EFFECTS OF KNOWLEDGE MANAGEMENT AND CORPORATE CULTURE ON ORGANIZATIONAL INNOVATION CLIMATE

EFFECTOS SOBRE LA GESTIÓN DEL CONOCIMIENTO Y LA CULTURA CORPORATIVA EN EL CLIMA DE INNOVACIÓN ORGANIZATIVA

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ABSTRACT
Knowledge and innovation are regarded as characteristics in the new knowledge economy era. Any organization should be able to manage knowledge and continuously innovate in order to present their competitive advantages. Under increasing market competition, enterprises depend more on innovation to enhance the competitiveness for survival and development. Organizational Innovation Climate therefore plays a critical role in the overall operation and activity performance. According to the previous research motives and purposes, this study aims to discuss the correlations between Organizational Innovation Climate and Knowledge Management. Manufacturers in Linkou Industrial Park are sampled as the research subjects and a total of 650 questionnaires are distributed. Having eliminated invalid and incomplete questionnaires, a total of 348 valid copies are retrieved, with a retrieval rate of 54%. The empirical results show 1. Partially significant correlations between Knowledge Management and Corporate Culture, 2. Remarkable correlations between Corporate Culture and Organizational Innovation Climate, 3. Notable correlations between Knowledge Management and Corporate Culture, and 4. Mediating effects of Corporate Culture on Knowledge Management and Organizational Innovation Climate.

KEYWORDS
Corporate Culture; Organizational Innovation Climate; Knowledge Management.

RESUMEN
El conocimiento y la innovación se consideran rasgos característicos de la nueva era de la economía del conocimiento. Toda organización debe ser capaz de gestionar el conocimiento y de innovar continuamente para hacer patentes sus ventajas competitivas. Sometidas a una creciente competencia de mercado, las empresas dependen cada vez más de la innovación para aumentar la competitividad que les permita sobrevivir y desarrollarse. Un clima de innovación organizativa desempeña por ello un papel central en la ejecución de operaciones y actividades. A tenor de los motivos y propósitos de investigaciones previas, en este estudio se pretende discutir la correlación entre el clima de innovación organizativa y la gestión del conocimiento. Nuestro objeto de investigación se centra en una muestra de trabajadores manuales del parque industrial de Linkou a los que se distribuye 650 cuestionarios. Una vez eliminados los cuestionarios que no eran válidos o los incompletos, se obtienen 348 válidos, con una tasa de recuperación del 54%. Los resultados empíricos
muestran lo siguiente: 1. Se produce una correlación parcialmente significativa entre la gestión del conocimiento y la cultura corporativa. 2. Se da una considerable correlación entre cultura corporativa y clima de innovación organizativa. 3. Asimismo, se produce una notable correlación entre gestión del conocimiento y cultura corporativa. 4. Hay un efecto de mediación entre la cultura corporativa relacionada con la gestión del conocimiento y el clima de innovación organizativa.

**PALABRAS CLAVE**

Clima de innovación organizativa; Cultura corporativa; Gestión del conocimiento.

**INTRODUCTION**

Joseph Alois Schumpeter, the famous economist in the 20th century, proposed the Innovation Theory, indicating that innovation is the core of economic development and entrepreneurs as the driving force of innovation. Since the 1990s, the global economy has turned to knowledge-based economic systems where both knowledge and innovation are the key characteristics in the new economic era (Tapscott, 1996). Drucker (1993) also mentioned that neither capital, natural resources, nor labor, were the primarily economic resources in post-capitalist societies. Knowledge was the key economic resource at the time and in the future. All values were created by Productivity and Innovation which were based on effective applications of knowledge. All organizations therefore had to create knowledge and continuously innovate to achieve competitive advantages (Nonaka & Takeuchi, 1995).

Many research findings showed the strong relationships between the innovation climate of R&D personnel in semi-conductor manufacturers and the number of technological breakthroughs in an organization. The organizational climate therefore would induce or hinder individual creation performance. Recent research also discovered the effects of the organizational staff’s perception of the workplace on creation performance. Apparently, the Organizational Innovation Climate plays an important role in the operation and activity performance. In such a globalization and rapidly changing networking era, Knowledge and Organizational Innovation need to be effectively managed and created for maintaining the competitive advantages of enterprises. Nevertheless, most of the current research stresses on the relationship between Knowledge Management and Organizational Innovation, but less on the correlations between Organizational Innovation Climate and Knowledge Management, which is intended to be explored in this study.

