Reliability analysis revealed that OC1, OC2, OC3, and OC4 were reliable with $\alpha = 84.8\%$, $\alpha = 84.0\%$, $\alpha = 61.6\%$, and $\alpha = 60.2\%$ respectively, which were acceptable. The factor loadings can be found in Appendix 2.

With regards to knowledge productivity, the results of the factor analysis indicated that two factors could be extracted (all eigenvalues > 1.00 and together explaining 42.138% of variance): improvement and innovation of products, services, and work processes (KP1) and sustainable ability to improve and innovate in the future (KP2). Most factor loadings for these items were acceptable (>0.400). Three items (item No. 12, item No. 15, and item No. 8) were excluded due to the low factor loadings. Reliability analysis revealed that KP1, and KP2 were reliable with $\alpha = 92.1\%$ and $\alpha = 79.7\%$ respectively, which were acceptable. The factor loadings can be found in Appendix 3.

Similarly, the analysis demonstrated that for value creation, 28 items could be categorized

into four factors (all eigenvalues > 1.00 and together explaining 52.495% of variance): VC1: corporate reputation, image, and corporate social responsibility, VC2: employee satisfaction with work environment, VC3: employee satisfaction with financial benefits, and VC4: sustainability. Most factor loadings for these items were acceptable (> 0.400). Five items (item No. 18, item No. 23, item No. 4, item No. 1, and item No. 16) were excluded due to the low factor loadings. Reliability analysis revealed that VC1, VC2, VC3, and VC4 were reliable with $\alpha = 76.5\%$, $\alpha = 87.5\%$, $\alpha = 71.1\%$, and $\alpha = 60.3\%$ respectively, which were acceptable. The factor loadings can be found in Appendix 4.

3.5 Results

The first research question is to describe the characteristics and investigate the relationships between the organizational culture, knowledge productivity and value creation, and compare the results with previous research in four-leading Korean companies.

This section discusses the descriptive statistics and correlations of the four organizational culture factors, two knowledge productivity factors and four value creation factors. Through comparing the means and standard deviations, the descriptive statistics provide a general view of the characteristics of organizational culture, knowledge productivity and value creation in SCCIG. Their relationships are reflected by correlation coefficients ranging from -1.00 to +1.00. The negative value represents a negative correlation while the positive value represents a positive correlation.

3.5.1 Relationships between Characteristics of Organizational Culture, Knowledge Productivity, and Value creation

Table 2 presents means, standard deviations and correlations for the main studied variables. The means for OC1 (people-oriented), OC2 (high challenge-seeking and risk-taking), and OC4 (bureaucratic and top-down) are on the positive site of the Likert-scale, above 3.0. The organization culture (low challenge-seeking and status-quo) is on the negative site (M=2.65). The mean for OC4 (bureaucratic and top-down) is higher than the other three characteristics. The means for KP1 (improvement and innovation of products, services, and work processes) and KP2 (sustainable ability to improve and innovate in the future) are also on the positive site of the Likert-scale. The means for VC1 (corporate reputation, image, and corporate social responsibility), VC2 (employee satisfaction with work environment) and VC4 (sustainability), except VC3 (employee satisfaction with financial benefits) (M=2.52), are on the positive site of the Likert-scale. There are no high variations among four organizational culture factors, two knowledge productivity factors, and four value creation factors.

The results of the analysis indicate that both organizational cultures (people-oriented=OC1, and high challenge-seeking and innovative=OC2) are found to be significantly and positively correlated with the two knowledge productivity factors (improvement and innovation of products, services and work processes= KP1, and sustainable ability to improve and innovate in the future= KP2). Also significant, positive relationships exist between both organizational

culture (OC1&OC2) and four value creation factors (corporate reputation, image, and corporate social responsibility=VC1, employee satisfaction with work environment=VC2, employee satisfaction with financial benefits=VC3, and sustainability=VC4). Other significant, positive relationships exist between two knowledge productivity factors and four value creation factors. In contrast, low challenge-seeking and status-quo organizational culture is found to negatively affect the knowledge productivity (improvement and innovation of products, services, and work processes= KP1, and sustainable ability to improve and innovate in the future=KP2) and value creation (sustainability).

However, different from the previous study in the four leading Korean companies, there are no significant relationships between OC3 (low challenge seeking and status-quo) and three value creation factors (corporate reputation, image, and corporate social responsibility=VC1, employee satisfaction with work environment=VC2 and employee satisfaction with financial benefits=VC3). Also, no significant relationships are found between OC4 (bureaucratic and top-down) and two knowledge productivity factors (improvement and innovation of products, services and work processes=KP1, and sustainable ability to improve and innovate in the future= KP2), between OC4 and four value creation factors.

Table 2 Means, standard deviations and correlations for all main variables (N=149).

	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. OC1	3.28	0.60		.697**	-.074	-.057	.715**	.512**	.543**	.592**	.395**	.453**
2. OC2	3.25	0.61			-.160	-.074	.654**	.379**	.491**	.572**	.359**	.359**
3. OC3	2.65	0.66				.272**	-.170*	-.170*	-.089	-.116	-.074	-.175*
4. OC4	3.72	0.57					-.071	.090	-.098	.002	-.035	-.041
5. KP1	3.28	0.51						.668**	.620**	.661**	.500**	.491**
6. KP2	3.58	0.49							.472**	.451**	.248**	.419**
7. VC1	3.63	0.44								.474**	.276**	.696**
8. VC2	3.06	0.58									.482**	.391**
9. VC3	2.52	0.54										.211*
10. VC4	3.62	0.51										1.000

Note: *P<0.05, **P<0.01, (both two-tailed).

1 = totally disagree, 2 = partly disagree, 3 = nor agree, nor disagree, 4 = partly agree, 5= totally agree

IV. Study 2: Identify Employees' Perceptions of Organizational Culture, Knowledge Productivity and Value Creation

4.1 Research Design

Descriptive research is carried out to observe, describe and explain the variables in specific

context (Mitchell & Jolley, 2010). It can provide information about the natural behaviors, attitudes or other characteristics of a particular group. In this study, descriptive research is used to answer the second research questions, in which interviews are applied to get insights into employees' and administrators' perceptions of the development of organizational culture, knowledge productivity and value creation in SCCIG.

4.2 Research Method

Qualitative research method is often used to find the meaning of something by observing what people do and say, which can provide rich and detailed data which helps understanding the context of study (Anderson, 2006). To answer the second research question, qualitative method is used by means of interviews. The interviews focus on finding out what SCCIG have done in improving organizational culture, knowledge productivity and value creation, what difficulties they encountered with and interviewees' ideas for improvement.

