

**The Effect of Organizational Trust, Knowledge Sharing and Knowledge
Creation on Innovation and Business Performance of Taiwan High
Technology Companies**

by

Juan Fernando Herrera Ramos

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Advisor: Cheng-Ping Shih, Ph.D.

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“Focus on the journey, not the destination. Joy is found not in finishing an activity but in doing it”. - Greg Anderson

ABSTRACT

We live in the era of globalization, an era where a call can be made from Asia and received in Africa at virtually no cost thanks to the internet and advances in telecommunications. An era where markets have merged and have become more aggressive, and where companies, in order to stay competitive, try to hire the most qualified employees from all across the globe. Due to this new trend, companies must provide their employees with conditions that allow them to achieve their full capabilities in order to be more profitable. Nevertheless, this creates issues, since there are so many different options when picking a strategy to obtain innovation and optimal business performance, with so many factors that may influence the results. Thus, this study examined and analyzed the effects of organizational trust, knowledge sharing, and knowledge creation on innovation and business performance of Taiwanese high technology company employees. A quantitative study was implemented and statistical analysis tested the relationship of said variables. The study used Statistical Package for the Social Sciences (SPSS) and Partial Least Squares (PLS), as tools to analyze the collected data, this study includes the descriptive statistics, path coefficients, coefficient of determination (R^2), bootstrapping, t-value, Composite Reliability results, Cronbach's Alpha, correlation, average variance extracted (AVE), Standardized Root Mean Square Residual, Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio. The data for this study was collected from employees of high technology companies in Taiwan. The results of this study showed that there is a strong and positive significant relationship between organizational trust and knowledge sharing, organizational trust and knowledge creation, , knowledge creation and knowledge sharing, knowledge creation and innovation, innovation and business performance, a weak correlation between organizational trust and business performance and finally with regards to knowledge sharing and innovation, the results showed that there was not a significant correlation between the two variables, this was explained because in order to protect their confidentiality, departments don't usually share their information with others unless strictly required and get their innovation process through knowledge creation.

Keywords: organizational trust, knowledge sharing, knowledge creation, innovation, business performance

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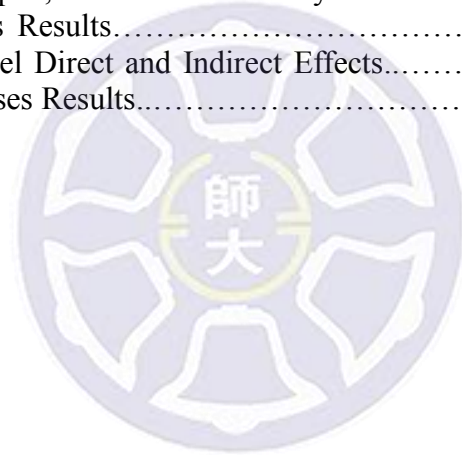
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CHAPTER I INTRODUCTION

The following chapter provides the research background, the problem statement, the research purposes, the research questions, the research significance, the definitions of terms and the delimitations and limitations of this study. This chapter also provides a definition of the key terms to have a better understanding of the study.

Background of the Study

Globalization is a phenomenon that cannot be denied; it is well known that because of it, the different markets around the world have merged into one global market, which generates a major interaction between people and of course between cultures. Globalization and technology have made markets more aggressive, and to achieve a higher level of competitiveness, organizations must deal with the challenges ahead using their competencies and the resources to adapt to their environment and come up with the best possible outcomes (Debowski, 2005). We all know that the people's background may change their communication approach and their way to express, reason that may be the start point to explain the gap between how people solves conflicts, the differences in spoken languages and body language as well (Gudykunst, 2005; Ting-Toomey & Kurogi, 1998).

In such times were people can move freely and work in not only different companies but also different countries around the world, turnover becomes an issue that can affect companies performance, when employees leave taking their knowledge with them, which is why it's important for organizations to stablish a work environment that

allows its employees to use their creativity to achieve innovation and to establish a knowledge sharing network, to keep the important information within the organization. That is why knowledge sharing and knowledge creation become essential topics that help organizations to keep and to pass the knowledge to other employees. The conservation and diffusion of said knowledge was never a big concern in times when the employees would stay working in the same organization throughout their entire life, but times have changed and nowadays organizations need to address this issues

Knowledge it is not only the data stored in files, electronic devices or papers, knowledge it's also in every employee's mind. People use knowledge every day to socialize, to work and to perform their daily activities. Knowledge management theories have become one of the most attractive subjects in management literature now that the use of knowledge in organizations has become such a hot topic. (Al-Alawi, Al-Marzooqi, & Mohammed, 2007).

Knowledge sharing and knowledge creation are determinant elements for the success of organizations (Faisal, Rasheedb & Habibac, 2013). Reason why is important to analyze employee's capabilities in this topics, since it could provide clues of their future achievements in organizations.

With a purpose of keeping national competitiveness and attract talents worldwide, more and more Taiwanese organizations have been working on strategies to attract qualified employees. Therefore, to conduct the analysis this study chose high technology companies in Taiwan as its sample. According to U.S. Taiwan connect, Taiwan has over 100 high technology companies across its territory; they are responsible in big part of the Taiwanese development.

Keeping high competitive levels in its industry is very important for the development of Taiwan, therefore, is important to look at how the organizational trust will influence employee's abilities to create and share knowledge and get the best performance outcomes for the organizations.

Problem Statement

Currently, because of the high levels of competitiveness between people, students, employees, companies, and educational institutions, it is very hard for co-workers to share the information between each other. It is a common behavior that even when they work for the same organization, people keep information to themselves; they don't disclose any data that could provide them with advantage towards the rest of the employees. But even if this might provide a personal advantage, this lack of trust generates a decrease on business performance and also affects the knowledge creation process of the organization overall. This is the reason why creating a trust environment is vital for organizations who want to improve their business performance. Based on knowledge management theories, business performance is one of the results that can be affected by a culture of trust in the organization.

Nevertheless, establishing a culture involving trust, knowledge sharing, knowledge creation and innovation to achieve great business performance it's not a simple task, companies need to be able to provide this environment while at the same time driving their efforts to reduce turnover rates and keeping employees satisfied with their working conditions.

Research Purpose

The central objective in this study is to develop a model that is able to analyze the relationships that may exist between the variables of organizational trust, knowledge sharing, knowledge creation, innovation and business performance in high technology companies in Taiwan. Therefore, the main objectives for the current study are formulated as follows:

1. To find out the effect of organizational trust on knowledge sharing.
2. To find out the effect of organizational trust on knowledge creation.
3. To find out the effect of knowledge creation on knowledge sharing.
4. To find out the effect of knowledge sharing on innovation.
5. To find out the effect of knowledge creation on innovation.
6. To find out the effect of innovation on business performance.
7. To find out the effect of organizational trust on business performance.

With this objectives, we expect that the integrated model is able to effectively measure the effect of organizational trust on knowledge sharing, organizational trust on knowledge creation, knowledge creation on knowledge sharing, knowledge sharing on innovation, knowledge creation on innovation, innovation on business performance and organizational trust on business performance, using Structural Equation Modeling (SEM) with Smart PLS software.

Research Questions

From the research purpose, we come up with the following seven research questions:

1. To what extent organizational trust affect knowledge sharing in high technology companies in Taiwan?
2. To what extent organizational trust affect knowledge creation in high technology companies in Taiwan?
3. To what extent knowledge creation affect knowledge sharing in high technology companies in Taiwan?
4. To what extent knowledge sharing affect innovation in high technology companies in Taiwan?
5. To what extent knowledge creation affect innovation in high technology companies in Taiwan?
6. To what extent innovation affect business performance in high technology companies in Taiwan?
7. To what extent organizational trust affect business performance in high technology companies in Taiwan.

Research Significances

This research will be significant for both researchers and practitioners. It attempts to offer a new perception of the relationships between organizational trust, knowledge

sharing, knowledge creation, innovation, and business performance.

After the analysis between these factors, the research provides some recommendations for companies, employees and practitioners to improve their decision making abilities and for them to be able to make the best use of organizational trust, knowledge sharing and knowledge creation, so that they are able to improve substantially their organizational innovation and consequently improve their business performance to position themselves above their competitors.

To do so, the study analyzed if there is any correlation between organizational trust on knowledge sharing, organizational trust on knowledge creation, knowledge creation on knowledge sharing, knowledge sharing on innovation, knowledge creation on innovation, innovation on business performance and organizational trust on business performance in the Taiwanese high technology companies.

The conclusions of this research provide new guidelines for future research on the topic. This research holds the interest of high technology company's employees, managers, and high technology companies. Furthermore, employees from the high technology industry will be able to use this research to understand and use organizational trust, knowledge sharing, knowledge creation and innovation to achieve optimal business performance. Companies can also use the results of this study to develop strategies that attract the most qualified employees and to improve their levels of profitability.

Definitions of Terms

To make sure that there are no conceptual misunderstandings of the terms used in this research and provide some context for researchers and readers, the definition of the main terms it's included.

Organizational Trust

Theoretical Definition: trust is being prepared and has the willingness to attribute good intentions to what other persons do or say (Cook & Wall, 1980).

Operational Definition: for the effects of this research, organizational trust was analyzed by the dimensions of trust in peers (T_P) and trust in management (T_M) from Mooradian, Renzl and Matzler (2006) and by the dimensions of openness and honesty (O_H), reliability (RE), identification (IDE) from Shockley-Zalabak, Ellis and Cesaria (2003). This variable was analyzed using a total of 15 items.

Knowledge Sharing

Theoretical Definition: knowledge sharing can be defined as the reception of information to perform tasks, know-how, and how to react regarding certain products and procedures (Cummings, 2004). It can also be defined as “the procedures to develop trans-specialist understanding which is achieved by creating coinciding knowledge fields” (Berggren, Bergek, Bengtsson, Hobday, & Söderlund, 2011). Or as a process in which people are able to share and communicate their ideas, to teach each other, a process in which ideas are constantly challenged, and where people are able to put to use the knowledge that they have obtained (Smith & McKeen, 2005).

Operational Definition: For the effects of this research, knowledge sharing was analyzed by the dimensions of intra-groups (I_G), and inter-groups (INTER_G) from Cummings (2004) and by the dimensions of knowledge donating (K_D) and knowledge collecting (K_C) from Van den Hooff and De Ridder (2003). This variable was analyzed using a total of 13 items.

Knowledge Creation

Theoretical Definition: Knowledge creation can be defined as the constant process, in which individuals exceeds the limitations of their old self transforming in a new self, developing a new perspectives, a new way to look at the world, and new knowledge (Nonaka, Toyama, & Konno, 2000).

Operational Definition: For the effects of this research, knowledge creation was analyzed by the dimensions of Socialization (KC-S), Externalization (KC-E), Combination (KC-C) and Internalization (KC-I) from Lee H. and Choi B. (2013). This variable was analyzed using a total of 11 items.

Innovation

Theoretical Definition: Innovation can be defined as the process of adoption of new behaviors or ideas (Jiménez-Jiménez & Sanz-Valle, 2011)

Operational Definition: For the effects of this research, innovation was analyzed by the dimensions of process innovation (P_I), technological innovation (T_I) and organization innovation (O_I) from Van der Panne, Van Beers and Kleinknecht (2003). This variable was analyzed using a total of 12 items.

Business Performance

Theoretical Definition: Business Performance can be defined as the standards set and used by the organizations to measure the outcomes and goals achieved (Emden, Yaprak, & Cavusgil, 2005).

Operational Definition: For the effects of this research, business performance was analyzed by the dimensions of partnership performance (P_P), market performance (M_P), and financial performance (F_P) from Emden et al. (2005). This variable was analyzed using a total of 12 items.

Delimitations and Limitations

To make the research feasible and enable a more practicable research process, the delimitations and limitations of the study are clearly described.

Delimitations

1. The study is delimited to Taiwanese companies.
2. The study is delimited to Taiwanese employees working in high technology companies in Taiwan.
3. The study only explored the effect of organizational trust, knowledge sharing, and knowledge creation on innovation and business performance.

Limitations

1. The study's findings and results should not be generalized to other populations than Taiwanese employees in high technology companies in Taiwan.

2. The study is limited to only factors such as organizational trust, knowledge sharing and knowledge creation that could affect innovation and business performance of Taiwanese high technology companies; nevertheless, there are several other factors that could be also taken in consideration.
3. The study focused on high technology companies located in Taiwan and to corresponding convenience of collecting samples.



CHAPTER II LITERATURE REVIEW

This chapter will define the concepts of the variables that will be used for this study. There is a lot of work and research about organizational trust, knowledge sharing, knowledge creation, innovation and business performance. So many researches have created a significant amount of definitions and classifications.

The following sections will provide a review of the relevant existing literatures in order to deliver the theoretical foundations of the conceptual model that is used in this research with the purpose of providing a better understanding of the focus of the study and its implications. This chapter includes some theories that concern organizational trust, knowledge sharing, knowledge creation, innovation and business performance.



The Concept of Organizational Trust

According to Lewis and Weigert (1985) trust can be defined as process which involves taking risks by being confident that everyone who is involved in the action will act loyally and also capably. From another point of view Culbert and McDonough (1985) defined trust as the willingness that a person has to make its own a vision of the institution system that would later on, valorize their contributions to the organization and defend them. From the perspective of Morreale and Shockley-Zalabak (2010) organizational trust can be defined as the credibility that an organization has that its communication skills, behaviors and practices are capable, truthful, open, consistent,

concerned, and that they identify with the organizational goals, norms, and morals. The authors consider that there are five dimensions in an “acceptable” organizational trust (competence, openness and honesty, concern for employees/stakeholders, reliability, and identification). According to Möllering, Bachmann and Hee (2004) trust is the symbol for honesty and devotion, but the idea of trust can possibly traced back to the first forms of human association. According to Deutsch (1958) trust can be defined as an interpersonal idea which also includes doubt, because trust refers to expectations regarding an outcome or occasion. Larzelere and Huston (1980) indicated that trust exists only to the degree, that a certain individual has the firm belief that there are other individuals who are generous and truthful. In the definition of Cummings and Bromiley (1996) organizational trust is having faith that an institution will fulfill all its responsibilities and duties. According to Lewicki and Bunker (1995) the definition of trust it’s the optimistic hope regarding another’s person reasons regardless to our own and the risk it involves. Another definition from Mayer, Davis and Schoorman (1995) defined trust as how much are we willing to be defenseless against the activities or actions of other individuals basing our behavior in the strong belief that others will make actions that will go according to the trustor best interest, even if we have limited or no control over those individuals. McAllister (1995) said trust as the point to which individuals are willing to act, despite the actions or choices made by other individuals. According to Ng and Chua (2006) trust refers to the level of confidence a person has in that others will be kind and will act in a helpful manner. Mishra (1996) defined organizational trust as the level of willingness an institution has, about its communication behaviors and culture in its interactions, to be vulnerable based on the

belief that other groups, institutions or persons, are open and honest, have concern, consistency, and identify with a common goal, a set of norms or values. In another definition from Ellis, and Shockley-Zalabak (1999) they have stated that trust it is a critical factor when it comes about encouraging harmony relationships within the company. It was also cited that trust is “The expectancy... regarding a certain ethical behavior – which represents moral decisions and analytical actions based on moral principles” (Hosmer, 1995).

According to Robinson (1996) trust is the expectation or belief that individuals have, that further actions will be satisfactory, gainful, or have the conviction that at least won't have negative effect for other individuals. In the definition given by Barber (1983) trust is the set of social beliefs, that where either established or learned, which individuals have on each other or other institutions, this can also be applied to the ethical norms and guidelines that are relevant to individuals and the environment that they interrelate to. This can be translated in simple words, by saying that their trust is highly related to some interest. From another perspective, Hardin (2002) stated that a person can trust others in a specific period of time under certain conditions, when they consider that person to be reliable. Doney, Cannon and Mullen (1998) described trust as being ready to believe in others and act in circumstances where these actions will make one exposed to those individuals. According to Bhattacharya, Devinney and Pillutla (1998) trust can be defined as expectation of non-negative results that a person assumes to obtain from the actions of other individuals in a process surrounded by doubt. Matthai (1989) defined trust as the employee's feelings of certainty that, if they were to face a dangerous condition or one that was undefined, the organization's actions would

be reliable, and will have all the intentions to be useful. In another definition by Giffin (1967) trust can be stated as being confident about the occurrence of an incident; it can also be defined as the behavior of a person with the objective of achieving a desired but unpredictable objective in an uncertain scenario. Shockley-Zalabak, Ellis and Winograd (2000) stated that organizational trust can be defined as “expectations individuals have about networks of organizational relationships and behaviors”. In a definition provided by Smith and Barclay (1997) trust is related to the individual recognition of other individual’s reasons behind their actions. Sztompka (1999) stated trust as believing that the individuals around us, included institutions or other groups that we come in contact, cooperate or collaborate with, will most likely act in a way oriented towards our happiness. From the perspective of Six (2007) interpersonal trust can be defined as the state of emotions which involves the possibility of being susceptible to other individual’s actions, but believing that those individuals will behave in a certain manner that will be significant to us. Another definition taken from Cook and Wall (1980) said that trust is having faith in the ability and intentions of other individuals. From the perspective of Rotter (1967) trust is the expectation a person has on the promises, words, written or spoken declarations of another individual or group of individuals. In the words of Anderson and Narus (1990) trust is the degree that group members believe that all the other individuals involved with the group, will show cooperation between them to achieve a goal.