**LITERATURE REVIEW AND CONCEPTUAL STRUCTURE**

**Knowledge Management**

Drucker (1993) clearly defined Knowledge Management in the context of a knowledge society which was an organizational society in which management was the core and key mechanism. The essence of management was to facilitate the acquisition of
knowledge, i.e. systematically and organizationally applying knowledge to knowledge innovation. Anastasia (2013) believed Knowledge Management is to improve employees’ performance and competitive standing. Anastasia (2013) stated “The proper management of knowledge is proof of the ability of innovation in relation to the ability to adapt to the ever-changing market demands.” Lin (2011) contends that Knowledge Management tended to provide tools for organizational knowledge workers and assist them in controlling and managing the critical production factors. The organizational learning process was an important part of Knowledge Management that could support an organization to improve its learning capability and achieve the goals of becoming a learning organization.

Chien (2009) and Chou (2010) classified Knowledge Management into Knowledge Acquisition, Knowledge Creation, and Knowledge Store and Transfer. (1) Knowledge Acquisition: There were several knowledge acquisition and learning routes, which were classified, by Hung (2010), into 1. Innate Learning, so as to create a new organizational knowledge or an individual inherited knowledge. 2. Experiential Learning, containing experiments of knowledge, self-evaluation of an organization, experimenting with different organizations, non-systematic learning, and the learning curve. 3. Vicarious Learning, referring to learning organizational strategies and management practices and technology through strategic alliances. 4. Transplantation, indicating merging another organization or poaching. 5. Collection and Attention, including environmental scanning, focus search, and performance monitoring. (2) Knowledge Creation: Nonaka & Takeuchi (1995) regarded Knowledge Creation as implicit and explicit knowledge interaction to transform knowledge, when organizational knowledge was created. (3) Store and Transfer:

Grant (1996) pointed out the finer and higher levels of common knowledge in a team, the higher and more efficient the knowledge integration. In other words, the finer the normalized, externalized, integrated, and internalized knowledge was integrated in a team, the higher the levels were spread, and the higher the knowledge integration efficiency was presented. He regarded organizational capabilities as the result of knowledge integration. The broader knowledge required for organizational capabilities, the lower the level of common knowledge among team members that the challenges of integration and management would be increased.

Organizational Innovation Climate

The issues of Organizational Innovation have not been clearly defined in research (Wolfe, 1994). Some researchers defined Organizational Innovation from the aspect of products (Crawford, 1980; Dougherty & Bowman, 1995), while others defined it from the viewpoint of processes (Amabile, 1988; Kanter, 1988; Johannessen et.al., 1994; Scott, et. al., 1994). Tanses (2013) defined Organizational Innovation as a process of profitably creating innovation within an organizational setting. Murat et al. (2013) considered organizational innovation has a positive impact on companies. Murat et al. (2013) stated
“organizational innovation at firm level refers to a firm’s receptivity and propensity to adopt new ideas that lead to development and launch a new product.” The establishment of innovative organizational environments with a complete management system to support innovative activities is necessary for enterprises to enhance the creation performance.

The literature on organizational climate addresses an important phenomenon: the creation and influence of social contexts in organizations (Atif and Ayse, 2011). Organizational climate refers to contextual situation at a given time and it shows in what degree it is meaningful for the group employees (Gunes and Peker, 2012). Litwin & Stringer (1968) regarded organizational climate as the mediator between organizational systems and motivation intentions. Objective organizational systems would be induced and the motivation intention by individual subjective perceptions, resulting in individual explicit behaviors and further affecting organizational performance. Tsai (2010) pointed out the Organizational Innovation Climate as the organizational staff’s perception of the workplace where the innovation stimulation, workplace resources, and innovation management skills were described (Chien, 2009). Amabile & Gryskiewicz (1987) indicated the factors of innovation stimulation, workplace resources, and innovation management skills in an Organizational Innovation Climate, as described below.

1. Innovation stimulation, referring to the encouragement of free speech on new ideas as well as appropriate feedback and fair rewards for creative work.
2. Workplace resources, indicating that managers who are the role models, full of passion, and adept at communication and organization of members who are willing to freely decide on affairs and make efforts to complete tasks.
3. Innovation management skills, containing organizational characteristics of cooperation, supportive innovation, and proper competition.