4.3 Respondents and Procedures

Followed the questionnaires, in-depth interviews are conducted with one executive, two team managers and three human resource staffs. Each interview takes about thirty minutes. The interviewees are purposefully selected from the 149 participants who have enough experience in developing organizational culture, and were familiar with the topics of knowledge productivity, value creation, and thinking independently.

4.4 Instrument

Interview guidelines

For the qualitative data collection, a set of interview guidelines were developed based on the outcomes of the statistical analysis (Table 3). The questions were formulated with more focus on the characteristics of culture in SCCIG, the level of knowledge productivity development and implement in the company, and the efforts and strategies in increasing their company's value. The interview guidelines formed the basis for communications with executives, managers, and other employees in the company. The guidelines were discussed with the interviewees beforehand to avoid ambiguities. The names of interviewees and their responses were kept confidentially. To make sure that the results were treated confidentially, interviewees had insights into their own answers. The interviewees went through their answers to make sure the main points had been taken down and to add other information that they may miss during the interview.

Table 3 *Interview guidelines*

Interview questions on organizational culture
<ol style="list-style-type: none"> 1. What do you think of the culture of your company? 2. How are decisions made and how are those decisions communicated to the staff? 3. How about the communication within the company? <ul style="list-style-type: none"> - Boundary-less open communication - Employees can actively and freely recommended new and creative ideas 4. What are the strong and weak points of your organizational culture?
Interview questions on knowledge productivity
<ol style="list-style-type: none"> 1. How does your company deal with knowledge development? 2. How would learning and development look like in your company? <ul style="list-style-type: none"> - Effectively sharing of knowledge and ideas in the company 3. What kinds of learning activities that were used in the company? <ul style="list-style-type: none"> - Supporting and developing professional talents and knowledge of the company 4. How learning is regulated in the company? 5. How does knowledge relate to the productivity of your company? 6. What do you think of the level of knowledge development and implementation in your company? 7. Does your organizational culture influence the knowledge productivity? 8. What is your opinion about the relation and impact of organizational culture on knowledge productivity in your company?
Interview questions on value creation
<ol style="list-style-type: none"> 1. How would you describe your enterprise value? 2. What are the vision and mission of your company? <ul style="list-style-type: none"> - Vision and future strategy of company management 3. How does your company achieve its goals for value creation? 4. How does your company meet its corporate social responsibilities? <ul style="list-style-type: none"> - Company reputation, image and social responsibility 5. Does the knowledge productivity of your company influence the value creation in your company? 6. What is your opinion about the relation and impact of organizational culture, knowledge productivity on value creation in your company?

4.5 Perceptions of Organizational Culture, Knowledge Productivity and Value Creation

Following the interview guidelines, several key questions are asked to interviewees for investigating their perceptions and ideas in transforming organizational culture, stimulating knowledge productivity and increasing value creation in SCCIG. The qualitative data are translated into English and coded by hand. The answers on these three subjects are presented by the selected responses in Table 4.

The coding scheme is derived from the conceptual framework. Before interpreting the qualitative data, all answers are read per respondent, to see if the answers are filled out to the

right questions. After that, per question and its answer are read and categorized into different arguments. Finally, every argument is coded and the similar arguments receive the same code.

Table 4 *Interview summaries*

Subjects	Interview responses
Organizational culture	<ul style="list-style-type: none"> ◆ <i>People-oriented</i> <ul style="list-style-type: none"> - “ We are following the Principle of Scientific Development, adhering to a people-oriented operation, and highlighting independent innovation and secure development.” - “Our company adheres to employee-oriented principles which aim to realize and safeguard the fundamental interests of employees. All activities are intended to enhance employee welfare and improve their working and living conditions.” ◆ <i>High challenge-seeking and innovative</i> <ul style="list-style-type: none"> - “To improve our chemical technology, we actively introduce foreign advanced chemical technologies to update our systems to increase production. Our company is pursuing independent innovation and safe development, and promoting the construction of environmentally friendly mines with safe features.” - “ Our company is sensitive to market changes, and continuously introducing new chemical technologies and innovating products.” ◆ <i>Bureaucratic and top-down</i> <ul style="list-style-type: none"> -“ The main decisions, such as the business strategies, are made by the top management. These decisions are presented to employees through announcements or official documents.” - “We can freely present our ideas in weekly meetings” - “ Our company is transforming to a more open and non-bureaucratic organization.”
Knowledge productivity	<ul style="list-style-type: none"> ◆ <i>Improvement and innovation of productivity, services and work processes</i> <ul style="list-style-type: none"> - “We regard knowledge as a kind of intangible asset and put efforts in stimulating employees’ self-directed learning and helping them fully use their talents.” - “ We are exploring the ways to cultivate a team of experts to provide technology support. We plan to build our own expert team in the next 3 years, where employees can exert their talents, and make full use of resources to improve working efficiency and production.” - “ We have opportunities to participate in different kinds of workshops. Besides, the company also invites experts from other chemical companies to share their experiences and introduce their new products.” - “The current learning activities are more formalized training programs about safety knowledge and expertise skills. Employees do not take more initiatives in learning.” - “We don’t have much freedom to design our own learning paths because most learning activities are organized by the company.” - “ After employees finishing the training program and passing the exam, they will get the operation certificates to prove their proficiencies. Employees also have their portfolios to take down their learning progress and learning outcomes.” ◆ <i>sustainable ability to improve and innovate in the future</i> <ul style="list-style-type: none"> - “ Our company is highlighting the importance of learning, and concerning about the individual needs. Our learning content is designed and classified based on the differences between individual characteristics.” - “An open and innovative organizational culture can trigger people’s innovative thinking and