The Importance of Organizational Trust

Described by Goffman (1963) trust can be considered as something vital for organizations; its main role consists in the preservation of social developments. Barney and Hansen (1994) stated that there is a lot of research that confirms that when an organization is capable of building relationships of trust can use that to establish a significant source of competitive advantage. According to the findings of Zaheer, McEvily and Perrone (1998) when an organization takes good care of the climates of trust, both external and internal, earns significant benefits in the market. Furthermore, Shockley-Zalabak et al. (2000) stated that the organizations that have better levels of trust have demonstrated higher levels of prosperity and to be more advanced if compared to other organizations with lower levels of trust. In their research, they have also proposed, that the service quality is highly associated with organizational trust. Cruise-O'Brien (2001) stated that organizational trust is a factor of great importance; he stated that it can raise the levels of critical thinking and creativity on employees. From the findings of, Ellis and Shockley-Zalabak (2001) trust was demonstrated to play an important part when building relationships in the organization environment or any environment where the individuals are. It is through trust that becomes possible for individuals to develop teamwork as well as interpersonal relations and the support they need in the organization. Shockley-Zalabak et al. (2003) stated that trust it's important, a good culture of trust can result in very positive outcomes for innovation, international business, profits, organizational survival and to increase the diversity of employee opinions and behaviors that play an essential role in organizations. According to the research of Gillis (2003) when an institution is concerned with establishing and

maintaining a culture of trust, it has demonstrated higher levels of output and job satisfaction within the company workers, as well as more successful team-building levels. As for the downside, Currall and Epstein (2003) stated that once that trust has been lost, it will be extremely hard for the organization to reverse that situation and for individuals to recover that trust. Accordingly, Petrovs (2005) stated that organizational trust has to be found, through leadership, actions and words from management. This process needs to sustain itself on day to day basis actions and activities. Mayer and Gavin (2005) stated that trust must be considered as an essential subject linked to organizational performance. From their research, Lee and Stajkovic (2005) established that when an individual has trust on its team members, this can generate higher levels of cooperation between the team. From Covey (2006) point of view, organizational trust is often linked to higher levels of financial performance and it's also linked to the accomplishment of the goals set by the organization. According to Zeffane (2006) if there is no trust, the individuals will not be able to show cooperation signs and hence the organization will not be able to achieve its goals. Building trust between employees must be a desire from all the organization (Zhang, Tsui, Song, Li, & Jia, , 2008). However, this can become the most difficult part for the organization to improve and preserve, this is definitely one of the biggest challenges to face. In the words of Starnes, Truhon and McCarthy (2010) when an organization has high levels of cultural trust, they usually produce great products with lower cost, this also needs to be combined with their ability of recruiting and retaining highly inspired employees. As described by Shockley-Zalabak, Morreale and Hackman (2010) trust should be one of the most critical factors in quality institutions in the 21st century. Stated by Vineburgh (2010)

trust must be essential to all institutions, universities and colleges. For Durkheim (2014) system trust assists interpersonal trust. This can be explained by saying that people, who lose trust in their co-workers, will also lose trust in the institution.

Organizational Trust Model

To be able to perform an effective measure of the organizational trust factor, amongst the employees working for the high technology companies, the measure used by Mooradian et al. (2006) was adapted. This model is composed of four dimensions from which two were adopted, these dimensions were (1) interpersonal trust in peers and (2) interpersonal trust in management (this will include three items for trust in management and three items for trust in peers). The difference between this two, considers the working environment. According to Mooradian et al. (2006) trust can be defined as being ready to attribute good intents to other individuals; this definition can be used to refer to management, peers or colleagues. Trust in peers refers to having faith in the intentions of our peers and trust in management refers to having faith in the intentions of our managers and the institution. In figure 2.1, we can observe the propensity of the model, it scales 6 items based on a one to five Likert scale (it goes from strongly disagree to strongly agree).

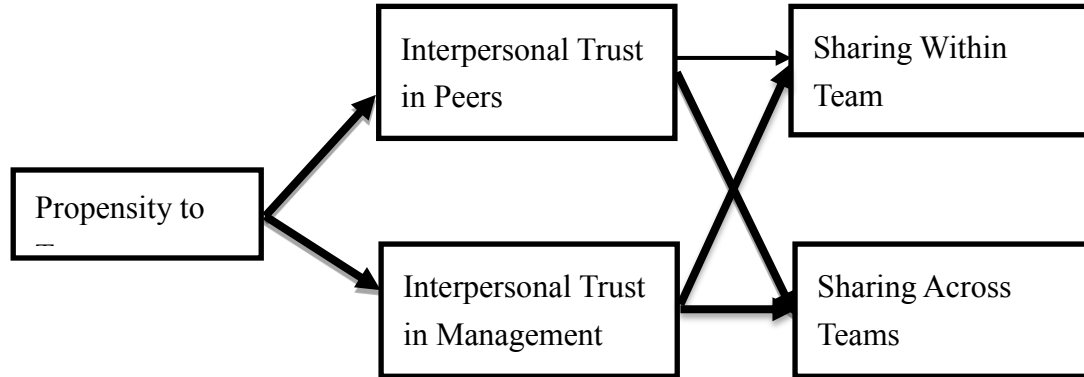


Figure 2.1. The model of Propensity to Trust, Interpersonal Trust, and Knowledge Sharing. Adapted from “Who trusts? Personality, trust and knowledge sharing,” by Mooradian, T., Renzl, B., and Matzler, K, 2006, *Management Learning*, 37(4), pp.523-540. Copyright 2006 by Sage Publications London, Thousand Oaks, CA and New Delhi.

In addition to that, this research has also combined the measure for organizational trust from Shockley-Zalabak et al. (2003). They built a model to be able to study the prominence of organizational trust and after its study provide a tool that could accurately measure trust in organizations. This study adopted its measurable way. This model is composed of five dimensions, from which only three of them were adopted for this study, these dimensions were: (1) openness and honesty, (2) reliability and (3) identification which can be defined as how the members of an organization handle or manage their thoughts and concerns to organizations. According to Shockley-Zalabak et al. (2003) the first dimension “openness and honesty are the words used when people are asked what contributes to organizational trust. This dimension involves not only the amount and accuracy of information that is shared, but also how sincerely and appropriate it is communicated.” The second dimension “reliability is determined by whether or not a co-worker, team, supplier, or organization acts consistently and dependably. In other words, can we count on them to do what they

say?” The third dimension “identification measures the extent to which we hold common goals, norms, values, and beliefs associated with our organization’s culture. This dimension indicates how connected we feel to management and to co-workers.” In figure 2.2, we can observe the organizational trust model, it scales 12 items based on a one to five scale (it goes from strongly disagree to strongly agree). According to Shockley-Zalabak et al. (2003) trust can be defined as the positive expectations, that other individual’s behavior or acts are based on people’s roles, experiences, relationships and interdependencies,

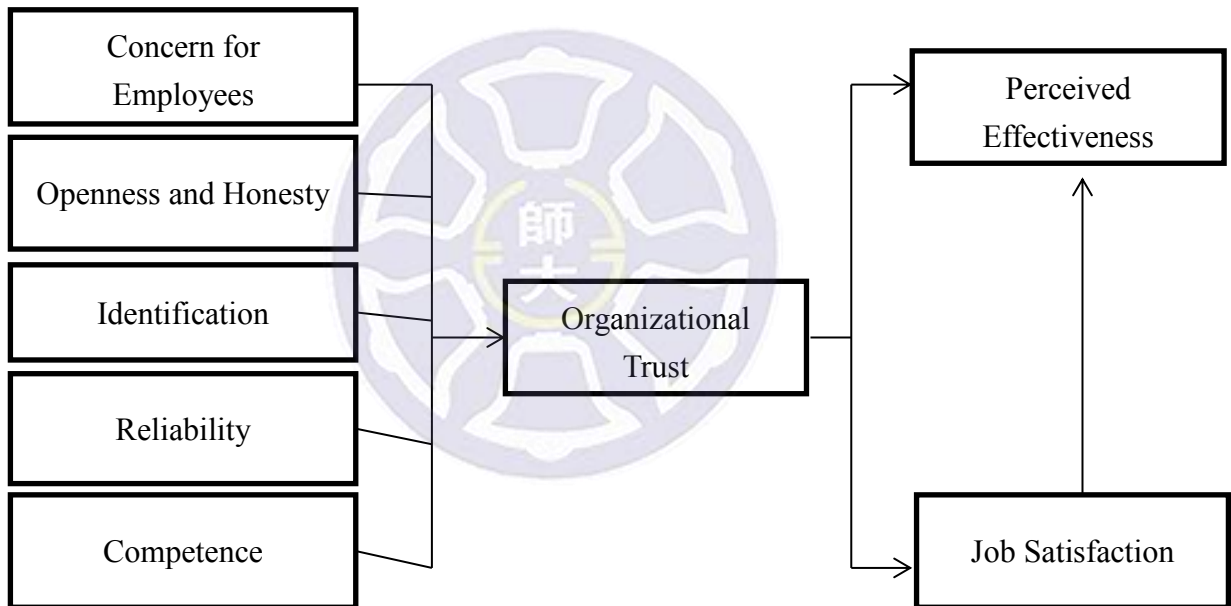


Figure 2.2. The model of organizational trust. Adapted from “Measuring organizational trust: Cross-cultural survey and index,” by Shockley-Zalabak, P., Ellis, K., and Cesaria, R, 2003, Copyright 2003 by IABC Research Foundation.

Hypothesis 1: Organizational trust has no effect on knowledge sharing.

Hypothesis 2: Organizational trust has no effect on knowledge creation.

Hypothesis 7: Organizational trust has no effect on business performance.

Knowledge Sharing

Concept and Definition of Knowledge Sharing

Stated by Wang and Noe (2010) knowledge sharing can be described as the contribution that employees have to innovation, to knowledge application and how this translates in a competitive advantage for organizations. Cummings (2004) provided a definition of knowledge as “the provision of receipt of task information, know-how, and feedback regarding a product or procedure”. Described by Ho and Han (2003) knowledge sharing can be defined as the way the information is distributed from an individual, who shares the knowledge he or she has learned, to other individuals from the organization. To this matter, knowledge sharing can be viewed as an item that can be transferred from one person’s mind to other persons who require it. Adding more to that concept, the authors have also stated that knowledge sharing can be described as the act of an individual that leads to the spread of information or knowledge that said individual has gained, amongst the members of the organization. Another definition by Van Den Hooff, Elving, Meeuwsen and Dumoulin (2003) said that knowledge sharing can be defined as a procedure that requires reciprocal exchange of knowledge between the individuals, this process takes place between a sender and a receiver. Moreover, the authors have also stated that both sender and receiver can come together resulting in the creation of new knowledge. From the perspective of Hooff, and Hendrix (2004) knowledge sharing is a process that requires that individuals come together to share their knowledge and through this process create new knowledge as well. On another side Ardichvili, Page and Wentling (2003) said that knowledge sharing is formed by two factors, both the demand and supply of new information. This leads us to the conclusion

that knowledge it's divided in knowledge donating, which consist in the exchange of our intellectual capital with others, and knowledge collecting, which consists in consulting your peers, to be able to exchange intellectual capital with them. Van den Hooff and De Ridder (2004) have also identified a two-dimension knowledge sharing mechanism which is also composed by both knowledge collecting and knowledge donating. Liebowitz (2001) stated that knowledge sharing constitutes the key in the exchange of information; he has also stated that knowledge sharing its scheming into society and can differentiate the competitive advantages, aptitudes or intellectual prosperity amongst different societies. Described by Darr and Kurtzberg (2000) knowledge sharing can be stated as a process in which and individual can obtain new and different data which he learns from other people experiences. Ghadirian, Ayub, Silong, Bakar, and Zadeh (2014) defined knowledge sharing as a puzzling assignment, which requires high levels of effort and can be very time consuming; it might require that the scholars who involve in it have a lot of enthusiasm and dedication to be able to cooperate between them. Knowledge sharing it is a vital factor in the organizational world, and one of the most important aspects of knowledge sharing. A necessary step to accomplish serious progress in knowledge achievement is to be able to understand and apply knowledge sharing techniques. Van den Hooff and De Ridder (2004) defined knowledge sharing as a mechanism which consists in the collection, organization and communication of knowledge that is transmitted from one individual to another. From the perspective of Chin, Sion, Geok, and Yee (2012) knowledge sharing can be defined as the spread and exchange of knowledge, regardless whether is tacit or explicit, this knowledge can be experiences, skills or ideas that get transferred from individual to

individual, and from student to student or even between groups of students. Nevertheless, to be able to achieve that, these students or groups of students must be willing to cooperate with each other; such cooperation can be achieved either face to face, or through online interactions. According to Lin (2007) knowledge sharing consists in what he defined as a social contract culture; this social contract culture includes factors such as experiences, the exchange of knowledge between peers and skills related to the organization. According to Clark and Brennan (1991) knowledge sharing consists of spreading the acquired knowledge, sharing expectations and principles. On another side, Hansen (1999) defined knowledge sharing as a procedure which consists of knowledge seeking, knowledge transfer, and knowledge adoption.

The Importance of Knowledge Sharing

According to Nelson (1993) if the organization is able to successfully deliver knowledge sharing concepts to its members, this translates in the organizations being able to put in practice and master novel techniques that will help achieve the goals of the organization. Nonaka and Takeuchi (1995) defined knowledge sharing, as a need for organizations to be able to transform both concepts and ideas, in services and products. Another definition given by Spender (1996) knowledge sharing is critical for organizations in order to be able to generate skills and abilities, growth value, and keep competitive advantages. According to Argote, Ingram, Levine, and Moreland (2000) if the institutions are able to successfully transfer the knowledge from an employee to the other, this later on translates in higher levels of effectiveness and organizational performance. According to the findings of Van Den Hooff, Elving, Meeuwsen and Dumoulin (2003) if there is an increase in knowledge sharing, this can have a great

effect on the organization's performance. In the definition of Reid (2003) he stated that knowledge sharing can generate a big benefit for individuals and teams in the organization. Van den Hooff and Hendrix (2004) stated that knowledge sharing can become even more significant if it's practiced by students. According to Van den Hooff and van Weenen (2004) knowledge sharing can be defined as an important process in modern organizations; an effective knowledge sharing culture can result in higher levels of spread of intellectual capital, which is a very important resource for organizations. In Addition, Renzl, Matzler and Mader (2005) said that knowledge sharing has a vital significance for the organization, to increase value, to keep within the organizations their competitive advantages, develop skills and abilities. From this we can conclude that the company's ability to transmit knowledge between the members of its organization can substantially increase the organization's performance. Jantunen (2005) stated that knowledge sharing supports organizations by helping them sustain their competitive abilities; is a strategic asset for organizations in such a wide global market. According to Yang (2007) knowledge sharing can be defined as a main factor for institutions or individuals that wish to achieve prosperity in an environment full of demanding competitively. Additionally, Cho, Li and Su (2007) mentioned that to greater levels of knowledge sharing, there will be higher levels of positive influence on the organization's performance. From results of the research about how important is knowledge sharing, which was conducted by Jer Yuen and Shaheen Majid (2007) we can conclude that students can identify how important is knowledge sharing amongst their peers to make their academic studies a much more rich experience. Renzl (2008) defined knowledge sharing, inside and between teams, as a crucial factor since it allows

the organization and the team to generate competencies, skills and keep the company's competitive advantages within the organization. Another definition from Wang and Noe (2010) said that knowledge sharing is an asset of vital importance to organizations, which provides a significant competitive advantage in such active economy. Additionally, it was mentioned by the authors that knowledge sharing is highly related to higher level of improvement in firm performance, team performance and innovation capabilities. However, Reychav and Weisberg (2010) stated that the lack of abilities in knowledge sharing can be attributed to the fact that higher education institutions may not be producing values resulting from knowledge management implementation. From research about the degrees of knowledge sharing between undergraduate students from a private university by Yaghi, Barakat, Alfawaer, Shkokani, and Nassuora (2011) it was demonstrated that knowledge sharing between students has a vital role that helps both the one who shares the knowledge as well as the one who receives it, it constitutes a vital learning activity. Wu and Lu (2012) stated that knowledge sharing is often linked to interpersonal relations and social interactions.