Corporate Culture

Corporate Culture, which embodies the business philosophy of an organization or enterprise, could be started in anyplace, possibly by an individual, work groups, sectors, or business units, and developed from bottom-up or top-down. Under this definition, Corporate Culture includes the organization values, visions, norms, working language, systems, symbols, beliefs and habits (Suraksha and Kumar, 2013). As proposed by Lin (2010) Corporate Culture is composed of several elements, including the business philosophy of the founder, the standards followed by the organization, and the established standards for new members to comply with. Ravasi and Schultz (2006) underlined the understanding of organizational culture is a set of shared mental assumptions that guide interpretation and action in organizations by defining appropriate behavior for various situations. Organizational culture affects the way people and groups interact with each other, with clients, and with stakeholders.

Toyohir Kono (1992) visited and analyzed the basic characteristics of a hundred enterprises and proposed three dimensions to define Corporate Culture. (1) A Live &
Active Culture mostly appears in the initial stage of enterprises in which challenges were greatly presented. The leaders were innovation-oriented, and the staff was energetic and not afraid of failure. The top-down distance was short for favorable communication and the staff was strongly responsible for their tasks. (2) A Bureaucratic Culture exhibits organization-oriented and over-cautious behaviors. Most governmental organizations and large-scale enterprises with a long history revealed such a culture. (3) A Rigid Culture was created by dictators, in which the members merely practice habitual and existing actions, and it showed habit-oriented and security-first values and rigid behaviors.

Correlations among Knowledge Management, Corporate Culture, and Organizational Innovation Climate

Johannessen, Olsen & Olaisen (1999) considered that Vision and Corporate Culture would provide a direction for Knowledge Management (assisting in knowledge integration and application). Managers should understand the criticality of Knowledge Management for the Organizational Innovation Climate, such as recording and emphasizing various types of organizational knowledge (including systematic, implicit, explicit, tacit, and interpersonal knowledge), and establishment of internal and external individual and team networks to assist in idea flow and to develop, analyze, and utilize Knowledge Management for reinforcing an Organizational Innovation Climate. A new information structure contained internet, intranet, and extranet networks. Establishing a communication structure (internal and external meeting locations are helpful for face-to-face communication) could change implicit knowledge into explicit knowledge and further enhance the employee commitment and Organizational Innovation Climate to reinforce the vision. Davenport, Delong & Beers (1998) indicated that creating an Organizational Innovation Climate as an item of Knowledge Management was to establish Knowledge Management with effective creation, transformation, and usage for Organizational Innovation Climate. In short, it was used to create Corporate Culture which paid attention to and accept knowledge. Some companies were devoted to changing the management of knowledge-related regulations and values, attempting to form an Organizational Innovation Climate. Others tried to change the staff's awareness of the job or emphasize the process of knowledge creation management, share, and usage. They tended to enhance the attention to Knowledge Management to create an Organizational Innovation Climate.

Accordingly, the following hypotheses are proposed in this study.

**H1:** Knowledge Management presents significant correlations with Corporate Culture.

**H2:** Corporate Culture shows remarkable correlations with Organizational Innovation Climate.

**H3:** Knowledge Management reveals notable correlations with Organizational Innovation Climate.
H4: Corporate Culture exhibits mediating effects on Knowledge Management and Organizational Innovation Climate.

Conceptual Structure

Summarizing the above literature review, the conceptual structure (Figure 1) is drawn to discuss the correlations among Knowledge Management, Corporate Culture, and Organizational Innovation Climate.

Figure 1.
Conceptual structure

Research Design and Method

Definition of Research Dimension

Knowledge Management

Based on Chien (2009) and Chou (2010), Knowledge Management is divided into the dimensions of Knowledge Acquisition, Knowledge Creation, and Knowledge Store and Transfer.

Corporate Culture

Based on Toyohir Kono (1992), three dimensions are covered in the definition of Corporate Culture, namely a Live & Active Culture, a Bureaucratic Culture, and a Rigid Culture.
Organizational Innovation Climate

Summarizing the literature studies on the Organizational Innovation Climate, Amabile & Gryskiewicz (1987) discussed the factors in the Organizational Innovation Climate, including innovation stimulation, workplace resources, and innovation management skills.

Research Participant

The questionnaires were distributed to the supervisors and staff of the manufacturers in Linkou Industrial Park. To promote Linkou, guide the relocation of illegal and underground plants in Sanchong, Luzhou, Xinzhuang, Banqiao, and Shulin, and assist industrial entrepreneurs in acquiring industrial land in northern Taiwan, five industrial parks, for a total 539 hectares in the Linkou area are planned. Such industrial development guides the population and industries in the flood plains along Tamsui River, providing employment opportunities and solving the pressure of population growth in the Taipei Metropolitan Area. By importing the industrial population to enhance the development of other industries, it achieves the ultimate goal of accommodating 0.75 million people in the new town. A total of 650 questionnaires were distributed, and 348 valid ones were retrieved, with a retrieval rate of 54%.