	challenging spirits, which can effectively improve the competitiveness of a company.
Value creation	<p>◆ <i>Corporate reputation, image, and corporate social responsibility</i></p> <ul style="list-style-type: none"> - “Diligence, responsibility, integrity, and cooperation.” - “ We take the responsibilities for offering excellent products and services to the society.” - “ Our company bears in mind that offering return to society and fulfilling the mission are the responsibility of state-owned enterprises. In recent years, the company has made accumulated social donations of more than 300 million <i>yuan</i>. At the same time, it cooperates actively and extensively with other regions of the province, carries out a series of social responsibility projects such as “joint bringing richness” and “reconstruction of shantytowns”, reaches the organic unity of economic responsibility and social responsibility.” <p>◆ <i>Employee satisfaction with work environment and financial benefits</i></p> <ul style="list-style-type: none"> - “ We possess a hard-working spirit, and devote ourselves to the company with dedication and responsibility.” - “I can see my development these years.” - “The company is improving the facilitation to create a more comfortable working environment for employees.” - “ Due to the stagnant market, our company had a difficult time in the last two years. Our compensation and benefits reduced a lot.” <p>◆ <i>Sustainability</i></p> <ul style="list-style-type: none"> - “ Our company is pursuing safe, clean, and energy-saving development which is comprehensively coordinated and sustainable.” - “ Our company has a high awareness of sustainable development. We firmly follow the clean and efficient growth mode of energy development and utilization, promoting the green, circular and low carbon development, aiming at building a beautiful homeland. In order to further strengthen the work of energy conservation and environmental protection, our company has established the Department of Energy Saving and Environment Protection, formulated and issued the regulations such as “The Regulation on Energy Saving and Environment Protection” and “The Notice on Strengthening the Reporting and Management of Unexpected Environmental Incident.”

Drawing upon the responses from the interviews, it is found that most employees in SCCIG recognize their efforts in transforming the organizational culture into a more people-oriented, boundary-less and high challenge-seeking one. Most interviewees indicate that their voices are respected in the company and they can propose their ideas freely. They point out the efforts and changes they made in recent years in improving technology and innovating products. Also, the executive and managers recognize the importance for improving the organizational culture that is favorable for stimulating creative ideas and increasing competitiveness of the company.

In terms of knowledge productivity and value creation, SCCIG emphasizes the development of knowledge. To support workplace learning, SCCIG uses different resources and activities, such as operation manuals, workshops, and training programs to provide employees convenience. They stress the need for stimulating employees’ learning initiatives and granting

them more freedom in learning. To achieve sustainable development, SCCIG actively promotes the green, circular and low carbon development and contribute to the society.

V. Conclusion, Discussion, and Recommendations

In this study, two research questions are proposed about organizational culture, knowledge productivity and value creation in the context of a Chinese state-owned enterprise, SCCIG. In this section, the results on these questions are summarized and discussed. The first part concludes and discusses the characteristics of the organizational culture, knowledge productivity, and value creation in SCCIG and explains their relationships. The discussion also includes some relevant literatures that support or contradict the results of this study. Moreover, this part also discusses the limitations of this study and proposes some recommendations for future research. The second part outlines recommendations for HRD professionals in SCCIG for improving an organizational culture, which is favorable for learning and development and achieving high knowledge productivity and value creation.

5.1 Conclusion and Discussion

Organizational Culture

Although the four culture characteristics appear to be incompatible and mutually exclusive, in most real situations they can coexist within a company (Linnenluecke & Griffiths, 2010). The results of the research reveal that three important characteristics of organizational culture are prevalent in SCCIG, namely bureaucratic and top-down ($M=3.72$), people-oriented ($M=3.28$), and high challenge-seeking and innovative ($M=3.25$). This result shares some commonalities with previous study in the four leading Korean companies, whose organizational culture were featured by people-oriented ($M=3.95$) and high challenge-seeking and innovative ($M=4.04$) (Kang et al., 2014a). It is found that both SCCIG and the four leading Korean companies recognize the importance of respecting employees and empowering them with freedom. They all take efforts in motivating employees to be creative and to do their best to achieve the company's vision and goals. In addition, they are taking efforts in transforming their organizations into more open and non-bureaucratic.

Different from the two featured organizational culture in the four leading Korean companies, SCCIG is also characterized by a bureaucratic and top-down organizational culture.

Decision-making and management responsibilities are still centrally controlled. Employees are used to follow well-planned activities, rules, and procedures. Besides, many employees cannot fully recognize the organizational culture and realize its importance. For instance, from the questionnaire and interviews, it can be found that some interviewees cannot give a clear description of their organizational culture and in most occasions, they just keep neutral attitudes without their own understandings. Also, some employees cannot provide examples that they learn or benefit from the organizational culture. They are not motivated to share knowledge and best practices in the workplace. Compared with the four leading Korean companies, who value employees' ideas, trust their abilities and fully delegate management responsibilities to each operating business unit, an open culture with sufficient freedom and active engagement of employees in developing new ideas are needed to improve in SCCIG.

Knowledge Productivity

The executive and managers strongly emphasize continuous improvement and radical innovation of products, services and work processes through supporting and stimulating workplace learning. They point out that employees' innovative thinking and challenging spirits can effectively improve the competitiveness of a company. However, the current learning activities are mostly workshops and formalized training programs, which hindering the creation the innovative ideas and development of individual talents. Employees show high awareness of continuous learning, but indicate less freedom in designing their own learning paths as most learning activities are organized by the company. The company has recognized this problem and tailored the learning contents based on the differences between individual characteristics. More freedom is given to employees to organize and develop their own ways of learning.

Value Creation

Findings from both quantitative and qualitative analysis of data indicate that SCCIG is recognized in their respective businesses in terms of corporate reputation, image and corporate social responsibility. SCCIG is actively offering return to society and carrying out a series of social responsibility projects. Employees are satisfied with the way the company contributes to society. Also, employees are satisfied with the work environment but complain about the reduced financial benefits. To achieve sustainable development, SCCIG firmly follow the clean and efficient growth mode of energy development and utilization, promoting the green, circular and low carbon development, aiming at building a beautiful homeland. Furthermore, SCCIG has established the Department of Energy Saving and Environment Protection to formulate and issue the regulations in terms of saving energy and protecting environment.

Relationships between Characteristics of Organizational Culture, Knowledge Productivity and Value Creation

The information above describes the main characteristics of organizational culture, knowledge productivity and value creation in SCCIG. The following paragraphs discuss the relationships between different characteristics of these three variables.

First, the results confirm the positive relationships between organizational culture characteristics (people-oriented, high challenge-seeking and innovative), knowledge productivity (improvement and innovation of products, services and work processes and sustainable development), and value creation (corporate reputation, image, and corporate social responsibility, employee satisfaction with work environment and financial benefits, and sustainability) (Kang et al., 2014a). It means that a company with a more open, people-oriented culture and challenge-seeking spirit is predisposed toward employees' creative thinking and active knowledge sharing behaviors, which affect a company's ability to innovate, to deal with rapid change, to respond to customer demands, and to increase corporate reputation (Ritchie, 2000; Alavi, Kayworth & Leidner, 2005). The result also

supports the argument of Kessels (2004) that knowledge productivity can influence a company's gradual improvement and radical innovation. In addition, it is claimed that a strong organizational culture which is featured by autonomy, open communication, and mutual trust, is leading to higher job satisfaction and superior working performance (Argyris, 1972). The satisfaction and well being of employees are favorable for increasing organizational effectiveness and respective reputation (McGregor, 1960).