Knowledge Sharing Model

To test knowledge sharing, conducts were measured using the Cummings' (2004) scale, for this purpose; knowledge sharing was categorized in two types, among and within work groups. As we observe in figure 2.3, the knowledge sharing model scales 6 items based on a one to five Likert scale (from strongly disagree to strongly agree).

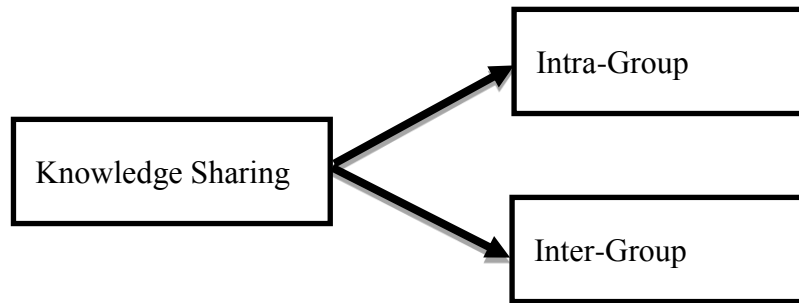


Figure 2.3. The model of knowledge sharing. Adapted from “Work groups, structural diversity, and knowledge sharing in a global organization,” by Cummings, J. N, 2004, *Management Science*, 50(3), pp.352-364. Copyright 2004 by Institute of Operations Research and the Management Sciences (INFORMS).

Additionally, this research also combines with a second model to be able to measure knowledge sharing commitment for knowledge collecting and donating, to achieve this purpose items of knowledge management scan were tested in a number of organizations by Van den Hooff and Van Weenen (2004). According to Oldenkamp (2001) knowledge donating implicates “communicating to others what one’s personal intellectual capital is” and knowledge collecting involves “consulting colleagues in order to get them to share their intellectual capital”. As we can observe in Figure 2.4, the CMC and commitment model scales 7 items based on a one to five (from strongly disagree to strongly agree).

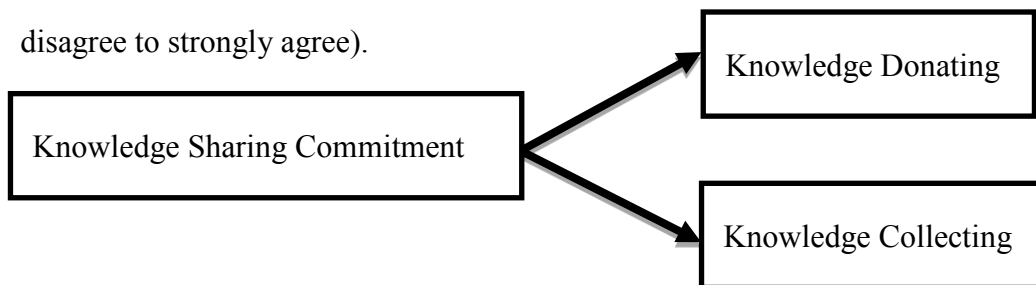


Figure 2.4. The model of CMC and commitment. Adapted from “Committed to share: the relationship between organizational commitment, knowledge sharing and the use of CMC” by Van den Hooff, B., and de Leeuw van Weenen, F, 2004, *Knowledge and Process Management*, 11(1), pp.13-24. Copyright 2004 by Wiley InterScience.

Hypothesis 3: Knowledge sharing has no effect on innovation.

Knowledge Creation

Concept and Definition of Knowledge Creation

Paavola and Hakkarainen (2005) stated that educational institutions have a wide known recognition as the biggest knowledge-building communities, in said communities; new knowledge is created by both teachers and students. This knowledge creation approach takes significant relevance in practice, when the individuals and communities have the specific tools that allow them to come together and work to achieve a more advanced knowledge. Innovative practices to work with knowledge are available for school children, this allows them to obtain tools to build and create new knowledge, and all of this is possible thanks to the new information technologies and advances in communications.

One of the most important aspects that can be found in all models of knowledge creation is that the agents involved in the knowledge creation process, are not isolated individuals, but are the members of a group or community, or the group or community itself.

From the literature we can get to the conclusion that the knowledge creation processes come from diverse communities and contexts. In the knowledge creation model designed by Nonaka, Byosiere, Borucki, and Konno (1994) it is proposed that the knowledge creation process it's composed by four dimensions: socialization, externalization, combination and internalization. On this study, these were the areas we focus on. According to Yang, Fang and Lin (2010) the theory from Nonaka about

knowledge creation is considered one of the models with more influence in the knowledge strategy literature.

According to Nonaka, Umemoto and Senoo (1996) knowledge creation can be defined as a dynamic human procedure that consists in justifying a personal belief and orienting it towards the truth, and can also be defined as the use of practice to embody a technical skill.

Yang, Fang and Lin (2010) defined organizational knowledge creation as the level of capability that a company possesses to create new knowledge, and once it is created, its capability to spread it through the organization and integrate it to its systems, products and services. On another definition by Nonaka et al. (2000) stated that knowledge creation can be described as self-transcending and continual procedure, in which an individual can transcend from its own limits and reach a new self, this, this can be achieved through acquiring new knowledge, a new context and a new view of the world.

Knowledge creation should be considered as a vital aspect for educational institutions. The transformation of the late advancement in learning sciences and also on information economy has its focus set on the importance of increasing the levels of learning creation capabilities between the younger generations, and making sure they embrace their self-confidence and become contributing nationals in the future.

The procedure of organizational knowledge creation includes experience sharing and ideas sharing, between employees and students, the organization of knowledge and the transfer of ideas through actions.

Chee Tan, So and Yeo (2014) stated that in order to be able to change the education

institutions, into knowledge-building institutions, it is necessary to adopt a vertical transformation, which will require that knowledge creation practices are spread through all levels in the organization.

Knowledge-building communities in educational institutions need efforts from students, but they also require high levels of commitment and involvement from the staff and teachers.

The four dimensions of Knowledge Creation

The procedure of knowledge creation has four dimensions which are commonly known as the SECI model for knowledge creation, this dimensions are: Socialization, Externalization, Combination and Internalization. As it has been mentioned before, these were the indicators to be able to effectively measure knowledge creation.

Socialization.

García-Muiña, Martín de Castro and López Sáez (2002) said that socialization is recognized as a procedure in which common knowledge is created, this creation takes place then experiences are shared. This procedure involves transforming the new tacit knowledge using experience sharing.

Externalization.

Externalization is a procedure through which tacit knowledge is transformed into explicit knowledge, usually in the form of a diagram or a concept. Analogies, sketches and metaphors are usually used in this process.

Combination.

Combination is the procedure of assembling both the new and the existing explicit

knowledge into systemic knowledge. It is on this dimension that the new created knowledge is supposed to be combined with the existing explicit knowledge to transform into something tangible.

Internalization.

The procedure in which the explicit knowledge is embodied into tacit, operational knowledge (also known as know-how) is called internalization.

The knowledge spiral

Is a procedure where the organizational knowledge is generated by a spiral that passes across the four dimensions of knowledge creation. The procedure known as “knowledge spiral” starts usually from the socialization dimension, but this is not mandatory; it could start from any of the four dimensions. It is also possible to view the knowledge spiral from different angles across the dimensions of knowledge creating entities like groups, individuals, organizations and collaborating organizations. In this research the knowledge spiral was applied to high technology company’s employees, to be able to evaluate them as both individuals and as groups.

Nonaka and Takeuchi (1995) shared that the common belief that knowledge is created and transformed within that spiral, from the individual level, and then moves up to the organizational level, to later move between organizations. This is well known and accepted by researchers, mostly because this proposal is focused on knowledge creating activities and not just in the knowledge itself. In figure 2.5 we can observe the knowledge spiral.

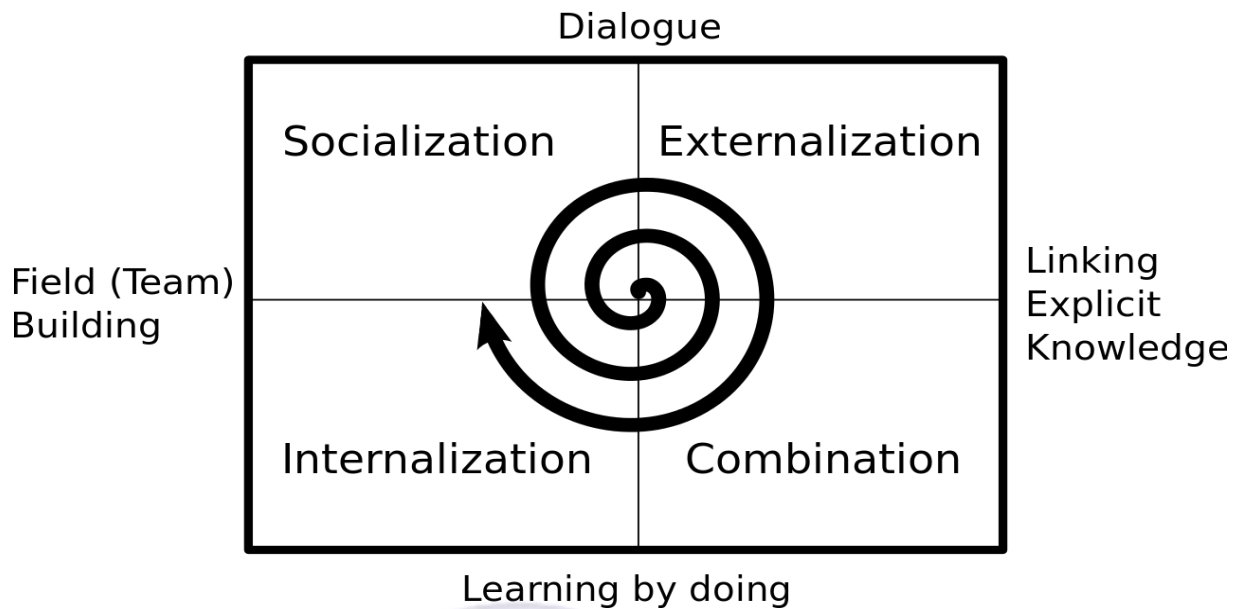


Figure 2.5. The knowledge spiral. Adapted from “The Knowledge Creating Company: How Japanese Companies Create the Dynamics of Innovation”, by Nonaka, I., and Takeuchi, H., 1995, *New York: Oxford University Press*, p.71. Copyright 1995 by Oxford University Press, Inc.

Hypothesis 4: Knowledge creation has no effect on knowledge sharing.

Hypothesis 5: Knowledge creation has no effect on innovation.

Innovation

Concept and Definition of Innovation

According to Thompson (1965) innovation can be defined as the creation, acceptance and implementation of new products, services or ideas. Amabile, Conti, Coon, Lazenby and Herron (1996) stated that innovation consists in fruitfully implementing new ideas in the organizations. Jiménez-Jiménez and Sanz-Valle (2011) have defined innovation as the process that individuals go through in order to adopt new

behaviors and ideas. According to Sher and Yang (2005) innovation takes place when there is a change in the process or product, either incrementally or drastically, that changes the value of it. In this research, we define innovation as the adoption of a new ideas or behavior.

The Importance of Innovation

According to the Barney (1991); Zahra, Ireland and Hitt (2000), we can conclude that innovation makes organizations create more special, rare and valuable services and products, consequently, this makes that organizations become much more profitable. According to Calantone, Cavusgil, and Zhao (2002); Deshpandé and Farley (2004), innovation is usually related to higher levels of financial performance. Furthermore, Hult and Ketchen (2001) said that innovation can also help organizations in the processes of developing more valuable, better, and newer services or products than the organizations they compete against. It can help to improve the organizational competitive advantage in a significant way.

As Hult, Hurley and Knight (2004) stated that using innovation, managers can discover new and innovative ways to resolve the challenges and problems that business can present, consequently, we can conclude that innovation can help an organization to have success in the competitive world we live on, innovation can significantly help companies to survive and succeed in global markets.

According to Tushman, Anderson and O'Reilly (1997) innovation can be defined as a source for competitive advantage in a sustainable way, which it's very important for

organizations since it helps them to have higher levels of economic growth. In addition Damanpour and Gopalakrishnan (2001) stated that progress innovation consists in getting new factors in the procedures, services and products in the organization to improve their quality.

Another definition from Damanpour (1991) said that organizational innovation, consists of creating new systems, devices, processes, services, programs and/or policies internally, for an organization adapt to the external environment.

Factors that influence the success of Innovation

According to the findings of Brown and Eisenhardt (1995), if an organization possess innovational capacities, it has better response time to difficulties and also provides better market opportunities and products than the organizations who lack from it. Sher and Yang (2005) stated that innovational capabilities are viewed as very important factors for an organization that wishes to obtain strategic and competitive advantages. Nevertheless, we can't stop wondering, what would be the factors that determine the success of organizations that have better innovational capacities.

We can find a lot of different opinions regarding what are the factors that have a significant effect on innovation capacities. Jerez-Gomez, Céspedes-Lorente, and Valle-Cabrera, (2005) said that innovation it's a big mystery, since for some organizations and studies, a group of factors can be very important, but not have the same importance to other companies, that may list different factors as "more important" to achieve higher innovational capacities. According to the findings of Van der Panne et al. (2003) originally there were four factors that helped the organization to measure

their capabilities for innovation. These factors are: (1) firm-related factors (organization-related); (2) project-related factors; (3) product-related factors; and (4) market-related factors. We can find these factors depicted in figure 2.6. These four factors affect two different areas of the innovational capabilities; these areas are the commercial area and the technological area. Consequently, this affects the final outcome and success of services and products of the organization.

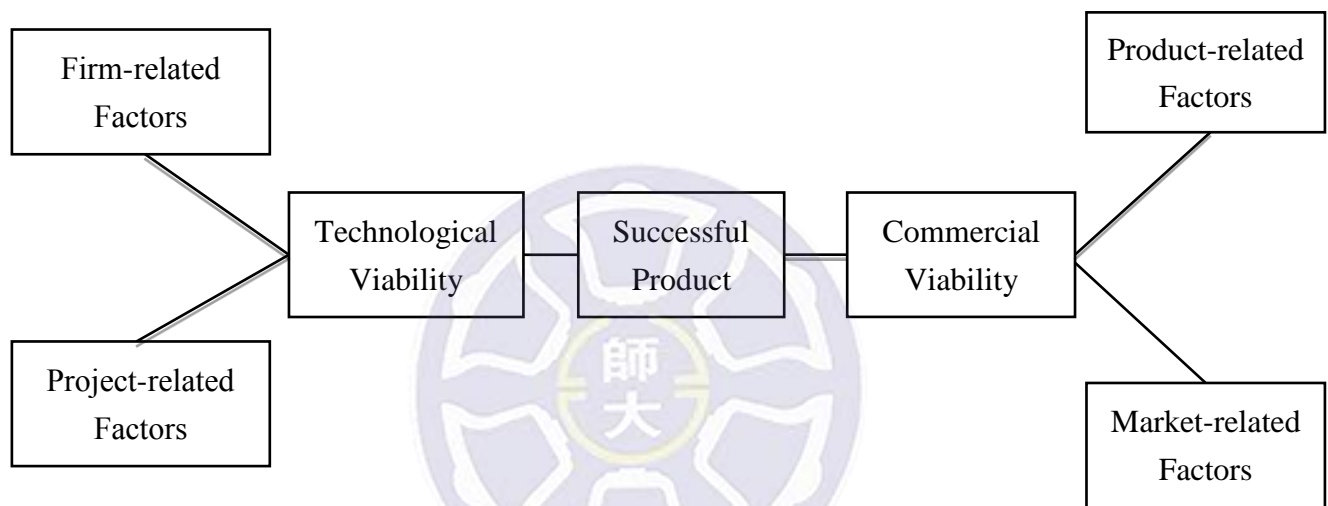


Figure 2.6. The model of successful factors towards innovation. Adapted from “Success and Failure of Innovation: A Literature Review,” by Van der Panne G., Van Beers C. and Kleinknecht A., 2003, *International Journal of Innovation Management* 7, p.4.

Hypothesis 6: Innovation has no effect on business performance.

Business Performance

Concept and Definition of Business Performance

Elenkov (2002) said that organizational performance is the level to which an organization achieves the objectives that had previously set. According to Emden et al. (2005) business performance can be defined as the standards that organizations use to measure the outcomes, regarding the goals that were previously set, and how much from them was actually achieved. In this study, we used part of the model built by them to measure the performance in the Taiwanese high technology companies. This model has separated the business performance into three different parts: (1) partnership performance, (2) market performance and (3) financial performance. The first dimension (partnership performance) consists in the behavior that the organizations displays during an alliance to achieve a common goal. This consists in the relationship that the organizations have with each other in an alliance, how strong the relationship is, the stability of the alliance and it's sustainability as well. Market performance can be stated as how successful the services or products of the organization are in the market, and what do customers think about that organization in the future. This is comprised by development of products, market share and market development. Financial performance consists on the efficiency in the use of resources and how successful was the commercial plan in the market. This consists of four parts: cash flow, return on investment, cost control and profitability.