Analyses

Regression Analysis is applied to understand the correlations among the Knowledge Management, Corporate Culture, and Organizational Innovation Climate.

Analysis and Conclusions

Factor Analysis of Knowledge Management

With Factor Analysis of the Knowledge Management Scale, the factors of Knowledge Acquisition (eigenvalue=2.337, α=0.82), Knowledge Creation (eigenvalue=2.064, α=0.80), and Store and Transfer (eigenvalue=1.816, α=0.84) are extracted, with the covariance explained up to 77.463%.

Correlation Analysis of Knowledge Management and Corporate Culture

Multiple Regression Analysis was used to test the hypotheses and the theoretical structure, the first regression equation, Table 1, achieves significance (F=22.186, p<0.001). Knowledge Management exhibits remarkable effects on the Live & Active Culture, where Knowledge Acquisition, Knowledge Creation, and Store and Transfer present significantly positive effects on Live & Active Culture, reaching significance (Beta=0.212, p<0.01; Beta=0.241, p<0.01; Beta=0.167, p<0.05).
The second regression equation, Table 1, reaches significance (F=28.337, p<0.001). Knowledge Management shows notable effects on Bureaucratic Culture, where Knowledge Acquisition and Store and Transfer affect remarkably positive effects on Bureaucratic Culture, achieving significance (Beta=0.173, p<0.05; Beta=0.201, p<0.05).

The third regression equation, Table 1, achieves significance (F=36.815, p<0.001). Knowledge Management presents remarkable effects on Rigid Culture, where Knowledge Acquisition and Store and Transfer reveal notably positive effects on Rigid Culture, reaching significance (Beta=0.181, p<0.05; Beta=0.186, p<0.05). H1 is therefore partially supported.

Table 1.
Regression Analysis of Knowledge Management and Corporate Culture

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Live &amp; Active Culture</th>
<th>Bureaucratic Culture</th>
<th>Rigid Culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent variable↓</td>
<td>β</td>
<td>Beta</td>
<td>p</td>
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<tr>
<td>Knowledge Management</td>
<td>2.142**</td>
<td>0.212</td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge Acquisition</td>
<td>2.344**</td>
<td>0.241</td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge Creation</td>
<td>1.521*</td>
<td>0.167</td>
<td>0.043</td>
</tr>
<tr>
<td>F</td>
<td>22.186</td>
<td>28.337</td>
<td>36.815</td>
</tr>
<tr>
<td>P</td>
<td>0.000***</td>
<td>0.000***</td>
<td>0.000***</td>
</tr>
<tr>
<td>R2</td>
<td>0.312</td>
<td>0.336</td>
<td>0.375</td>
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<tr>
<td>Adjusted R2</td>
<td>0.022</td>
<td>0.031</td>
<td>0.037</td>
</tr>
</tbody>
</table>

Remark: * stands for p<0.05, ** for p<0.01

Correlation Analysis of Knowledge Management, Corporate Culture, And Organizational Innovation Climate

Using Multiple Regression Analysis to test the hypotheses and the theoretical structure, Table 2, the first regression equation reaches significance (F=24.184, p<0.001). Knowledge Management shows noteworthy effects on Organizational Innovation Climate, where Knowledge Acquisition, Knowledge Creation, and Store and Transfer exert
remarkably positive effects on Organizational Innovation Climate, achieving significance (Beta<0.252, p<0.01; Beta=0.271, p<0.01; Beta=0.221, p<0.01). H3 therefore is supported.

The second regression equation, Table 2, achieves significance (F=33.438, p<0.001). Corporate Culture presents notable effects on Organizational Innovation Climate, whereas the Live & Active Culture, Bureaucratic Culture, and Rigid Culture reveal significantly positive effects on the Organizational Innovation Climate, reaching significance (Beta=0.234, p<0.01; Beta=0.171, p<0.05; Beta=0.162, p<0.05). H2 therefore is supported.