Second, in line with Kang et al. (2014a), the results confirm that low challenge seeking and status-quo organizational culture will negatively affect a company's sustainability, and improvement and innovation of products, services, and work processes. This means that a company with an orientation towards internal stable process and an emphasis on formalization is resistant to change efforts, which might constrain employees creative thinking and actions in the company (Scott, 2003), and restrict the enactment and development of sustainability (Linnenluecke & Griffiths, 2010). Research indicates that the improvement and innovation of products, services, and work processes rely on the possibility to change and room for learning and flexibility (Dunphy et al., 2003). A company that is narrowly focused on stable development and quick economic outcomes might lose business opportunities and competitiveness in changing market (Senge & Carstedt, 2001).

Third, as expected bureaucratic and top-down organizational culture is negatively correlated with knowledge productivity and value creation. The absence of this relationship might be explained by the fact that in SCCIG, although the bureaucratic culture is more dominant than the other three culture types, the company achieves a good balance between the competing culture types. SCCIG has created a clear and specific image of where they are and what they want to achieve. Under the top-down mission, employees are engaged in the process of strategy-making and problem-solving. The management is thinking some interventions to create an open communication environment which allows employees to communicate with top management in a timely manner. Employees not only have the opportunity to report the problems, but also give their own viewpoints and suggest solutions. Employees have gradually increased their sense of belongings and motivation of engagement. Also, employees are encouraged and motivated to be creative and challenging with money or incentives: *"I feel motivated to take initiative based on my ideas and judgment when working in line with the rules and towards meeting the company's goal."* Another explanation is that employees have developed their ways of learning in accordance with formalized rules and training programs, such as group discussion and fields visit, which allow the production of knowledge and creative ideas. Additionally, the bureaucratic and top-down culture, the implementation and conformity with rules are effective under stable environment, which also allows the production and innovation of products and services (Cameron & Quinn, 2011). So it is hard to define the correlations between bureaucratic and top-down culture, knowledge productivity and value creation.

The missing link between low challenge seeking and status-quo organizational culture on one hand and three value creation factors (corporate reputation, image, and corporate social responsibility=VC1, employee satisfaction with work environment=VC2 and employee

satisfaction with financial benefits=VC3) on the other might be explained by the low consensus about this organizational culture in SCCIG. As the standard deviation is 0.66, there is a high variance in the understanding of this type of organizational culture, which may affect the result.

Revised conceptual framework

On the basis of the research findings, the conceptual framework is revised. Figure 2 presents the main characteristics of organizational culture and the relationships to knowledge productivity and value creation as explored in the context of SCCIG.

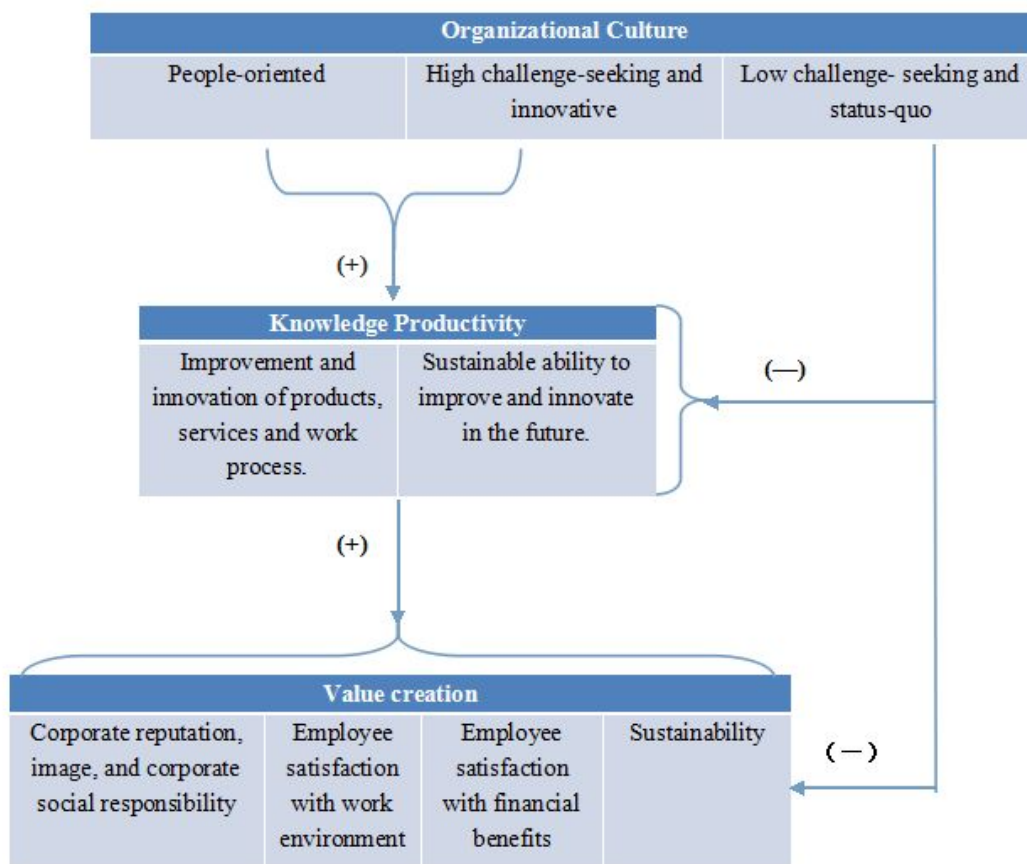


Figure 2. The relationships between organizational culture, knowledge productivity and value creation in SCCIG

Limitations

The knowledge gained from this study can be mostly used by SCCIG to establish better guidelines in improving organizational culture to increasing knowledge productivity and value creation. If a more open culture is created, then employees are stimulated to propose creative ideas and actively share expertise. Moreover, if employees are empowered with more freedom and encouraged to be self-directed in their learning, SCCIG can cut costs on for instance resources needed for training. By knowing the significance and employees' perception of organizational culture, it is possible to develop targeted effective interventions

to ultimately increase knowledge productivity and value creation. With regards to the general SOEs, this study enriches the current knowledge field on organizational culture, knowledge productivity and value creation by demonstrating the significance of creating an open and challenge-seeking culture to increase employees' ownership and stimulate employees' creative thinking.