The Learning from experience as a key driver of alliance performance framework is shown in figure 2.7 in which we can see how business performance is separated and examined through partnership performance, market performance and financial

performance.

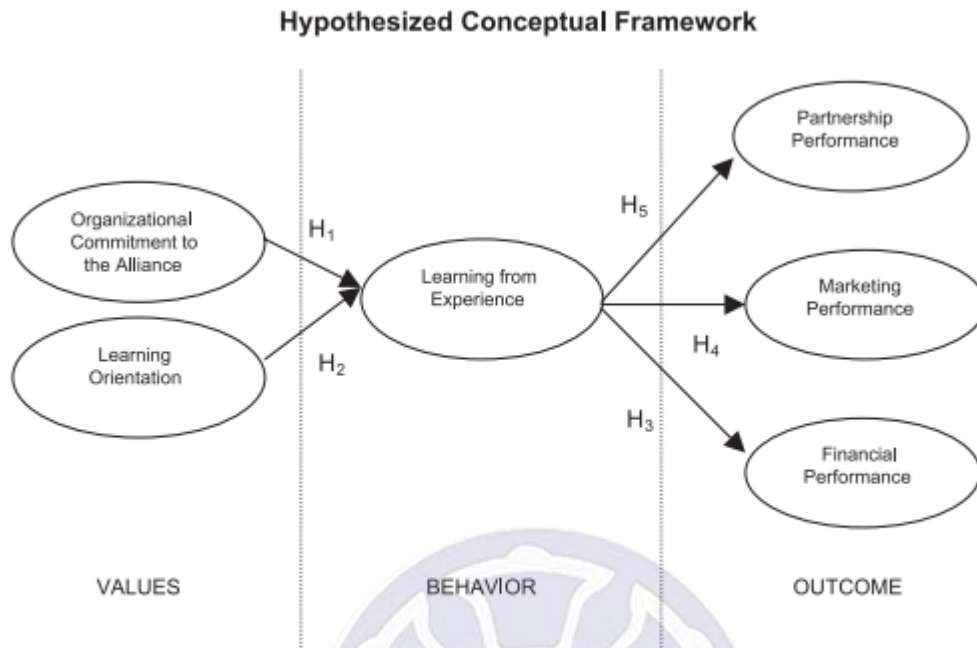


Fig. 1. Hypothesized conceptual framework.

Figure 2.7. Learning from experience as a key driver of alliance performance framework. Adapted from “Learning from experience in international alliances: Antecedents and firm performance implications” by Emden, Yaprak, and Cavusgil, 2005, *Journal of Business Research*, 58(7), p.887. Copyright by Elsevier Inc.

Partnership performance.

“Partnership performance relates to the achievement of organizational objective concerning the firm’s alliances, in terms of the strength, stability, and sustainability of its alliance relationships” (Emden et al., 2005).

Market performance.

“Market performance is the success of products and programs in existing

businesses and in those related to the future positioning of the firm. The specific components of this measure are market share, market development, and product development” (Emden et al., 2005).

Financial performance.

“Financial performance relates to the success of the business programs in relation to the resources employed in implementing them. The specific components we used are profitability, ROI, cash flow, and cost control” (Emden et al., 2005).



CHAPTER III METHODOLOGY

The following chapter contains the research design and methodology for this study. The chapter also presents the research hypothesis that has been derived from the literature review and research questions. It explains the research procedure, sample, data collection method, measurement instrument, and data analysis methods. The chapter also provides details of validation and reliability.

Research Framework

For this study, the research framework was developed after conducting the literature review. In this research, we have four dependent variables: organizational trust, knowledge sharing, knowledge creation, and innovation. The independent variable for this research is business performance. In the next theoretical framework we show the relationship amongst these variables.

To be able to test the effects of the variables and their relations, this research developed the Organizational Trust, Knowledge Sharing, Knowledge Creation, Innovation and Business Performance by Cheng-Ping Shih and Ramos. This model is formed by partially adopting the model of Organizational Trust Model by Mooradian et al. (2006); Shockley-Zalabak et al. (2003), Knowledge Sharing Model by Cummings (2004); and Van den Hooff and De Ridder (2003), Knowledge Creation by Nonaka et al. (1994), Innovation Model by Van der Panne et al. (2003), and Business Performance Model by Emden et al. (2005). The research framework developed can be found below.

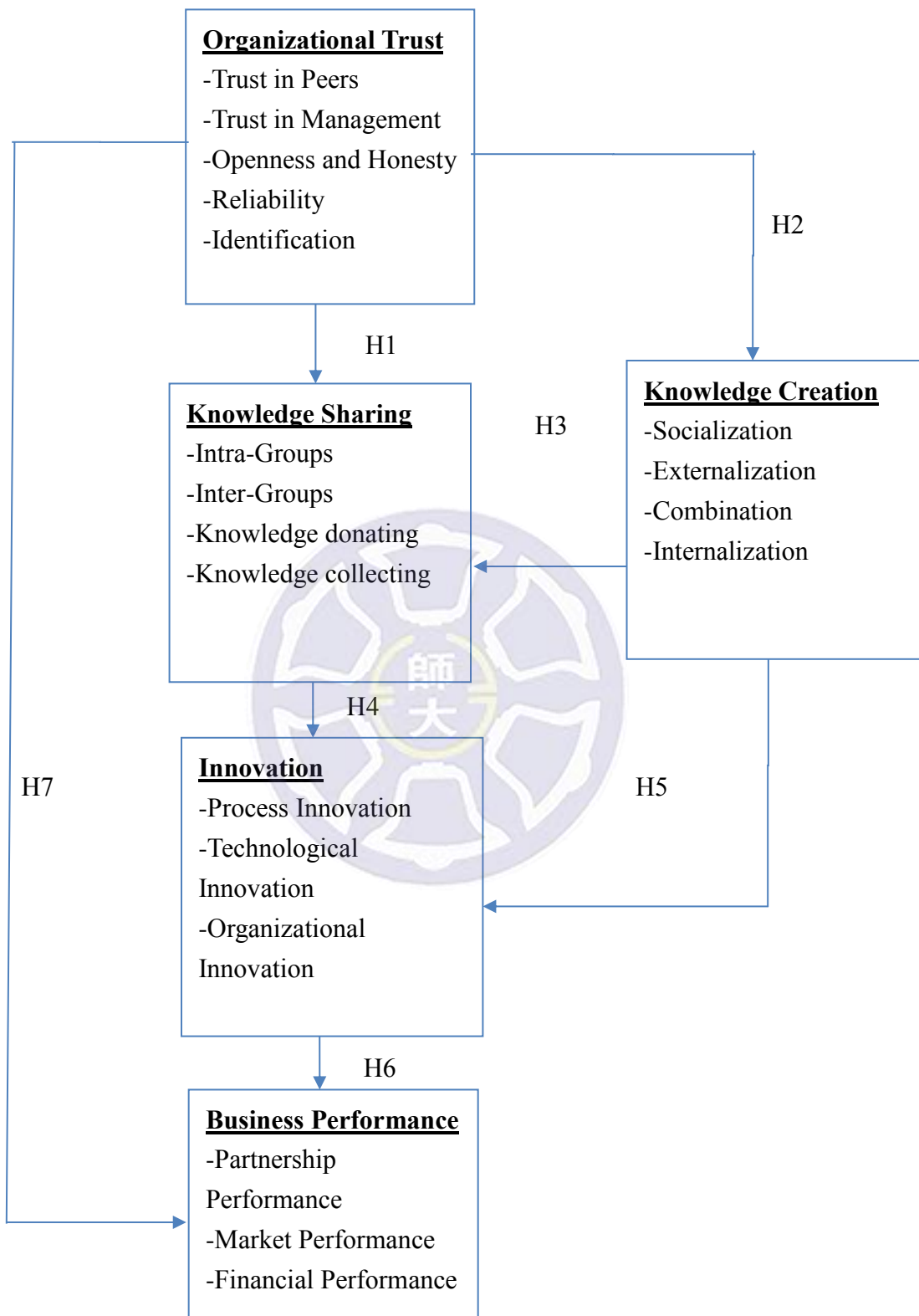


Figure 3.1. OK-OB model, developed by Cheng-Ping Shih and Fernando Ramos.

Research Hypotheses

The research hypotheses test the relationships among organizational trust, knowledge sharing, knowledge creation, innovation and business performance. Based on the literature review and research questions, the following null-hypotheses were developed for testing the results:

H1: Organizational trust has no effect on knowledge sharing.

H2: Organizational trust has no effect on knowledge creation.

H3: Knowledge creation has no effect on knowledge sharing.

H4: Knowledge sharing has no effect on innovation.

H5: Knowledge creation has no effect on innovation.

H6: Innovation has no effect on business performance.

H7: Organizational trust has no effect on business performance.

Research Procedure

In the next chart, we describe the procedure followed to complete the study.



Figure 3.2. Research procedures

Data Collection

This study used a quantitative approach, to its completion a self-reported questionnaire was used in order to gather all the data that was needed to test the effect of the variables in the study (organizational trust, knowledge sharing, and knowledge creation on innovation and business performance).

The participants selected for this research are Taiwanese employees from high technology companies. The respondents must be Taiwanese high technology company's employees that are currently working in Taiwan. This means that employees could be from any region of Taiwan; as long as they are registered as employees in a high technology company when the research is conducted. Besides, the researcher used physical questionnaires to do the investigation. Participants have the privacy to fill in the questionnaire anonymously, so that they can provide honest answers. For this research the convenient sampling procedure was used to collect the data. The total population of the company is calculated at is calculated 2,100 employees by the end of February 2017. For the main study, a total of 220 questionnaires were collected from which 193 were valid questionnaires.

Measurement

For this study, we applied a quantitative approach, the objective of the research is to gather numerical data and then use it to analyze the statistical relationships amongst the variables. The instrument used for this research is a self-reported questionnaire. The function of the research instrument is to obtain the required data and then test the proposed hypotheses. The questionnaire divided the questions in six

sections according to their relevance and relationship. The questionnaire provides simple instructions to the respondents both at the beginning of the questionnaire and at the beginning of each section. The questions are applicable and answerable by most participants. All the constructs that are included in the questionnaire were adapted from pre-validated measures in existing correlated researches. This instrument consists of 5 variables with total of 67 questions. To briefly introduce the study for the respondents, a cover letter is used; it also explains its purpose. The survey consists of two parts: the first part consists of the questions about organizational trust, knowledge sharing, knowledge creation, innovation and business performance, and the second part is the respondent demographic data. For the first part, the participants were asked to rate each item in a scale ranging from “strongly disagree” (1) to “strongly agree” (5). For the second part, the participants were asked to choose one from the different options available. The measurements are described:

1. **Organizational Trust** (15 items): Adopted from Mooradian et al. (2006). the variables of trust consist of trust in peers (T_P) and trust in management (T_M) and by Shockley-Zalabak, Ellis and Cesaria (2003) the variables of trust consist of openness and honest (O_H), reliability (RE), identification (IDE). The items range from (1) “strongly disagree” to (5) “strongly agree”.
2. **Knowledge Sharing** (13 items): The measurement of knowledge sharing were adopted by Cummings’ (2004) scale and categorizing knowledge sharing into two types: intra-groups (I_G), and inter-groups (INTER_G) and by Van den Hooff and

De Ridder (2003) with the variables knowledge donating (K_D) and knowledge collecting (K_C). The items range from (1) “strongly disagree” to (5) “strongly agree”.

3. **Knowledge Creation** (11 items): Adopted from the questionnaire found in Knowledge Management Enablers, Processes, and Organizational Performance: An Integrative View and Empirical Examination (Lee H. and Choi B 2013). The SECI model of Nonaka and Takeuchi is also used in this section to define the variables which are: Socialization (KC-S), Externalization (KC-E), Combination (KC-C) and Internalization (KC-I). The items range from (1) “strongly disagree” to (5) “strongly agree”.
4. **Innovation** (12 items): The questions were adopted from Van der Panne et al. (2003). The questionnaire was modified and adapted for this research. The dimensions to be measured are Process Innovation (PI), Technological Innovation (TI) and Organizational Innovation (OI). The items range from (1) “strongly disagree” to (5) “strongly agree”.
5. **Business Performance** (12 items): The questions were adopted from Emden et al. (2005); the questionnaire was modified and adapted for this research. The dimensions to be measured are Partnership Performance (PP), Market Performance (MP) and Financial Performance (FP). The items range from (1) “strongly

disagree” to (5) “strongly agree”.

The Respondent Demographic Profile: This part was added to provide a deeper analysis of the respondents, it contains demographic information about the participant’s gender, age, marital status, educational level and tenure.

Also, peer reviews and expert review were utilized to verify the validity of the instrument. Pilot test was initially conducted to ensure the validity of each item, before gathering the whole data for the study.

Construct Scales Coding

Before the analysis, the data was coded to facilitate the processing of information. The 67 items of the questionnaire were coded using a 5-point Likert scale as it was previously described in measurement. The items used to measure the variables of this study can be found below in Tables 3.1 to 3.6. Each item was coded for later use in the statistical analysis of the data by using PLS. For that purpose, the items were grouped within the same sub dimensions under the same construct. Thus, Dummy variables were created to code part II of the measurement instrument relating to demographics.

Table 3.1.

Items Measuring Organizational Trust

Construct	Code	Questionnaire Item
Trust in Peers (T_P; 3 items)	T_P1	If I got into difficulties at my company I know my co-workers would try and help me.
	T_P2	I can trust the people I work with to lend me a hand if I needed it.
	T_P3	Most of my co-workers can be relied upon to do as they say they will do.
Trust in Management (T_M; 3 items)	T_M1	Management at my company is sincere in its attempts to meet the employee's point of view.
	T_M2	I feel quite confident that the company will always try to treat me fairly.
	T_M3	Our working staff (<u>managers</u> , <u>technicians</u> , administrative, etc.) would be quite prepared to gain advantage by deceiving their co-workers.
Openness and Honesty (O_H; 3 items)	O_H1	I can get enough evaluation of my working abilities.
	O_H2	I can have opinions to the decisions which are relevant to my work.
	O_H3	When something is wrong, I am not afraid to tell my supervisor.
Reliability (RE; 3 items)	RE_1	My supervisor does what he or she says.
	RE_2	Top managers keep their commitments to employees.
	RE_3	My supervisor behaves in a consistent manner.
Identification (IDE; 3 items)	IDE_1	I feel connected to my peers.
	IDE_2	I feel connected to my supervisors.
	IDE_3	My value is similar to my co-worker's values.

Table 3.2.

Items Measuring Knowledge Sharing

Construct	Code	Questionnaire Item
Intra-Groups (I_G; 3 items)	I_G1	I frequently share knowledge and information with my co-workers.
	I_G2	I usually involve myself in discussions of various topics rather than specific topics with my co-workers.
	I_G3	I usually spend a lot of time conducting knowledge sharing activities within my co-workers.
Inter-Groups (INTER_G; 3 items)	INTER_G1	I frequently share knowledge with co-workers even though he (or she) is not in my team.
	INTER_G2	I usually involve myself in discussions of various topics rather than specific topics with co-workers from other co-worker's teams.
	INTER_G3	I spend a considerate amount of time conducting knowledge sharing activities with other co-worker teams in the company.
Knowledge Donating (K_D; 3 items)	K_D1	When I have learned something new, I tell my co-workers about it.
	K_D2	When they have learned something new, my co-workers tell me about it.
	K_D3	Knowledge sharing among co-workers is considered normal in my company.
Knowledge Collecting (K_C; 4 items)	K_C1	I share information I have with classmates when they ask for it.
	K_C2	I share my skills with co-workers when they ask for it.
	K_C3	Co-workers in my company share knowledge with me when I ask them to.
	K_C4	Co-workers in my company share their skills with me when I ask them to.

Table 3.3.

Items Measuring Knowledge Creation

Construct	Code	Questionnaire Item
Socialization (KC_S; 3 items)	KC_S1	My company emphasizes sharing experience with other employees.
	KC_S2	My company emphasizes finding new strategies and working opportunities by wandering inside the department.
	KC_S3	My company emphasizes creating a working environment that allows peers to understand the technicalities of the work subjects.
Externalization (KC_E; 3 items)	KC_E1	My company emphasizes the use of deductive and inductive thinking.
	KC_E2	My company emphasizes creative and essential dialogues.
	KC_E3	My company emphasizes the use of metaphors in dialogue for concept creation.
Combination (KC_C; 2 items)	KC_C1	My company emphasizes planning strategies by using published literature, computer simulation and forecasting.
	KC_C2	My company emphasizes creating manuals and documents on products and services.
Internalization (KC_I; 3 items)	KC_I1	My company emphasizes forming teams, conducting experiments, and sharing results with the entire department.
	KC_I2	My company emphasizes searching for and sharing new values and thoughts.
	KC_I3	My company emphasizes bench-marking and test marketing.