### Table 2.

_Multiple Regression Analysis of Knowledge Management and Corporate Culture_

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Organizational Innovation Climate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Knowledge Management</td>
</tr>
<tr>
<td>Knowledge Acquisition</td>
<td>2.462**</td>
</tr>
<tr>
<td>Knowledge Creation</td>
<td>2.675**</td>
</tr>
<tr>
<td>Store and Transfer</td>
<td>2.133**</td>
</tr>
<tr>
<td>Corporate Culture</td>
<td></td>
</tr>
<tr>
<td>Live &amp; Active Culture</td>
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</tr>
<tr>
<td>Bureaucratic Culture</td>
<td></td>
</tr>
<tr>
<td>Rigid Culture</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>24.184</td>
</tr>
<tr>
<td>P</td>
<td>0.000***</td>
</tr>
<tr>
<td>R2</td>
<td>0.343</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.035</td>
</tr>
</tbody>
</table>

Remark: * stands for p<0.05, ** for p<0.01
Mediating Effects of Knowledge Management and Corporate Culture On The Organizational Innovation Climate

The mediating effects of Corporate Culture are analyzed by Hierarchical Regression Analysis, Table 3. Knowledge Management achieves the notable explanation of Organizational Innovation Climate (F=38.413, p<0.001). According to Model II, which simultaneously considers the effects of Knowledge Management and Corporate Culture on Organizational Innovation Climate, the mediating effects of Corporate Culture are discussed. It is found that the $\beta$ of Knowledge Acquisition remarkably drops from .252 (p<.01) to .209 (p<.01), showing that Corporate Culture would reduce the direct effects of Knowledge Acquisition on Organizational Innovation Climate. The $\beta$ of Knowledge Creation notably drops from .271 (p<.01) to .234 (p<.01), presenting that Corporate Culture would reduce the direct effects of Knowledge Creation on Organizational Innovation Climate; and, the $\beta$ of Store and Transfer significantly drops from .221 (p<.001) to .182 (p<.05), revealing that Corporate Culture would reduce the direct effects of Store and Transfer on the Organizational Innovation Climate. Consequently, Corporate Culture appears to partially mediate the effects on Knowledge Management and Organizational Innovation Climate that H4 is supported.

Table 3.
Hierarchical Regression of Knowledge Management, Corporate Culture, and Organizational Innovation Climate

<table>
<thead>
<tr>
<th>Dependent variable →</th>
<th>Organizational Innovation Climate</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Model I</td>
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<tr>
<td>Knowledge Management</td>
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<tr>
<td>Knowledge Acquisition</td>
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<td></td>
<td>0.252</td>
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<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Knowledge Creation</td>
<td>2.675***</td>
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<tr>
<td></td>
<td>0.271</td>
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<tr>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Store and Transfer</td>
<td>2.133**</td>
</tr>
<tr>
<td></td>
<td>0.221</td>
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<tr>
<td></td>
<td>0.000</td>
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<tr>
<td>Corporate Culture</td>
<td></td>
</tr>
<tr>
<td>Live &amp; Active Culture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.169**</td>
</tr>
<tr>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Bureaucratic Culture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.542*</td>
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<tr>
<td></td>
<td>0.041</td>
</tr>
<tr>
<td>Rigid Culture</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.627*</td>
</tr>
<tr>
<td></td>
<td>0.039</td>
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<tr>
<td>F</td>
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<tr>
<td>P</td>
<td>0.000***</td>
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<tr>
<td>Adjusted R2</td>
<td>0.035</td>
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</tbody>
</table>

Remark: * stands for p<0.05, ** for p<0.01
CONCLUSION AND SUGGESTIONS

Following the research results of this study on Knowledge Management, Corporate Culture, and Organizational Innovation Climate, the following suggestions are proposed.

With regard to Knowledge Acquisition, learning organizations should be established for the promotion of management, such as encouraging the employees, constantly learning new knowledge, and discussing about continuous learning, improvement, quality, and performance. The establishment of knowledge learning, integration, and systematic mechanisms would assist in the formation of organizational innovation culture.

Regarding Knowledge Creation, an enterprise could create and enhance the organizational knowledge creation and innovation climate through organizational encouragement, supervisor encouragement, work team support, and sufficient resources so that the organizational members realize Knowledge Management and organizational learning as the key success factors, approve creation work, and develop and operate new ideas. Furthermore, providing the workplace with sufficient resources, such as resources required for projects, could enhance and create a high Organizational Innovation Climate to enhance the overall efficiency of Knowledge Management and promote the competitive advantages of the organization.

In terms of Store and Transfer, the investment in information equipment and the relative talents should be practiced, rather than being executed with traditional methods. In this case, expressing work experiences with implicit or explicit methods, learning work skills by observation, imitation, and practice, and recording and organizing the database for the employees should be treated as a long-term investment. With step-by-step promotion, knowledge could be inherited through information technology for more effective development.

REFERENCES


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