Nevertheless, the generalization of the results is subject to a few limitations. First, in this study, only one Chinese SOE is selected for empirical research. Therefore, the results may not necessarily be generalized to all Chinese SOEs or other types of organizations. Second, the sample size is small, which may bring some inaccuracies in the results. Third, the absent of relationship between bureaucratic organizational culture, knowledge productivity and value creation is a limitation since valuable information could have been gathered from those scales.

Future researches might be appropriate for bridging these limitations. A broad sample could be used including more types of the Chinese enterprises, such as domestic private enterprises, foreign invested companies and joint venture companies. Second, a longitudinal study could be used to examine to what extent the knowledge productivity and value creation increased with the transformation of organizational culture.

5.2 Recommendations

From the discussions on the answers of research question 1, there are a set of guidelines that can be recommended to the HR professionals in SCCIG. The guidelines are developed based on the findings and request from SCCIG. They focus on promoting the people-oriented and challenge-seeking culture which are conducive for innovation and sustainability. Also, there are some suggestions on optimizing the learning activities in the workplace and increasing the company's reputation. The guidelines are presented as follows:

Guideline 1. Implementing people-oriented practices

a) Ensuring production safety. Safety is a commitment that should be shared by the entire company, and it must be back every day with the right decisions and actions. To strictly prevent safety accident, SCCIG should continuously improve their emergency management and emergency handling capacity. Every task, whether in the office, on the road, in one of the plants, or for that matter, at home, must be done with safety as a first concern. Each accident should be reflected by all the employees to increase their safety awareness. Safe and healthy working condition is necessary to ensure the well-being of employees.

b) Protecting employees' legal right. All the employees should be respected and treated equally by acknowledging their values and ideas. The company should build a fair mechanism of evaluation and salary increasing. All the employees share equal opportunities of personal development. In addition, to encourage employees to actively participate in the company's decision-making and daily activities, SCCIG should further their efforts in implementing the employee representatives' convention system and promoting democratic management. The improvement of employees' livelihood can reduce their anxieties and increase their ownership

spirit.

c) Increasing mutual trust and open communication. SCCIG should create a trustworthy working environment and fully delegate responsibilities of each business unit. Management and employees should always share the company vision, goals and strategies. The communication should be boundary-less and open so that ideas and requires can be exchanged effectively.

Creating people-oriented practices requires all organizational members avoid bias and trust each other. For SCCIG, who is still predominant by bureaucratic organizational culture, it needs a long time to change people's mind and promote people-oriented practices through various activities.

Guideline 2. Highlighting challenge-seeking and innovative spirit

a) Encouraging creative thinking. To achieving company's challenging goals, employees should be motivated to think creatively and develop new ways to achieve challenging goals by providing rewards or career benefits. The mistakes in attempting to meet challenging goals should be understood and accepted (Kang et al., 2014a).

b) Improving risk management. To response to possible crises, risk management systems should be improved and employees need to cultivate expertise through trainings.

c) Promoting innovation and technological advancement. SCCIG needs to increase investment in research and development so as to enforce innovation and accelerate technology development.

Challenge-seeking and innovative spirit requires a strong support from technology and experts. It is not wise to rely on foreign technologies. Therefore, SCCIG needs to prioritize the independent innovation and development of expert team.

Guideline 3. Optimizing training programs and stimulating self-directed learning

a) Identify hard-to-learn knowledge. To improve the effectiveness of training programs, it is important to identify hard-to-learn knowledge in the workplace and provide practice-based experiences for employees to learn from (Dochy, Gijbels, Segers, & van de Bossche, 2011). Currently, in SCCIG the knowledge and skills that need to be learned are recognized by management and experienced employees. However, it is significant to take into account the voices of novices, which may need more supports. Thus, the Human Resource Department can develop a grading system to particular tasks after each training cornerstone. Participants can use numbers one to five (one means easy to learn, and five means very difficult to learn) to indicate the difficulty of learning tasks (Dochy, Gijbels, Segers, & van de Bossche, 2011). Trainers can use this feedback to identify the particular tasks that need more supports from experts and offer specific guidelines or learning strategies in the next cornerstone or other training courses. In this way, employees conduct their learning process with clear goals to achieve and enhance their expertise in particular domains.

b) Evaluating training programs afterwards. Feedback is an effective approach to optimize the learning process. When a training course is completed, the company can use questionnaires to get feedback from participants. This feedback may include what participants like and dislike about the learning course; what they have learned and what they expect from the training. Such information is valuable for the company to assess the effectiveness of training programs and find the gap between what employees obtained and what employees expect. The results from questionnaires can be presented to employees through reporting systems. Employees may feel more involved and motivated by giving their voices and see their efforts paid off (Probst & Borzillo, 2008). Apart from questionnaires, project managers or trainers can also randomly select participants to conduct interviews, which help both trainers and employees reflect on the learning process.

c) Stimulating self-directed learning. To achieve radical innovation and sustainability, trainings cannot ensure all employees in the company acquire knowledge and skills needed to maximize knowledge productivity (Rowden, 2007). Therefore, apart from necessary training programs, such as safety training and operation training, employees should be self-directed in their daily learning process. This means that employees take their own initiatives to learn according to their needs, goals as well as occupation requirements (Knowles, 1975). SCCIG should empower employees with more freedom to make their learning plans with clear purposes and collect resources according to their daily performances (Knowles 1975; Bennett et al., 2000). Employees take their own responsibilities of learning with distinctive needs and interests. They can share their learning experience with each other and become more capable in managing their career and dealing with risks (Guglielmino, 2008).

As employees are adapted to the traditional formal training, it may be difficult at the initial stage to promote self-directed learning due to the lack of awareness and motivations. Attentions need to be paid to increase employees' intrinsic motivation of learning. Trainings can be used to support learning but not as the main approach for learning.

Guideline 4. Encouraging social public activities

a) Adhering to active social responsibility. To increase the respective reputation of the company, SCCIG should adhere to its active role in practicing social responsibility. Stimulating continuous awareness about promoting the green, circular and low carbon sustainable development.

b) Encouraging active participation in social activities. SCCIG should encourage their employees to actively participate in social services and social welfare programs, such as charity, donations.

The fulfillment of social responsibility can promote the continuous learning process of a company, resulting in new competencies that are conducive for knowledge productivity and value creation (Kang et al., 2014a). As employees actively participate in social activities, their commitment and ownership spirit will be reinforced and they are motivated to develop

themselves to make contributions to the company.