Table 3.4.

Items Measuring Innovation

Construct	Code	Questionnaire Item
Process Innovation (PI; 4 items)	PI1	My company enhances work efficiency because of company's process innovation.
	PI2	My company gets a higher success rate in launching new products and new services.
	PI3	My company has clear and specific process of innovation development.
	PI4	My company encourages using process innovation to understand the information of customers, suppliers and competitors.
Technological Innovation (TI; 4 items)	TI1	My company gets a higher profit because company's technical innovation.
	TI2	My company gets a good reputation because company's technical innovation.
	TI3	My company can fast its' service to customers because company's technical innovation.
	TI4	My company gets a higher sales performance because company's technical innovation.
Organizational Innovation (OI; 4 items)	OI1	My company improves internal communication efficiency because company's organizational innovation.
	OI2	My company cross-cultural communications ability is good for keeping ahead of market.
	OI3	My company continues to import new way of management and knowledge to keep flexibility.
	OI4	Employees highly accept the new way of innovational management.

Table 3.5.

Items Measuring Business Performance

Construct	Code	Questionnaire Item
Partnership Performance (PP; 4 items)	PP1	Comparing to our company's competitors, company's relationship with key alliance partners is strong.
	PP2	Comparing to our company's competitors, our company's alliances are stable.
	PP3	Comparing to our company's competitors, company has an ability to sustain relationships regardless of changes in senior people.
	PP4	Comparing to our company's competitors, company and alliance partners keep commitments to each other.
Market Performance (TI; 4 items)	MP1	Comparing to our company's competitors, company's market development is good.
	MP2	Comparing to our company's competitors, company's market share is high.
	MP3	Comparing to our company's competitors, company's sales growth is satisfying.
	MP4	Comparing to our company's competitors, the products of company's brand is popular.
Financial Performance (FP; 4 items)	FP1	Comparing to our company's competitors, company's profitability is satisfying.
	FP2	Comparing to our company's competitors, company's return on investment is good.
	FP3	Comparing to our company's competitors, company's Cost control is good.
	FP4	Comparing to our company's competitors, company's Cash flow from operations is satisfying.

Table 3.6.

Items Measuring Demographic Data Profile

Variables	Code	Items
Gender	1	Male
	2	Female
Age	1	21-25
	2	26-30
	3	31-35
	4	36-40
	5	41 and up
Educational Level	1	High School Diploma
	2	Bachelor Degree
	3	Master
	4	PhD
Tenure	1	1-3
	2	4-6
	3	7-9
	4	10-12
	5	13 and up

Validity and Reliability

This test used the internal consistency and stability to test the validity and reliability. To test the internal consistency, the study used the Cronbach's alpha values. Cronbach's alpha assessment is a common method that is used to test the reliability. According to Arambewela, Hall and Zuhair (2006) the minimum level for Cronbach's alpha to be accepted is 7.0. As we can observe in the 4.1 table, this requirement was met. In the work of Nunnally and Bernstein (1994) it was determined that the composite reliability needs to be higher or at least equal to 0.7, as we observed from the results of the study, the composite reliability also met that criteria. The average variance extracted (AVE) should at least be 0.5 or higher, this criteria was also met by the data gather in the study (Hair, Tatham and Anderson, 2006). As we can observe in the 4.1 table, the results show that the data had an AVE higher than 0.5, so that we can conclude that the data can be accepted. Furthermore, to be able to test the reliability of each individual item, we loadings were also examined. Chin (1998) determined that if the loadings are higher than 0.5, those can be accepted. This criterion was also met. If After observing the results from the Partial Least Square test, we can observe that the data collected for this study meets the minimum requirements of validity and reliability, then we conclude that is acceptable.

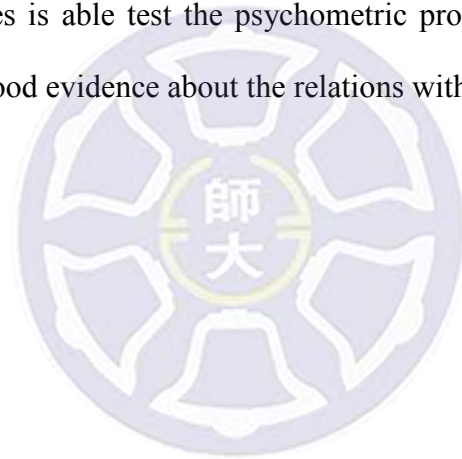
Partial Least Square (PLS)

Once the data is gathered for the study from the sample population, it was analyzed using Partial Least Square. Partial Least Square which is used to estimate the path models through the use of the latent variables. This procedure permits modeling

simultaneously the relation between the multiple constructs, or allows the analysis of a system of constructs. The main goal in PLS is “maximize the explanation variance, thus R^2 and the significance of relationships among constructs are measures indicative of how well a model is performing” (Bontis, 1998, p. 69). The Partial Least Square model is composed by two different parts, the first one it is the structural part, this part shows the relation amongst a measurement component and the variables, this shows what the relation between the variables is. To perform a confirmatory path and factor analysis the SmartPLS 2.0 software was used. To analyze the structural we evaluated the following factors: The path coefficients, the coefficient of determination (R^2), bootstrapping and t -value (t). The function of the R square is to explain the endogenous latent variables in relation to the total variance. In his study, Chin (1998) defined the R^2 values of significance to be .67 (considered substantial), .33 (considered moderate) and .19 (considered weak). The function of the path coefficients is to judge the relation that exist among the variables, the also help to determine what is the relation’s direction and how significant it is. In Partial Least Squares this values can be observed by bootstrapping the collected data to later examine the t -value results. Hair, Ringle, and Sarstedt (2011) has previously defined what the critical values are in a two-tailed test, this tests has determined that the results are weak if they are lower than 1.65, moderate when they are between 1.65 and strong if they are equal or higher than 1.96 2.58. Bootstrapping can be defined as “a nonparametric approach to statistical inference that does not make any distributional assumptions of the parameters like traditional methods. It draws conclusions of a population strictly from the sample at hand (Sharma & Kim, 2012). Wong (2010) said that Partial Least Squares can be considered as a good

alternative under the following circumstances; when there is little available theory for the applications, when we cannot ensure the correct model specification and predictive accuracy is paramount and finally when the size sample is considered small. Partial Least Square was considered to be ideal for this research for the reasons presented as follows:

1. This research is exploratory rather than confirmatory in nature.
2. Partial Least Squares have less strict regulations regarding levels of correlation between variables, sample size, and distribution parameters.
3. Partial Least Squares is able test the psychometric properties of the indices, and hence it can gives good evidence about the relations within variables.



CHAPTER IV FINDINGS AND DISCUSSIONS

This chapter offers an overview of the descriptive statistics of the research data. The results of the PLS findings are presented, which includes the Cronbach's Alpha, validity and reliability tests, and hypotheses results.

Descriptive Statistics

Table 4.1 provides a description of the participant's characteristics, which include age, gender, education and sponsoring. The largest group of respondent was between the ages of 36-40 corresponding to a total of 29% of the respondents. Following this was the group age above 41 with a percentage of 19%, following it was the group of 26-30, followed by the group of 31-to 35 with a 16% and finally the group of 21 to 25, this can be explained because at this age, most people are still studying in university and not part of the workforce.

Regarding to the gender of the respondents there was not a significant difference between the gender being 55% male and the other 45% female.

In relation to the level of education, the majority of the respondents had a bachelor's degree education accounting to 69% of the participants, this can be caused due to age constraints, since the biggest group of respondents is about 35 years old, it is possible that at the time they graduated, a master was not considered necessary to find a job and now that they have a stable job it is not their priority to pursue a higher education; followed by 30% of employees who possessed a Master's degree, 1% of the employees only had a high school education and from all the valid answers collected, there were no employees who possessed a PhD level 0%.

Regarding the tenure of the respondents the biggest group of employees had been working for the company had more than 13 years with a total of 37%, followed by 1 to 3 years with 32%, then 10 to ten years had a 13%, and following very closely was 4 to 6 years with 12%, and finally the smallest percentage of respondents located themselves between 7 and 9 years working for the organization with 6%. As we can observe from this results, the majority of employees in this organization are either very tenured with more than 13 years, or have recently started working, locating themselves in 1 to 3 percent, it is also worth noting that the closer to mid tenure we got, the less employees we find, with both categories around it with 12% and 13%, this could reflect an incident around 7 years ago in which the company might have halt the hiring or the new employees, or it could also mean that the company has not being able to retain the their employees. This would be a hypothesis worth observing in the future, to validate if in a couple of years from now, the company will be able to retain its new workforce, or if on the other case the new hire employees will start decreasing towards to the center reaching levels below 10% tenure. If this becomes a pattern, the organization must conduct efforts to prevent this trend from repeating again in again and affecting their growth and development

Table 4.1.

Demographic Distribution of Respondents

Items		Entries	Percentage
Age	21-25	14	7%
	26-30	41	21%
	31-35	31	16%
	36-40	57	29%
	41+	50	27%
Gender	Male	107	55%
	Female	86	45%
Educational Level	High School Diploma	3	1%
	Bachelor Degree	133	69%
	Master Degree	51	30%
	PhD	0	0%
Tenure	1-3	62	32%
	4-6	23	12%
	7-9	10	6%
	10-12	26	13%
	13+	72	37%

Descriptive Statistics Analysis

In the following section we observe a summary of the responses to the questions

that were included in the questionnaire and applied to the participants. Each table show the mean and standard deviation of every item question. All the variables were measured with a 5 point Likert scale. The participants were instructed to indicate their level of agreement or disagreement with each of the statements with anchors ranging from 1 (Totally disagree) to 5 (totally agree).

Findings: Organizational Trust.

Table 4.2 shows that regarding organizational trust, the employees showed a high level of agreement on item T_P1, which stated “I frequently share knowledge and information with my co-workers” with a mean of 4.25. The second highest item in this section was item TP_2, which stated that “I usually involve myself in discussions of various topics rather than specific topics with my co-workers”, with a mean of 4.18. From this we can conclude that the aspect that employees are most satisfied with was trust in peers. The lowest score was for item T_M3 which stated “Our working staff (managers, technicians, administrative, etc.) would be quite prepared to gain advantage by deceiving their co-workers”, with a mean of 2.55. It is also worth noting that the section Trust in managers had the lowest scores of agreement, the item T_M1 which stated “Management at my company is sincere in its attempts to meet the employee’s point of view” with a mean of 3.32 and item TM_2 which stated “I feel quite confident that the company will always try to treat me fairly” with a mean of 3.36 were also among the lowest items regarding trust in the organization.

Table 4.2.

Organizational Trust; Likert Scales, Mean, and SD (N= 193)

Survey Questionnaires		Mean	SD
T_P1	If I got into difficulties at my company I know my co-workers would try and help me.	4.25	.54
T_P2	I can trust the people I work with to lend me a hand if I needed it.	4.18	.59
T_P3	Most of my co-workers can be relied upon to do as they say they will do.	3.88	.67
T_M1	Management at my company is sincere in its attempts to meet the employee's point of view.	3.32	0.86
T_M2	I feel quite confident that the company will always try to treat me fairly.	3.36	0.79
T_M3	Our working staff (managers, technicians, administrative, etc.) would be quite prepared to gain advantage by deceiving their co-workers.	2.55	0.92
O_H1	I can get enough evaluation of my working abilities.	3.58	0.69
O_H2	I can have opinions to the decisions which are relevant to my work.	3.74	0.74
O_H3	When something is wrong, I am not afraid to tell my supervisor.	3.88	0.72

(continued)

Table 4.2. (continued)

Survey Questionnaires		Mean	SD
RE_1	My supervisor does what he or she says.	3.53	0.81
RE_2	Top managers keep their commitments to employees.	3.54	0.81
RE_3	My supervisor behaves in a consistent manner.	3.53	0.88
IDE_1	I feel connected to my peers.	3.77	0.63
IDE_2	I feel connected to my supervisors.	3.50	0.71
IDE_3	My value is similar to my co-worker's values.	3.53	0.66

Note. N= 193, SD= Standard Deviation.

Findings: Knowledge Sharing.

Table 4.3 shows that with respect to knowledge sharing the employees showed a high level of agreement on item K_C1 “I share information I have with co-workers when they ask for it” with a mean of 4.16 and K_C2 which stated “I share my skills with co-workers when they ask for it” with a mean of 4.15. The lowest item is INTER_G3 which stated “I spend a considerate amount of time conducting knowledge sharing activities with other co-worker teams in the company” with a mean of 3.08.

Table 4.3.

Knowledge Sharing; Likert Scales, Mean, and SD (N= 193)

Survey Questionnaires		Mean	SD
I_G1	I frequently share knowledge and information with my co-workers.	3.94	.66
I_G2	I usually involve myself in discussions of various topics rather than specific topics with my co-workers.	3.89	.70
I_G3	I usually spend a lot of time conducting knowledge sharing activities within my co-workers.	3.53	.73
INTER_G1	I frequently share knowledge with co-workers even though he (or she) is not in my team.	3.49	0.79
INTER_G2	I usually involve myself in discussions of various topics rather than specific topics with co-workers from other co-worker's teams.	3.35	0.81
INTER_G3	I spend a considerate amount of time conducting knowledge sharing activities with other co-worker teams in the company.	3.08	0.82
K_D1	When I have learned something new, I tell my co-workers about it.	3.74	0.67
K_D2	When they have learned something new, my co-workers tell me about it.	3.58	0.69

(continued)

Table 4.3. (continued)

Survey Questionnaires		Mean	SD
K_D3	Knowledge sharing among co-workers is considered normal in my company.	3.61	0.70
K_C1	I share information I have with co-workers when they ask for it.	4.16	0.54
K_C2	I share my skills with co-workers when they ask for it.	4.15	0.52
K_C3	Co-workers in my company share knowledge with me when I ask them to.	3.98	0.61
K_C4	Co-workers in my company share their skills with me when I ask them to.	3.96	0.55

Note. N= 193, SD= Standard Deviation.

Findings: Knowledge Creation.

Table 4.4 shows that with respect to knowledge creation, the employees showed the highest level of agreement on item KC_C2 which states “My Company emphasizes creating manuals and documents on products and services”, with a mean of 3.73, followed by item KC_I1 which states “My Company emphasizes forming teams, conducting experiments, and sharing results with the entire department” with a mean of 3.70. The lowest item is KC_E3 which states “My Company emphasizes the use of metaphors in dialogue for concept creation” with a mean of 3.26.

Table 4.4.

Knowledge Creation; Likert Scales, Mean, and SD (N= 193)

Survey Questionnaires		Mean	SD
KC_S1	My company emphasizes sharing experience with other employees.	3.67	.77
KC_S2	My company emphasizes finding new strategies and working opportunities by wandering inside the department.	3.54	.75
KC_S3	My company emphasizes creating a working environment that allows peers to understand the technicalities of the work subjects.	3.56	.73
KC_E1	My company emphasizes the use of deductive and inductive thinking.	3.45	0.73
KC_E2	My company emphasizes creative and essential dialogues.	3.37	0.79
KC_E3	My company emphasizes the use of metaphors in dialogue for concept creation.	3.26	0.73
KC_C1	My company emphasizes planning strategies by using published literature, computer simulation and forecasting.	3.35	0.90
KC_C2	My company emphasizes creating manuals and documents on products and services.	3.73	0.81

(continued)

Table 4.4. (continued)

Survey Questionnaires	Mean	SD
KC_I1 My company emphasizes forming teams, conducting experiments, and sharing results with the entire department.	3.70	0.82
KC_I2 My company emphasizes searching for and sharing new values and thoughts.	3.57	0.79
KC_I3 My company emphasizes bench-marking and test marketing.	3.50	0.77

Note. N= 193, SD= Standard Deviation.

Findings: Innovation.

Table 4.5 shows that with respect to innovation, the employees showed the highest level of agreement on item PI2 which states “My company gets a higher success rate in launching new products and new services.”, with a mean of 3.57, followed by item OI3 which states “My company continues to import new way of management and knowledge to keep flexibility” with a mean of 3.54. The lowest item is OI4 which states “Employees highly accept the new way of innovational management.” with a mean of 3.30.

Table 4.5.