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Appendix 1

The three questionnaires are to investigate the characteristics of the organizational culture, knowledge productivity and value creation in the enterprise. Your feedback is valuable for our analysis. There are no right or wrong answers to the questions, please take minutes to fill in according to your real situations. Any information given in the questionnaires will be kept secret and will not be hand down to the third party. Thanks for your time. (此份调查问卷是探寻企业文化特点。您的观点将有助于我们进一步的分析研究。所有涉及的问题均为开放性问题，无对错答案，请您根据实际情况填写。抱歉占用您宝贵的时间。此问卷涉及的任何信息将会被保密，不会泄露给第三方。感谢您的合作。)

个人信息

1. 性别： 男 / 女
2. 年龄： 29 岁以下 / 30-40 岁 / 41-50 岁 / 50 岁以上
3. 教育程度： 中专或技校 / 大专 / 大学本科 / 硕士及以上
4. 职务： 高层管理层 / 中层管理人员 / 一般管理人员 / 一般技术人员
5. 任职时间： 一年以下 / 1-3 年 / 3-5 年 / 5 年以上

Questionnaire about Organizational Culture

Questions (问题)		Strongly disagree (非常不同意)	Disagree (不同意)	Neutral (中立)	Agree (同意)	Strongly agree (非常同意)
1	Our company has a non-bureaucratic and boundary-less open culture with freedom. (我们公司拥有开放自由，无层次分化的文化氛围)					
2	Our company is decentralized with authority and responsibilities delegated to each operating business unit. (我们将权力与责任下放给各经营单位)					
3	In our company, we have boundary-less open and free communication across layers. (我们公司内部各管理层可以开放，自由的进行沟通)					

4	In our company, management and employees share information, knowledge, and best practices effectively. (我们公司管理层与员工之间可以有效分享信息, 知识及实践技能)					
5	In our company, management and employees always share the company vision, goals, and strategies. (我们公司管理层能够与员工分享公司的发展前景, 目标及战略)					
6	In our company, people are doing their best with ownership spirit. (我们公司能够给予员工归属感并让员工发挥其才能)					
7	In our company, management supports employees to achieve the company's objectives and goals. (我们公司管理层支持员工实现公司的发展目标)					
8	In our company, employees' opinions are respected. (我们公司充分尊重员工的意见)					
9	In our company, employees are motivated to participate in decision-making. (我们公司鼓励员工参与到公司的决策当中)					
10	Our company has an open culture where people have freedom to be creative and innovative. (我们公司拥有开放的文化氛围, 员工在其中能够充分发挥其创新与创造力)					
11	In our company, employees are respected as human beings. (我们公司充分尊重员工)					
12	In our company, employees are actively involved in learning new knowledge, information, and ideas both internal and external to the company. (我们公司员工能够积极在公司内部及外部学习新知识, 获取新信息)					

13	In our company, people are proactive in implementing new ideas and action plans. (我们公司员工能够积极的实践新的想法和计划)					
14	In our company, most of the important decisions are made from the top down. (我们公司的大部分重要决策由高层决定)					
15	Our company emphasizes following procedures and rules. (我们公司强调遵循各类规章制度)					
16	Our company maintains a stagnant culture. (我们公司文化发展停滞不前)					
17	Our company emphasizes order, rank, and position. (我们公司强调秩序, 等级和职位)					
18	Our company is proactive in implementing new ideas and action plans. (我们公司积极推进实施新观念, 新方案)					
19	Our company maintains the status quo. (我们公司倾向于维持当下发展状态)					
20	Our company prefers to maintain stability rather than taking risks and challenges. (我们公司倾向于维持稳定发展而不是追求挑战与风险)					
21	In our company, people are encouraged to recommend new ideas freely. (我们公司鼓励员工自由地提出新想法)					

Questionnaire about Knowledge Productivity

Questions (问题)	Strongly disagree (非常不同意)	Disagree (不同意)	Neutral (中立)	Agree (同意)	Strongly agree (非常同意)
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1	In our company, all the subject matter expertise we need now and in the near future is available within our organization. (在我们公司, 员工在工作中需要的专业技能知识都能在公司内部获得)					
2	We know what problems we are good at solving and those we are not. (我们知道自己能力所在, 认识自己不擅长的专业领域)					
3	We try hard to increase our level of expertise and broaden the areas of knowledge within our company. (我们努力在公司内部拓展自己的专业技能及知识领域)					
4	Our open communication contributes to sharing experience, exchange of learning, and knowledge. (我们公司开放式的交流模式有助于企业员工交流工作经验, 分享学习知识)					
5	In our company, people know what work is meaningful for them and how to perform such work. (我们公司员工能够认识到对自己有意义的工作并且知道如何实践)					
6	We take sufficient time to think how to apply to our actual work what we have learned from the past. (我们公司员工有足够的时间去思考总结如何吸取过去的经验教训)					
7	Our company management and employees have the ability to create opportunity from turmoil. (我们公司管理层和员工懂得在动荡的市场中创造机遇)					
8	We try to develop the knowledge and expertise our firm needs. (我们公司员工尝试按照公司所需发展自身技能和知识)					
9	Our company tries to stimulate people to experiment with new approaches to solve defined problems. (我们公司鼓励员工用创新的方法解决一些既定的问题)					

10	We know the intelligence level of our company in the industry. (我们公司员工知道公司在行业中的发展水平)					
11	We are well aware of the preferred ways to develop and share knowledge. (我们公司员工有自己喜欢的分享知识的方式)					
12	We analyze the reasons why we make progress or lag behind in various fields of expertise. (我们公司员工能够分析在专业领域领先或落后其他公司的原因)					
13	We apply to our actual work what we have learned from the past. (我们公司员工能够吸取过去的经验教训并将所学应用到实际工作当中)					
14	Our company focuses on finding new ways to deal with critical issues. (我们公司专注于探寻新的方法解决一些核心问题)					
15	Our new knowledge and ideas lead to business growth. (我们公司员工所获取的新知识有助于公司的发展)					
16	Our company is an organization that values and highlights intelligence, information, and ideas. (我们公司重视行业信息及发展理念)					
17	The market value of our company increases as a result of our creative knowledge and ideas. (我们公司的创意理念提升了公司的市场价值)					
18	The creative ideas of employees are respected and well accepted for implementation. (我们公司尊重并积极采纳员工的意见)					
19	In our company, creativity and new ideas are formed by employees working together. (我们公司的创新理念是员工共同努力的结果)					
20	Our company considers developing and learning new knowledge as the most important priority. (我们公司将员工自身的学习发展置于首位)					