Innovation; Likert Scales, Mean, and SD (N= 193)

Survey Questionnaires	Mean	SD
PI1 My company enhances work efficiency because of company’s process innovation.	3.48	.76
PI2 My company gets a higher success rate in launching new products and new services	3.57	.75

(continued)

Table 4.5. (continued)

Survey Questionnaires	Mean	SD
PI3 My company has clear and specific process of innovation development.	3.42	.80
PI4 My company encourages using process innovation to understand the information of customers, suppliers and competitors.	3.41	0.81
TI1 My company gets a higher profit because company's technical innovation.	3.53	0.83
TI2 My company gets a good reputation because company's technical innovation.	3.46	0.80
TI3 My company can fast its' service to customers because company's technical innovation.	3.52	0.78
TI4 My company gets a higher sales performance because company's technical innovation.	3.50	0.78
OI1 My company improves internal communication efficiency because company's organizational innovation.	3.39	0.77
OI2 My company emphasizes searching for and sharing new values and thoughts.	3.42	0.81
OI3 My company continues to import new way of management and knowledge to keep flexibility.	3.54	0.74

(continued)

Table 4.5. (continued)

Survey Questionnaires		Mean	SD
OI4	Employees highly accept the new way of innovational management.	3.30	0.78

Note. N= 193, SD= Standard Deviation.

Findings: Business Performance.

Table 4.6 shows that with respect to innovation, the employees showed the highest level of agreement on item PP4 which states “Comparing to our company’s competitors, company and alliance partners keep commitments to each other.”, with a mean of 3.74, followed by item PP1 which states “Comparing to our company’s competitors, company’s relationship with key alliance partners is strong.” with a mean of 3.73. The lowest item is MP4 which states “Comparing to our company’s competitors, the products of company’s brand is popular.” with a mean of 3.16.

Table 4.6.

Business Performance; Likert Scales, Mean, and SD (N= 193)

Survey Questionnaires		Mean	SD
PP1	Comparing to our company’s competitors, company’s relationship with key alliance partners is strong.	3.73	.67
PP2	Comparing to our company’s competitors, our company’s alliances are stable.	3.72	.62
PP3	Comparing to our company’s competitors, company has an ability to sustain relationships regardless of changes in senior people.	3.70	.63

(continued)

Table 4.6. (continued)

Survey Questionnaires	Mean	SD
PP4	3.74	0.63
Comparing to our company's competitors, company and alliance partners keep commitments to each other.		
MP1	3.50	0.71
Comparing to our company's competitors, company's market development is good.		
MP2	3.31	0.80
Comparing to our company's competitors, company's market share is high.		
MP3	3.31	0.77
Comparing to our company's competitors, company's sales growth is satisfying.		
MP4	3.16	0.72
Comparing to our company's competitors, the products of company's brand is popular.		
FP1	3.28	0.78
Comparing to our company's competitors, company's profitability is satisfying.		
FP2	3.26	0.77
Comparing to our company's competitors, company's return on investment is good.		
FP3	3.33	0.76
Comparing to our company's competitors, company's Cost control is good.		
FP4	3.38	0.72
Comparing to our company's competitors, company's Cash flow from operations is satisfying.		

Note. N= 193, SD= Standard Deviation.

Discussion for Descriptive Statistics Analysis

After the descriptive statistics, we can make a few conclusions about organizational trust, knowledge sharing, knowledge creation, innovation and business performance. The results show that employees have a high level of trust amongst them and usually talk to each other about different topics. However, we can also observe that the managers need to make efforts to earn the trust of their employees because currently is at a very low level. From the knowledge sharing perspective, the employees spend considerable efforts in sharing knowledge with their peers and consider that they also share knowledge in return with them to, however, they think that this is something that happens mostly within departments and there is not such a great communication between them and the employees of different units. Regarding knowledge creation, the employees believe that the company spends the necessary resources in creating manual and documents and experimenting and sharing the results with the whole department. Regarding innovation, the employees believe that the company does a good job when launching new products, but they don't think that the employees accept innovative management methods, this could be explained because of the lack of trust that they have towards managers in general. And finally regarding business performance, the employees believe that the company enjoys of a strong relation with their partners but they also believe that the company's brand is not as popular as it should be.

Correlation Analysis

In order to examine the degree of relationship between the variables in this study, Pearson coefficient correlation was conducted. The following table 4.7 shows the correlation values of the variables. The results of the correlation analysis show that the correlation between knowledge creation and innovation in Taiwanese high technology companies is very strong with correlation values ranging from 0.36 to 0.63 and that also innovation is strongly correlated to business performance with values ranging from 0.37 to 0.50. However, trust and knowledge creation show the weakest correlation with correlation values ranging from 0.02 to 0.39.

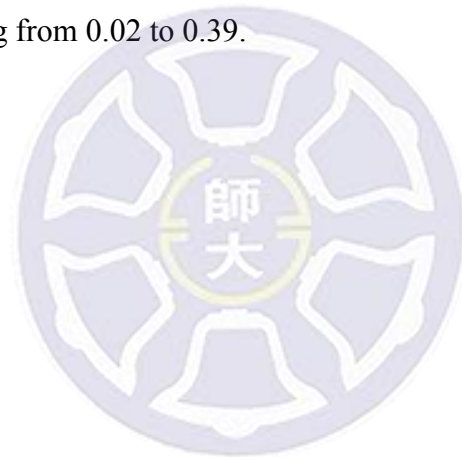


Table 4.7.

Correlation Analysis

#Variable	T_P	T_M	O_H	RE	IDE	I_G	INTER	K_D	K_C	KC_S	KC_E	KC_C	KC_I	PI	TI	OI	PP	MP	FP
1 T_P	1																		
2 T_M	.427	1																	
3 O_H	.282	.429	1																
4 RE	.389	.565	.502	1															
5 IDE	.384	.314	.405	.437	1														
6 I_G	.225	.163	.362	.199	.372	1													
7 Inter	.195	.100	.196	.167	.357	.452	1												
8 K_D	.372	.286	.365	.378	.426	.458	.337	1											
9 K_C	.382	.218	.318	.293	.312	.327	.196	.333	1										
10 KC_S	.332	.440	.363	.475	.364	.300	.253	.455	.266	1									
11 KC_E	.246	.355	.350	.380	.309	.333	.252	.385	.217	.684	1								
12 KC_C	.020	.252	.219	.291	.196	.187	.125	.227	.171	.496	.543	1							
13 KC_I	.166	.288	.423	.309	.204	.142	.133	.345	.311	.538	.570	.683	1						
14 PI	.146	.307	.266	.187	.146	.055	.033	.299	.121	.363	.444	.506	.630	1					
15 TI	.096	.212	.212	.177	.193	.033	.017	.134	.111	.306	.472	.425	.412	.672	1				
16 OI	.133	.258	.241	.292	.195	.172	.073	.322	.223	.441	.469	.531	.564	.619	.592	1			
17 PP	.206	.211	.200	.296	.330	.207	.170	.364	.352	.416	.320	.357	.355	.370	.422	.423	1		
18 MP	.095	.143	.188	.183	.122	.118	.150	.263	.170	.282	.290	.426	.423	.502	.435	.445	.431	1	
19 FP	.181	.203	.217	.212	.096	.031	.027	.221	.145	.227	.284	.391	.404	.506	.462	.443	.479	.445	1

Note: 1 T_P = Trust in Peers; 2 T_M = Trust in Management; 3 O_H = Openness and Honesty; 4 RE = Reliability; 5 IDE = Identification; 6 I_G = Intra-Groups; 7 Inter_G= Inter-Groups; 8 K_D= Knowledge Donating; 9 K_C= Knowledge Collecting; 10 KC_S= Socialization; 11 KC_E = Externalization; 12 KC_C = Combination; 13 KC_I = Internalization; 14 PI = Process Innovation; 15 TI = Technological Innovation; 16 OI = Organizational Innovation; 17 PP = Partnership Performance; 18 MP= Market Performance; 19 = Financial Performance

Testing the Measurement Model

To assess the measurement model, this study uses Cronbach's Alpha's approach from Smart PLS. Table 4.8 indicates that the values of Cronbach's Alpha of all five constructs are higher than .70 (organizational trust, knowledge sharing, knowledge creation, innovation and business performance).

Table 4.8.

PLS Cronbach's Alpha, Internal Consistency and R² in this Study

Constructs	Number of items	Cronbach's Alpha	Internal consistency	R ² (%)
Organizational Trust	15	0.773	0.870	
Knowledge Sharing	13	0.839	0.903	0.350
Knowledge Creation	11	0.851	0.899	0.265
Innovation	12	0.701	0.812	0.407
Business Performance	12	0.784	0.849	0.408

The evaluation of the statistical significance of the path coefficients and the loadings was made through bootstrapping method in Smart PLS. For this study, of the seven paths (organizational trust to knowledge sharing, organizational trust to knowledge creation, knowledge creation to knowledge sharing, knowledge sharing to innovation, knowledge creation to innovation, knowledge creation to business performance and organizational trust to business performance) six proved to be significant, with the exception of knowledge sharing to innovation. The results also showed that the explanatory power of R² for knowledge sharing is 35%, for knowledge creation is 26%, for innovation is 40% and for business performance is 40%. Table 4.9 shows that organizational trust has a positive and significant effect on knowledge sharing (β -path=.45, t-value=15.49). Therefore, null hypotheses one is rejected. Organizational trust has a positive and significant effect on knowledge creation (β -path=.51, t-value=15.49). Therefore, null hypotheses two is rejected. Knowledge creation has a positive and significant effect on knowledge sharing (β -path=.21, t-value=15.49). Therefore, null hypotheses three is rejected. Knowledge sharing doesn't have a positive and significant effect on innovation (β -

path=.0.03, t-value=10.42). Thus, null hypotheses four is accepted. Knowledge creation has a positive and significant effect on innovation (β -path=.65, t-value=12.52). Therefore, null hypotheses five is rejected. Innovation has a positive and significant effect on business performance (β -path=.58, t-value=12.52). Therefore, null hypotheses six is rejected. Organizational trust has a positive and significant effect on business performance (β -path=.12, t-value=12.52). Therefore, null hypotheses seven is rejected. From these results we conclude that six out of the seven null hypotheses are rejected as shown on the table below.

Table 4.9.

PLS Path Analysis Results (Standard β Coefficients and Adjusted T-Values)

Path	H°	β -path	T-value	Sig.	Direction	Result
OT → KS	H1	0.45	5.60	***	+	Rejected
OT → KC	H2	0.51	8.57	***	+	Rejected
KC → KS	H3	0.21	2.80	***	+	Rejected
KS → I	H4	0.03	0.39		+	Accepted
KC → I	H5	0.65	9.85	***	+	Rejected
KS → BP	H6	0.58	7.34	***	+	Rejected
OT → BP	H7	0.12	1.720	*	+	Rejected

Figure 4.1 shows the results of the OK-OB structural path. The results were obtained using Smart PLS software and show that the five variables of the model have an effect on each other. “Figure 4.1 OK-OB Structural Path” shows that from the business performance dimension, trust in peers has a positive parameter (.64) and t-ratio (12.11); trust in management has a positive parameter (.73) and t-ratio (16.32); openness and honesty has a positive parameter (.74) and t-ratio (18.84); reliability has a positive parameter (.80) and t-ratio (22.81), identification has a positive parameter (.70) and t-ratio (14.47) with all being significant at 1%. From these dimensions, the most significant is reliability, which means that the reliability between the employees is the dimension that has most influence in organizational trust.

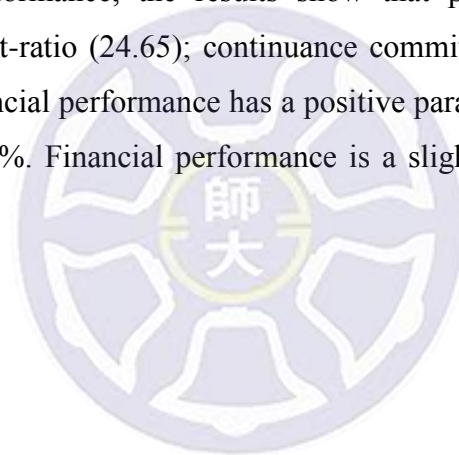
From the knowledge sharing perspective, the results show that each dimension has a positive parameter and t-ratio; intra-groups (parameter=.74, t-ratio=12.57); inter-groups (parameter=.60, t-ratio=7.18); knowledge donating (parameter=.83, t-ratio=30.02); knowledge collecting (parameter=.68, t-ratio= 15.15); all being significant at 1%. It is also important to note

that knowledge donating is what influences knowledge sharing the most.

From the knowledge creation perspective, results show that socialization has a positive parameter and t-ratio (parameter=.83, t-ratio=29.84); externalization has a positive parameter and t-ratio (parameter=.85, t-ratio=29.39); combination has a positive parameter and t-ratio (parameter=.80, t-ratio=30.25); and internalization has a positive parameter and t-ratio (parameter=.83, t-ratio =36.37), all of the above being significant at 1%. It is also important to note that externalization is what influences knowledge creation the most.

From the innovation perspective, the results show that process innovation has a positive parameter (.88) and t-ratio (36.61); technological innovation has a positive parameter (.86) and t-ratio (33.41); organizational innovation has a positive parameter (.85) and t-ratio (36.610); which are all significant at 1%. Process innovation is a slightly more significant factor for commitment.

From the business performance, the results show that partnership performance has a positive parameter (.75) and t-ratio (24.65); continuance commitment has a positive parameter (.85) and t-ratio (30.74); financial performance has a positive parameter (.87) and t-ratio (39.82); which are all significant at 1%. Financial performance is a slightly more significant factor for business performance.



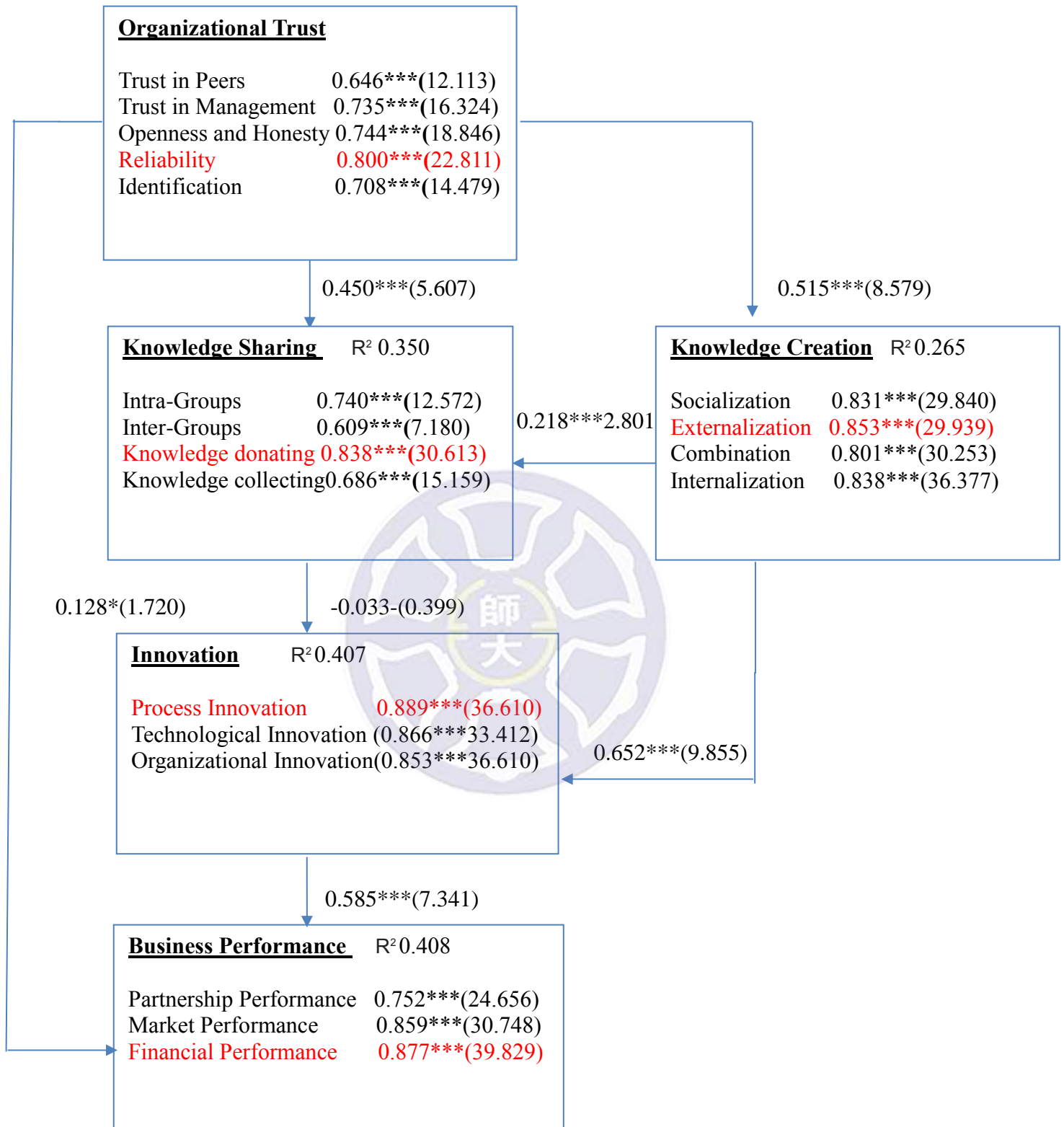


Figure 4.1. OK-OB structural path via Smart PLS

Table 4.10 shows the direct and indirect effects of the variables. The results show that organizational trust has a direct positive, significant effect on knowledge sharing (.45), knowledge creation (.51) and business performance (0.12). Organizational trust also has an indirect effect on innovation (.31). Knowledge creation is shown to have a direct effect on knowledge sharing (.21) and innovation (0.26), but it also has an indirect effect on business performance (.37) and . Knowledge sharing has a direct effect on innovation (-0.03) and also an indirect effect on business performance (-0.01) and finally we can observe that innovation has a direct and positive effect on business performance (0.58).