21	In our company, we share knowledge and best practices effectively without boundaries. (我们公司各部门员工之间能够有效地分享实践技能及经验)					
22	We always try to think creatively for developing new knowledge and improving knowledge productivity. (我们公司员工能够创造性的思考如何学习新的知识技能并将所学运用到实际工作中)					
23	In our company, we always try to create ideas to develop new products and services. (我们公司能够尝试创新理念, 开发新产品和提升服务)					
24	In our company, innovative thinking is encouraged in order to improve operating systems and productivity. (我们公司鼓励通过创新思想来提升运营系统和生产力)					
25	Our company respects the creative ideas of management and employees that come from their expertise and intuition. (我们公司尊重来自管理层和员工的专业技能和直觉力)					
26	Our company continuously innovates our business with creative new ideas to develop Blue Ocean business. (我们公司不断通过创新理念发展业务, 积极开拓蓝海业务---突破传统的残酷竞争形式, 将主要精力由打败竞争对手, 转为全力提升客户服务与企业自身价值, 并由此开创新的“无人竞争”的市场空间, 彻底摆脱竞争, 开拓属于自己的一片蓝海)					
27	Our company is very open to learning and accepting best practices and new knowledge from inside and outside the business. (我们公司开放的有开放的学习环境, 接受来自企业内部及外部的知识经验)					

28	Our company utilizes knowledge in each business unit productively to achieve goals. (我们公司各个部门通过高效利用知识来实现公司的发展目标)					
29	Our company emphasizes developing new ideas to improve operation processes continuously. (我们公司注重开发新思路, 不断优化操作流程)					

Questionnaire about Value Creation

Questions (问题)		Strongly disagree (非常不同意)	Disagree (不同意)	Neutral (中立)	Agree (同意)	Strongly agree (非常同意)
1	The top management team of our firm is esteemed for its outstanding management capability. (我们公司因其卓越的管理才能而受人尊重)					
2	Our company is fairly well managed by top management. (我们公司的最高管理层能很好的经营公司)					
3	Our company is focusing on fast moneymaking. (我们公司追求快速的盈利模式)					
4	Our company is strongly involved in the community and has a strong sense of social responsibility. (我们公司能够积极融入社会各界, 拥有强烈的社会责任感)					
5	Our company focuses on customer needs and customer satisfaction. (我们公司重视客户需求和满					

	意度)					
6	Our company is a good place to work and I am satisfied with my job. (我很满意公司和现在的工作)					
7	I can grow when I work hard in our company. (在公司, 我的努力能帮助我提升个人发展)					
8	Our company payment level is similar to that of competitors. (我们公司的工资水平与竞争对手持平)					
9	Promotion and evaluation are fairly executed in our company. (我们公司能够公平的对员工进行评估和提升)					
10	Our company offers considerable benefits and bonuses. (我们公司为员工提供可观的福利和奖金)					
11	My work brings out my best abilities. (我的工作能够让我充分发挥自己的才能)					
12	My job is challenging and creative. (我的工作充满挑战性的创新性)					
13	I respect and trust my boss. (我尊重并相信我的老板)					
14	In our work environment, I feel free to make recommendations for the company. (在我们的工作环境中, 我可以自由的为公司提供建议)					
15	I know what my company and superiors expect from me. (我知道公司和上级					

	对我的期望)					
16	Our company is known for its efforts for transparent management. (我们公司因其透明的管理方式著称)					
17	Our company is known for its high profitability and stability. (我们公司因其高盈利性和稳定性著称)					
18	Our company gives back to society from what is earned and has strong sense of social responsibility. (我们公司拥有强烈的社会责任感并能以其所获回报社会)					
19	Our company is doing business in a fair and honest way with competitors and suppliers. (我们公司是在公平诚实的基础上与竞争者和供应商进行商业往来)					
20	Our company is reputed for its advanced technology compared to our competitors. (与竞争对手相比, 我们公司以其先进的技术而著称)					
21	Our company is renowned for its high-quality products and services. (我们公司在产品质量和服务方面享有声誉)					
22	The employees are satisfied with the way our company contributes to society. (我们公司员工满意公司为社会做贡献的方式)					
23	Our company is known for its focus on radical innovation. (我们公司以其突破性的创新力而著称)					

24	We are customer-oriented and always try to do our best to fulfill customer needs. (我们公司以客户为中心, 尽其全力满足客户的要求)					
25	Our company takes responsibility for protection of the environment. (我们公司肩负着保护环境的责任)					
26	Our company manages globally-oriented business. (我们公司经营着全球性的业务)					
27	Our company is appreciated for its active role in corporate social responsibility. (我们在积极履行企业社会责任方面是值得赞赏的)					
28	Our company promotes sustainable management and social values. (我们公司推进可持续的管理模式, 不断提升其社会价值)					

Appendix 2

Summary of Exploratory Factor Analysis Results for Organizational culture Using Principle Component Analysis (N=149)

Item	Component			
	OC1 (People-oriented)	OC3 (Low challenge-seeking and status-quo)	OC4 (Bureaucratic and top-down)	OC2 (High challenge-seeking and innovative)

4. In our company, management and employees share information, knowledge, and best practices effectively.	.806	.190	.098	.001
5. In our company, management and employees always share the company vision, goals, and strategies.	.738	-.049	-.005	.033
2. Our company is decentralized with authority and responsibilities delegated to each operating business unit.	.734	.001	-.061	-.044
3. In our company, we have boundary-less open and free communication across layers.	.729	-.028	-.031	.029
13. In our company, people are proactive in implementing new ideas and action plans.	.603	.017	-.026	.078
6. In our company, people are doing their best with ownership spirit.	.600	.008	.154	.259
1. Our company has a non-bureaucratic and boundary-less open culture with freedom.	.436	.094	-.147	.292
12. In our company, employees are actively involved in learning new knowledge, information, and ideas both internal and external to the company.	.371	-.198	-.066	.318

7. In our company, management supports employees to achieve the company's objectives and goals.	.367	.110	-.085	.335
19. Our company maintains the status quo.	.298	.798	.101	.017
16. Our company maintains a stagnant culture.	.105	.695	-.052	-.396
20. Our company prefers to maintain stability rather than taking risks and challenges.	-.290	.647	-.229	.219
15. Our company emphasizes following procedures and rules.	.329	-.243	-.730	-.036
14. In our company, most of the import decisions are made from the top down	-.342	.301	-.679	.159
17. Our company emphasizes order, rank, and position.	.034	.138	-.606	-.366
11. In our company, employees are respected as human beings.	-.060	.003	.424	.853
8. In our company, employees' opinions are respected.	.082	.028	.466	.783
9. In our company, employees are motivated to participate in decision-making.	.240	.015	.164	.600
10. Our company has an open culture where people have freedom to be creative and innovative.	.296	-.067	.012	.550

21. In our company, people are encouraged to recommend new ideas freely.	.274	-.153	-.189	.449
18. Our company is proactive in implementing new ideas and action plans.	.301	-.149	-.279	.406
Eigenvalue	7.090	2.163	1.341	1.275
Variance explained (%)	33.760	10.298	6.385	6.070
Cumulative variance explained (%)	33.760	44.058	50.443	56.513

Note: Factor loadings over 0.400 appear in bold.

Appendix 3

Summary of Exploratory Factor Analysis Results for Knowledge Productivity Using Principle Component Analysis (N=149)

Item	Component	
	KP1 (Improvement and innovation of products, services, and work processes)	KP2 (Sustainable ability to improve and innovate in the future)
17. The market value of our company increases as a result of our creative knowledge and ideas.	.784	-.211
27. Our company is very open to learning and accepting best practices and new knowledge from inside and outside the business.	.779	-.152
16. Our company is an organization that values and highlights intelligence, information, and ideas.	.761	-.106
28. Our company utilizes knowledge in each business unit productively to achieve goals.	.715	.070

18. The creative ideas of employees are respected and well accepted for implementation.	.708	-.034
20. Our company considers developing and learning new knowledge as the most important priority.	.667	.025
14. Our company focuses on finding new ways to deal with critical issues.	.621	.062
24. In our company, innovative thinking is encouraged in order to improve operating systems and productivity.	.621	.211
26. Our company continuously innovates our business with creative new ideas to develop Blue Ocean business.	.612	-.173
7. Our company management and employees have the ability to create opportunity from turmoil.	.589	.054
23. In our company, we always try to create ideas to develop new products and services.	.589	.165
9. Our company tries to stimulate people to experiment with new approaches to solve defined problems.	.574	.144
25. Our company respects the creative ideas of management and employees that come from their expertise and intuition.	.562	.208
4. Our open communication contributes to sharing experience, exchange of learning, and knowledge	.522	.302
19. In our company, creativity and new ideas are formed by employees working together.	.517	.114
29. Our company emphasizes developing new ideas to improve operation processes continuously.	.490	.152
1. In our company, all the subject matter expertise we need now and in the near future is available within our organization.	.489	.087
21. In our company, we share knowledge and best practices effectively without boundaries.	.426	.269
10. We know the intelligence level of our company in the industry.	.426	.156
12. We analyze the reasons why we make progress or lag behind in various fields of expertise.	.348	.304
5. In our company, people know what work is meaningful for them and how to perform such work.	-.077	.819

3. We try hard to increase our level of expertise and broaden the areas of knowledge within our company.	-031	.725
2. We know what problems we are good at solving and those we are not.	-.107	.654
22. We always try to think creatively for developing new knowledge and improving knowledge productivity.	.131	.595
13. We apply to our actual work what we have learned from the past.	.202	.534
6. We take sufficient time to think how to apply to our actual work what we have learned from the past.	.124	.529
11. We are well aware of the preferred ways to develop and share knowledge.	.168	.511
15. Our new knowledge and ideas lead to business growth.	.289	.390
8. We try to develop the knowledge and expertise our firm needs.	.259	.321
Eigenvalue	10.352	1.868
Variance explained (%)	35.698	6.440
Cumulative variance explained (%)	35.698	42.138

Note: Factor loadings over 0.400 appear in bold.

Appendix 4

Summary of Exploratory Factor Analysis Results for Value Creation Using Principle Component Analysis (N=149)

Item	Component			
	VC2 (Employee satisfaction with work environment)	VC4 (Sustainability)	VC3 (Employee satisfaction with financial benefits)	VC1 (Corporate reputation, image, and corporate social responsibility),
15. I know what my company and superiors expect from me.	.792	-.056	-.101	-.022
9. Promotion and evaluation are fairly executed in our company.	.771	-.068	-.048	-.103

14. In our work environment, I feel free to make recommendations for the company.	.730	.139	-.071	.016
7. I can grow when I work hard in our company.	.713	-.023	.022	-.074
12. My job is challenging and creative.	.630	.236	.066	.167
11. My work brings out my best abilities.	.615	.327	.171	.244
13. I respect and trust my boss.	.513	-.153	.182	-.294
6. Our company is a good place to work and I am satisfied with my job.	.499	-.212	.280	-.219
2. Our company is fairly well managed by top management.	.450	.036	.315	-.208
1. The top management team of our firm is esteemed for its outstanding management capability.	.319	.089	.263	-.316
25. Our company takes responsibility for protection of the environment.	.025	.757	-.150	-.019
20. Our company is reputed for its advanced technology compared to our competitors.	-.010	.679.	.096	.037
21. Our company is renowned for its high-quality products and services.	-.040	.570	.042	-.379
18. Our company gives back to society from what is earned and has strong sense of social responsibility.	.107	.377	.245	-.298
10. Our company offers considerable benefits and bonuses.	.017	.093	.771	.259
17. Our company is respected for its high profitability and stability.	.036	-.068	.759	-.061
8. Our company payment level is similar to that of competitors.	.193	-.068	.680	.247
26. Our company manages globally-oriented business.	-.076	-.073	.555	-.129
3. Our company is focusing on fast moneymaking.	-.074	.248	.454	-.152
16. Our company is known for its efforts for transparent management.	.280	.068	.392	-.281
23. Our company is known for its focus on radical innovation.	.171	-.008	.357	-.322

27. Our company is appreciated for its active role in corporate social responsibility.	.049	.116	-.023	-.753
22. The employees are satisfied with the way our company contributes to society.	-.023	.264	.045	-.601
28. Our company promotes sustainable management and social values.	.213	.043	-.218	-.600
5. Our company focuses on customer needs and customer satisfaction.	.074	-.341	.073	.407
19. Our company is doing business in a fair and honest way with competitors and suppliers.	-.008	-.108	.045	.707
24. We are customer-oriented and always try to do our best to fulfill customer needs.	.084	.069	.002	.742
4. Our company is strongly involved in the community and has a strong sense of social responsibility.	.246	.147	.170	-.390
Eigenvalue	9.036	2.650	1.569	1.443
Variance explained (%)	32.273	9.464	5.603	5.155
Cumulative variance explained (%)	32.273	41.737	47.340	52.495

Note: Factor loadings over 0.400 appear in bold.