Table 4.10.

Summary of Model Direct and Indirect Effects

Path	Equation	Influence
OT → KS	Direct	0.450
OT → KC	Direct	0.515
KC → KS	Direct	0.218
KC → I	Direct	0.265
KS → I	Direct	-0.033
I → BP	Direct	0.585
OT → BP	Direct	0.128
OT → I	Indirect	0.318
KS → BP	Indirect	-0.019
KC → BP	Indirect	0.378

PLS Findings Summary

The results on 4.11 show that organizational trust has a significant positive effect on knowledge creation, knowledge sharing and business performance of the Taiwan IT industry company where the study was applied. From the results we can observe that 6 out of the 7 hypothesis were rejected. The following table summarized the research results.

Table 4.11.

Research Hypotheses Results

Research	Hypotheses	Results
H1	Organizational trust has no effect on knowledge sharing.	Rejected
H2	Organizational trust has no effect on knowledge creation.	Rejected
H3	Knowledge creation has no effect on knowledge sharing.	Rejected
H4	Knowledge sharing has no effect on innovation.	Accepted
H5	Knowledge creation has no effect on innovation.	Rejected
H6	Knowledge creation has no effect on business performance.	Rejected
H7	Organizational trust has no effect on business performance.	Rejected

The investigation has demonstrated that organizational trust has a strong and positive direct effect on knowledge sharing, knowledge creation and business performance as well as indirect effects on innovation. The most influential factor is reliability, which means that for employees it is important how much they can rely on one another inside the organization. Employees are more willing to share knowledge between their peers when they feel that they can rely on them.

For knowledge creation, the results indicate that knowledge creation has a positive and direct effect on knowledge sharing and innovation and indirect effect on business performance. In this variable, the most significant factor is externalization which is closely related to the articulation of tacit knowledge between the group members of the organization.

With regards to knowledge sharing, the results of the analysis show that knowledge sharing does have a negative direct effect on innovation, and also has indirect effects on business performance. The most significant factor for knowledge sharing was knowledge donating, meaning that in order to share knowledge successfully, it is important for employees to feel comfortable providing help and knowledge to their peers when they require it. Those companies who focus more on competitiveness rather than cooperation suffer from ineffective knowledge management strategies for knowledge sharing.

With regards to innovation, the results of the analysis show that innovation does have a positive direct effect on business performance. The most significant factor for innovation was process innovation, which means that employees consider that the organization must constantly

update their processes in order to achieve the competitiveness levels it desires.

From the results discussed above most of them have a significant effect on business performance, meaning that if the mentioned conditions are met in the organization (reliability, externalization, knowledge donating, and process innovation), employees will feel more encouraged contributing with the business performance of the organization. Knowledge sharing did not have a positive influence in the innovation capability of the organization.



CHAPTER V CONCLUSIONS AND RECOMMENDATIONS

This chapter sums up and discusses the PLS findings for this study. Recommendations are also proposed.

Conclusions

The goal of this study was to explore the relationships between organizational trust, knowledge sharing, knowledge creation, innovation and business performance of a Taiwan high technology company. The OK-OB model was developed in order to fulfill the purposes of this study.

First, the study finds that organizational trust affects knowledge sharing. Specifically, reliability is the most important factor influencing employee's willingness to share knowledge with their peers, followed by openness and honesty. How much they trust each other and are willing to talk and interact with each other is a very important and determinant factor for employees to share knowledge. In other words, it is ineffective for employees to keep the information or knowledge they process to try to get a competitive advantage. Since workplaces and the world are becoming more and more complex, organizations have to pay more attention to their organizational strategies, especially in the innovation field. Likewise, it is important for the organization to find ways of ensuring that the employees trust in their managers to enhance their business performance, as well as to make sure that the employees identifies themselves with the organizational goals and objectives and stimulate an environment where employees trust each other. This will facilitate the knowledge sharing in the organizations.

Second, this study also investigated the effects that knowledge creation has on knowledge sharing. In organizations, knowledge creation has great impact on knowledge sharing processes. This study showed that this statement was correct, with externalization, which is defined as the transformation of tacit knowledge into explicit knowledge, being the most influential aspect of knowledge creation, followed by the factors of internalization, socialization and combination, all showing very high levels of impact in the overall knowledge creation process.

Third, knowledge sharing has a negative effect on innovation on the business performance of the organizations, with knowledge donating being the most influential factor. The following factors were intra-groups and knowledge donating, with inter-groups being the least influential of all.

Fourth, innovation on the business performance of the organizations, with process innovation being the most influential factor, followed technological information and organizational innovation all displaying high levels of influence on the organizational innovation.

Employees and managers should pay more attention to all the factors mentioned above and focus on strengthening the reliability amongst peer and the knowledge donation techniques to enhance the knowledge sharing levels as well as the transformation of tacit knowledge into explicit knowledge, and to foster the process innovation. All these factors are highly influential with regards to the business performance of the organization.

Recommendations

Based on the results and information collecting during this investigation, the following recommendations are made for this particular study.

a) Concerning organizational trust: the employees, managers and the organization in general should focus on improving trust in management and trust between the employees, while continuing to promote and keep identification among its members.

b) Concerning knowledge creation: the employees, managers and the organization in general should focus on improving their socialization methods, and continue to enhance the externalization process.

c) Concerning knowledge sharing: the employees, managers and the organization in general should focus on improving their knowledge collecting methods, and continue to promote knowledge donation amongst its members.

d) Concerning innovation: the employees, managers and the organization in general should focus on promoting the organizational innovation and keep working to improve their processes' innovation.

d) Concerning business performance: the employees, managers and the organization in general should focus on improving their partnership performance and work towards enhancing their financial performance.

Recommendations for Further Research

Some recommendations and suggestions for future researchers and organization's staff are:

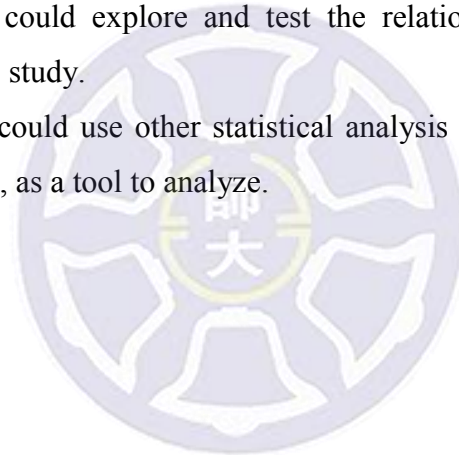
First, since this study was made exclusively with Taiwanese employees in high technology companies in Taiwan, further research should be considered with international employees, or international organizations from other areas such as manufacturing industry, pharmaceutical industry, etc.

Second, other research methods can also be considered to explore different areas of this topic, most notably qualitative methods.

Third, comparisons and contrasts with other studies and other educational areas can also be conducted. Examples include: comparisons between local and international organizations, or comparisons between different industries.

Fourth, future research could explore and test the relationship of others variables and dimensions that are not in this study.

Finally, future research could use other statistical analysis procedures to analyze the data obtained instead of using PLS, as a tool to analyze.



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APPENDIX A: RESEARCH QUESTIONNAIRE

Research Questionnaire

問卷

Dear Sir/Madam,

I am graduate student of National Taiwan Normal University. The following questionnaire is for my academic research project, investigating the effect of organizational trust on knowledge sharing, knowledge creation, innovation and business performance of High Technology companies in Taiwan. Please, help me fill out the questionnaire. Your participation is very important and greatly appreciated.

All personal information you provide will be confidential and the data will not be exposed to the public.

親愛的先生／女士，

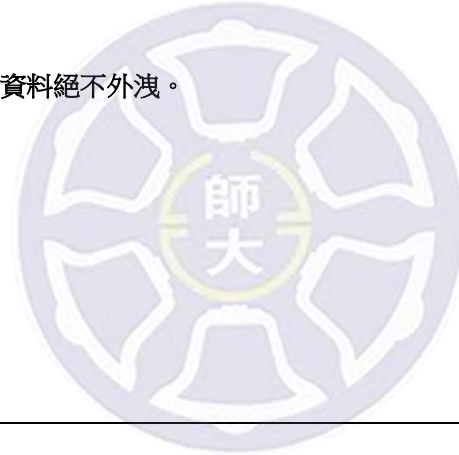
我是國立臺灣師範大學的研究生，這是我的學術研究問卷調查。我的研究主旨為調查台灣高科技公司其組織間的信任對於知識分享、知識創造、創新思維和商業表現的影響。請您協助我填寫此份問卷。非常感謝您的幫忙，您的參與回答對我來說非常重要。

您提供的所有個人資料將進行保密，所有資料絕不外洩。

Sincerely yours,

Juan Fernando H. Ramos
Researcher E-mail: jfer2334@hotmail.com
Thesis Advisor: Dr. Tony Shih

研究生：黃賀南
聯絡方式：jfer2334@hotmail.com
指導教授：施正屏教授



Part I: Research Factors 第一部分

Please check [✓] the number that best describes the level of agreement you have to the following factors provided.

請依照個人同意程度以勾選[✓]方式進行填答。

Organizational Trust		非常不同意	不同意	沒意見	同意	非常同意
Each section is classified into five levels, with 1 being “Strongly Disagree” and 5 being “Strongly Agree”						
組織信任感						
每個選項共分成五個級別，1 代表非常不同意，5 代表非常同意						
1.	If I got into difficulties at my company I know my co-workers would try and help me. 當我在工作上遇到困難，我知道我的同事會願意試著幫助我。	1	2	3	4	5
2.	I can trust the people I work with to lend me a hand if I needed it. 當我需要借助別人的幫忙時，我相信跟我一起工作的人願意幫助我。	1	2	3	4	5
3.	Most of my co-workers can be relied upon to do as they say they will do. 我可以相信我大部分的同事是說到做到的。	1	2	3	4	5
4.	Management at my company is sincere in its attempts to meet the employee’ s point of view. 我們公司的管理者會盡可能滿足每個員工的意見。	1	2	3	4	5
5.	I feel quite confident that the company will always try to treat me fairly. 我相信我的公司總是公平地對待我。	1	2	3	4	5
6.	Our working staff (managers, technicians, administrative, etc.) would be quite prepared to gain advantage by deceiving their co-workers. 我們公司的員工(主管、技師、行政人員等等)會為了得到好處而欺騙同事。	1	2	3	4	5
7.	I can get enough evaluation of my working abilities. 我可以得到足夠關於自己工作表現的評估。	1	2	3	4	5
8.	I can have opinions to the decisions which are relevant to my work. 我可以對和我工作相關的決策提出意見。	1	2	3	4	5
9.	When something is wrong, I am not afraid to tell my supervisor. 當發現有錯誤發生時，我不會害怕告訴我的主管。	1	2	3	4	5
10.	My supervisor does what he or she says. 我的主管說到做到。	1	2	3	4	5
11.	Top managers keep their commitments to employees. 高階主管對員工會信守承諾。	1	2	3	4	5
12.	My supervisor behaves in a consistent manner. 我的主管行為舉止總是一致。	1	2	3	4	5
13.	I feel connected to my peers. 我和我的同事關係都很密切。	1	2	3	4	5
14.	I feel connected to my supervisors. 我和我的主管關係很密切。	1	2	3	4	5
15.	My value is similar to my co-worker’ s values. 我的想法與價值觀跟我同事的很接近。	1	2	3	4	5

Knowledge Sharing		非常不同意	不同意	沒意見	同意	非常同意
Each section is classified into five levels, with 1 being “Strongly Disagree” and 5 being “Strongly Agree”						
知識分享 每個選項共分成五個級別，1 代表非常不同意，5 代表非常同意						
16.	I frequently share knowledge and information with my co-workers. 我經常和同事分享知識以及資訊。	1	2	3	4	5
17.	I usually involve myself in discussions of various topics rather than specific topics with my co-workers. 我經常和同事討論各種不同的議題，而不只是針對單一特定主題。	1	2	3	4	5
18.	I usually spend a lot of time conducting knowledge sharing activities within my co-workers. 我經常花很多時間和我的同事做知識分享的活動。	1	2	3	4	5
19.	I frequently share knowledge with co-workers even though he (or she) is not in my team. 即使有些同事不是跟我同部門的，我也經常跟他們分享知識。	1	2	3	4	5
20.	I usually involve myself in discussions of various topics rather than specific topics with co-workers from other co-worker’s teams. 我經常和不同部門的同事討論不同的議題，而不只是針對單一特定主題。	1	2	3	4	5
21.	I spend a considerable amount of time conducting knowledge sharing activities with other co-worker teams in the company. 我花很多時間和不同部門的同事做知識分享的活動。	1	2	3	4	5
22.	When I have learned something new, I tell my co-workers about it. 當我學到新的東西時，我會告訴我的同事。	1	2	3	4	5
23.	When they have learned something new, my co-workers tell me about it. 當我的同事學到新的東西時，他們會告訴我。	1	2	3	4	5
24.	Knowledge sharing among co-workers is considered normal in my company. 同事間的知識分享在我們公司是很平常的一件事。	1	2	3	4	5
25.	I share information I have with co-workers when they ask for it. 當我同事向我請教的時候，我會跟他們分享資訊。	1	2	3	4	5
26.	I share my skills with co-workers when they ask for it. 當我同事向我請教的時候，我會分享我的工作技能。	1	2	3	4	5
27.	Co-workers in my company share knowledge with me when I ask them to 當我向我同事請教的時候，他們會跟我分享知識。	1	2	3	4	5
28.	Co-workers in my company share their skills with me when I ask them to 當我向我同事請教的時候，他們會跟我分享他們的工作技能。	1	2	3	4	5

	Knowledge Creation	非常不同意	不同意	沒意見	同意	非常同意
	<p>Each section is classified into five levels, with 1 being “Strongly Disagree” and 5 being “Strongly Agree”</p> <p>知識創造 每個選項共分成五個級別，1 代表非常不同意，5 代表非常同意</p>					
29	<p>My company emphasizes sharing experience with other employees. 我的公司注重和員工分享經驗。</p>	1	2	3	4	5
30	<p>My company emphasizes finding new strategies and working opportunities by wandering inside the department. 我的公司注重從各個部門中發現出新的策略以及工作機會。</p>	1	2	3	4	5
31	<p>My company emphasizes creating a working environment that allows peers to understand the technicalities of the work subjects. 我的公司注重營造出一個能夠讓同事從中了解工作所需技能的工作環境。</p>	1	2	3	4	5
32	<p>My company emphasizes the use of deductive and inductive thinking. 我的公司注重使用推論及歸納的思考方法。</p>	1	2	3	4	5
33	<p>My company emphasizes creative and essential dialogues. 我的公司注重必要且有創造性的對話。</p>	1	2	3	4	5
34	<p>My company emphasizes the use of metaphors in dialogue for concept creation. 我的公司注重使用譬喻的方式討論概念創造。</p>	1	2	3	4	5
35	<p>My company emphasizes planning strategies by using published literature, computer simulation and forecasting. 我的公司在計畫策略時會參考現有文獻、電腦模擬各種情境以及預測評估。</p>	1	2	3	4	5
36	<p>My company emphasizes creating manuals and documents on products and services. 我的公司注重製作產品和服務的操作手冊及檔案。</p>	1	2	3	4	5
37	<p>My company emphasizes forming teams, conducting experiments, and sharing results with the entire department. 我們公司注重成立團隊、執行實驗，以及與整個部門分享成果。</p>	1	2	3	4	5
38	<p>My company emphasizes searching for and sharing new values and thoughts. 我的公司注重找尋並分享新的想法和價值。</p>	1	2	3	4	5
39	<p>My company emphasizes bench-marking and test marketing. 我們公司注重標竿管理以及市場測試。</p>	1	2	3	4	5

<p>Innovation</p> <p>Each section is classified into five levels, with 1 being “Strongly Disagree” and 5 being “Strongly Agree”</p> <p>創新</p> <p>每個選項共分成五個級別，1 代表非常不同意，5 代表非常同意</p>	非常不同意	不同意	沒意見	同意	非常同意
40 My company enhances work efficiency because of company’ s process innovation. 我的公司因為有創新的流程，工作效率因而提升了。	1	2	3	4	5
41 My company gets a higher success rate in launching new products and new services. 我們公司因為提供新的產品以及服務而得到了更好的成就。	1	2	3	4	5
42 My company has clear and specific process of innovation development. 我們公司在創新發展方面有明確且清楚的流程。	1	2	3	4	5
43 My company encourages using process innovation to understand the information of customers, suppliers and competitors. 我們公司鼓勵用創新流程以了解消費者、生產者以及競爭者的資訊。	1	2	3	4	5
44 My company gets a higher profit because company’ s technical innovation. 我們公司因為科技創新而有更好的營收。	1	2	3	4	5
45 My company gets a good reputation because company’ s technical innovation. 我們公司因為科技創新而得到很好的口碑。	1	2	3	4	5
46 My company can fast its’ service to customers because company’ s technical innovation. 我們公司因為科技創新加快了服務客戶的速度。	1	2	3	4	5
47 My company gets a higher sales performance because company’ s technical innovation. 我們公司因為科技創新而提升了銷售。	1	2	3	4	5
48 My company improves internal communication efficiency because company’ s organizational innovation. 我們公司因為組織創新而提升了內部的溝通效率。	1	2	3	4	5
49 My company cross-cultural communications ability is good for keeping ahead of market. 我們公司跨文化的溝通能力有助於我們領先市場。	1	2	3	4	5
50 My company continues to import new way of management and knowledge to keep flexibility. 我們公司持續引進新的管理方式以及知識以助於我們保持可塑性。	1	2	3	4	5
51 Employees highly accept the new way of innovational management. 員工非常能接受新的創新管理方式。	1	2	3	4	5

<p>Business Performance</p> <p>Each section is classified into five levels, with 1 being “Strongly Disagree” and 5 being “Strongly Agree”</p> <p>經營績效</p> <p>每個選項共分成五個級別，1 代表非常不同意，5 代表非常同意</p>	非常不同意	不同意	沒意見	同意	非常同意
52 Comparing to our company’ s competitors, company’ s relationship with key alliance partners is strong. 和同業相較之下，我的公司和重要企業夥伴的關係很緊密。	1	2	3	4	5
53 Comparing to our company’ s competitors, our company’ s alliances are stable. 和同業相較之下，我的公司和企業夥伴的關係很穩定。	1	2	3	4	5
54 Comparing to our company’ s competitors, company has an ability to sustain relationships regardless of changes in senior people. 和同業相較之下，即使資深員工有異動，我的公司有能維持良好的關係。	1	2	3	4	5
55 Comparing to our company’ s competitors, company and alliance partners keep commitments to each other. 和同業相較之下，我的公司和企業夥伴較能維持彼此的承諾。	1	2	3	4	5
56 Comparing to our company’ s competitors, company’ s market development is good. 和同業相較之下，我的公司在市場上的發展很順利。	1	2	3	4	5
57 Comparing to our company’ s competitors, company’ s market share is high. 和同業相較之下，我的公司的市場佔有率很高。	1	2	3	4	5
58 Comparing to our company’ s competitors, company’ s sales growth is satisfying. 和同業相較之下，我的公司的銷售成長令人滿意。	1	2	3	4	5
59 Comparing to our company’ s competitors, the products of company’ s brand is popular. 和同業相較之下，我的公司品牌的產品很受歡迎。	1	2	3	4	5
60 Comparing to our company’ s competitors, company’ s profitability is satisfying. 和同業相較之下，我的公司的收益令人滿意。	1	2	3	4	5
61 Comparing to our company’ s competitors, company’ s return on investment is good. 和同業相較之下，我的公司的投資報酬率很高。	1	2	3	4	5
62 Comparing to our company’ s competitors, company’ s Cost control is good. 和同業相較之下，我的公司在成本上的管控良好。	1	2	3	4	5
63 Comparing to our company’ s competitors, company’ s Cash flow from operations is satisfying. 和同業相較之下，我的公司所經營的資金流動是令人滿意的。	1	2	3	4	5

Part II: Demographics Data

基本資料

For the following questions, please check [√] only one appropriate answer.

請用[√]勾選回答以下問題

64. Gender: 性別

Male 男 Female 女

65. Age: 年齡

21-25 26-30 31-35 36-40 41 and up 41 或大於

66. Educational Level: 教育程度

High School Diploma 高中 Bachelor Degree 大學 Master Degree 碩士
 PhD 博士

67. Tenure: 年資

1-3 4-6 7-9 10 – 12 13 and up

End of Questionnaire

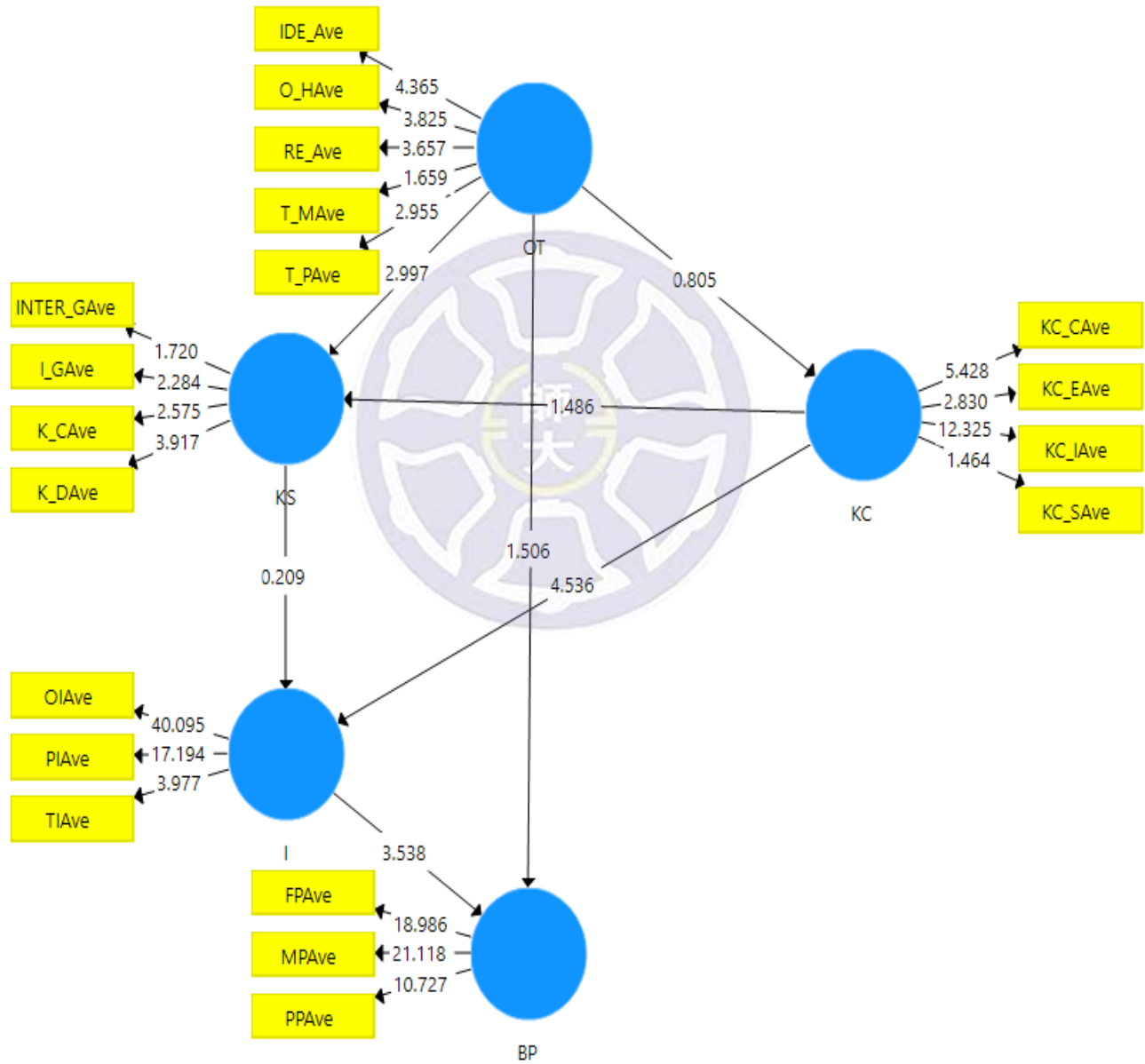
問卷填寫完畢

Please kindly double check the questionnaire items. Thank you so much for your time. I greatly appreciate your participation, support and cooperation
請再次確認問卷上的作答，非常感謝您撥冗幫忙，非常感謝您的支持以及參與，謝謝您的合作！

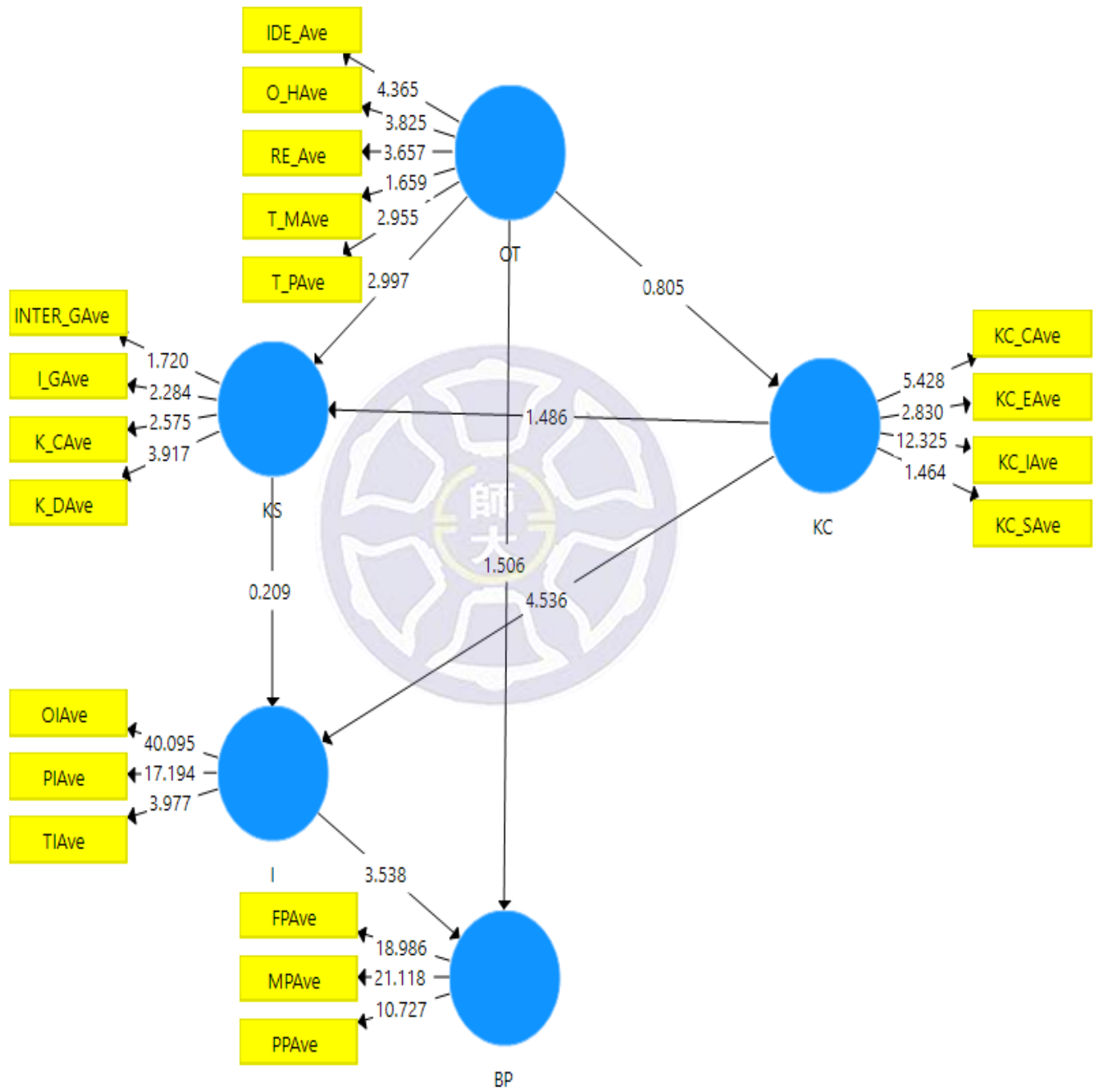
APPENDIX B: PLS FIGURES

Figures Pilot Study

Bootstrapping

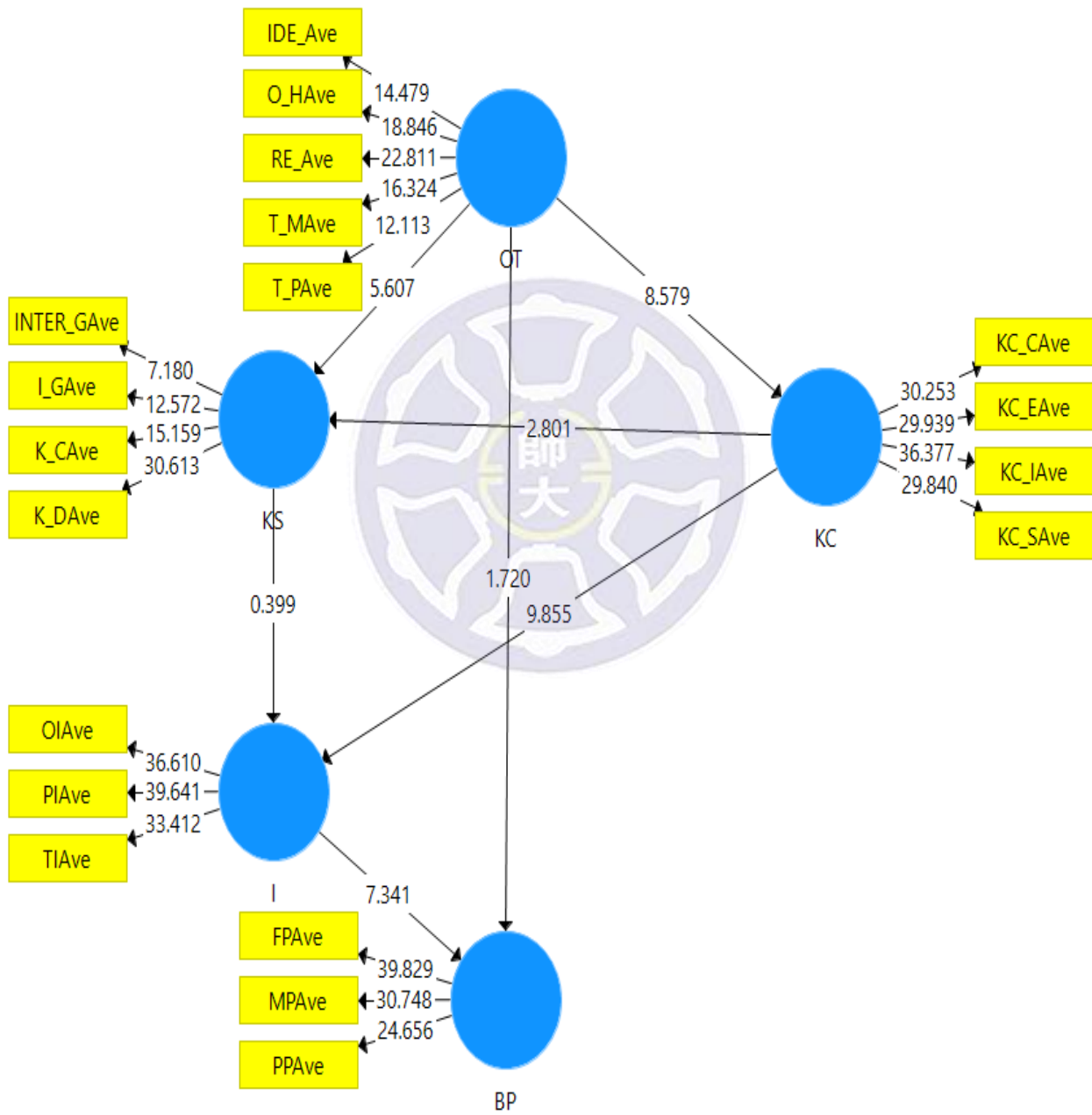


PLS Algorithm



Figures Main Study

Bootstrapping



PLS Algorithm

