

**THE FACTORS INFLUENCING THE IMPROVEMENT OF  
INDIVIDUAL CAPABILITY IN KNOWLEDGE TRANSFER:  
THE CASE OF THE AIRPORTS OF THAILAND PUBLIC  
COMPANY LIMITED (AOT)**

**Surisa Palawongse**

**A Dissertation Submitted in Partial  
Fulfillment of the Requirements for the Degree of  
Doctor of Philosophy (Development Administration)  
School of Public Administration  
National Institute of Development Administration**

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## **ABSTRACT**

**Title of Dissertation**    The Factors Influencing the Improvement of Individual Capability in Knowledge Transfer: the Case of the Airports of Thailand Public Company Limited (AOT)

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With globalization, the development of information, communication, and technology has changed the world rapidly. Globalization has made the world a smaller place. It is not possible in the contemporary world to stand still; rather the process of transformation requires a response. Advancement in information technology has brought about rapid globalization and this requires formulization and re-evaluation of every functional aspect in the new world. Many organizations have to encounter a competitive environment and workers need to learn new skills. Both the public and private sectors have to face this challenge. In this regard, the Airports of Thailand Public Company Limited, which is in the public sector, must survive in this competitive environment as well. Thus, it is essential to take action in order to implement new techniques, methods of administration, and management procedures. In particular, knowledge is no exception as a requirement for change because it is considered as a key to achievement over competitors. Because the areas of knowledge especially the knowledge transfer that was one of the essential tools to manage knowledge assets is broadly acknowledged and questionable, it is a challenge to explore that factors that influence individual capability regarding knowledge transfer.

In this study, there are 4 objectives: 1) to assess the improvement of individual capability in AOT's knowledge transfer; 2) to identify the factors that impact the improvement of the individual's capability to achieve knowledge transfer at AOT; 3) to explain the relationship levels of the factors for the improvement of individual

capability in AOT's knowledge transfer; and 4) to recommend appropriate management alternatives for utilizing key lessons for the improvement of the individual's to transfer knowledge at AOT.

Self-administered survey questionnaires were conducted to identify the critical factors in the improvement of the individual's capability to achieve knowledge transfer. Employees working at the Airports of Thailand Public Company Limited were the target population of this study, and the population consisted of 500 employees; 460 questionnaires were usable, with a 92.0 percent rate of return in April, 2013.

The questionnaires were comprised of 3 sections: demographic data, the factors influencing the improvement of the individual's capability to transfer knowledge, and the improvement of the individual's capability regarding knowledge transfer. In addition, mechanistic structure, organic structure, training, incentives, and information technology were the variables that influenced the improvement of the individual's capability to transfer knowledge. To determine the degree of agreement of each item, a five-point Likert scale was used in this study.

In the study, stepwise regression analysis was used to investigate the factors that impacted the improvement of individual capability in AOT's knowledge transfer. The findings revealed that all of the factors (mechanistic structure, organic structure, training, incentives, and information technology) were significant in influencing the improvement of the individual's capability at AOT to transfer knowledge.

This dissertation suggests that all five variables should be highly recognized in terms of the improvement of the individual's capability to achieve knowledge transfer. Human resource management and the organizations' policy makers can formulate applicable strategies in order to enhance greater action for AOT's employees for improvement in the area of knowledge transfer.

## **ACKNOWLEDGEMENTS**

The Ph.D. dissertation seemed to be a long journey in my life. Not only did the accomplishment of my Ph.D. dissertation require lots of patience and huge effort, but also the support from many beloved people encouraged me to achieve the target destination. I would not have reached this point without the great help and support from those to whom I owe a debt of gratitude. Even if their names are not shown in this short message here, all of them will be in my deep heart and wonderful memories.

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Finally, I also hope that my dissertation will be more or less beneficial to either the private or public sector in terms of improvement in the area of knowledge transfer.

Surisa Palawongse

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# CHAPTER 1

## INTRODUCTION

### 1.1 Statement of Problem and Significance of the Study

At present, the process of globalization drastically impacts every place in the world. According to Lentner (2004: 98-99), globalization entails ever-increasing intercalation across the entire world. It is impossible for every organization to stand still but it requires a response of transformation process associated with the globalization. This unprecedented development necessitates the proactive management of transformative change instead of passive reaction. Advances in information technology have brought about rapid globalization and this dictates a requirement for the re-evaluation of company's structure and the formulization of new world economies and social orders. Firms need to remain competitive and workers need to re-skill. Therefore, world economies are in a period of adjustment. Several issues are of concerned such as technology, diversity, ethics, human resources, etc. As workers are any firm's greatest asset, it is essential nowadays that many companies take steps to ensure that their workers possess the requisite knowledge and command the proper skills for being able to contribute effectively under contemporary economic conditions, or being able to measure up to new challenges.

In Thailand, every organization must fully prepare to handle and adjust to these major changes irrespective of people and work systems. Suitable and flexible changes in all sectors along with globalization can bring about lots of benefits and this will bring achievement to the company and development to nation. Regarding the ever-faster and more complex changes along with globalization, it is crucial to define the appropriate strategies in order to improve domestic structures for a higher level of competitiveness and national development. Moreover, it is imperative to construct a knowledge base for survival with the changes in globalization, extend impartial development, and become a foundation of livelihood in the society. In order to cope with

the changes taking place in terms of an increasing competitive world and to develop its system of governance, the Thai government has announced its vision in its publication of the Tenth Economic and Social Development plan (2007-2011). In this plan, development strategies are projected for a number of domains, including, biodiversity and conservation of the environment and natural resources, community, the environment, and the economy and human quality (Office of the National Economic and Social Development Board, 2013).

One of the main strategy focuses on human quality is to promote human development for integrity, knowledge and learning. To increase human quality, people may progress towards the world of work and competition. Both local wisdom and modern learning will be nurtured from the community to the national level for benefits in the development of the economy and society. To accomplish the mission in human development for quality with virtuous behavior and all-around knowledge, the tenth plan set strategies for the development of human quality towards a knowledge-based and learning society, which places great emphasis on human development in 3 dimensions as follows:

**First Dimension:** promote human development for virtue leading and social immunity

This will lead people to be well-prepared through mental readiness, basic knowledge necessary for living, competency development, and life skills and labor skills. Moreover, it creates manpower to respond to the country's development, fosters continuous learning, and promotes knowledge management.

**Second dimension:** promote physical and mental health for Thai people in a healthy environment

This can be achieved by enhancing food and increasing preventive healthcare.

**Third dimension:** create an environment in which all Thai people can live in coexistence peacefully

This will foster good relations among people in society based on reasonableness and nurturing a secure living both at the family and community levels by developing an economic and social protection system, justice processes, human rights, and security in living.

Later, the Eleventh of National and Economic and Social Development Plan (2012-2016) was launched with the paradigmatic Tenth Economic and Social Development

Plan being overhauled in such a way as to address changes at both the international and domestic levels. This plan focuses on all parties at all levels. The development of people, society, the economy, the environment and politics is integrated holistically to increase Thailand's capacity for resilience and adaptation, including at the level of the family, community, and the nation. People-centered development and participation are applied throughout the national development process. This plan concentrates on human and social development towards social quality. Resilience must be created at the individual, family and community levels. People can adapt to changes and will have an opportunity to access resources and obtain fair benefits from development (Office of the National Economic and Social Development Board, 2013).

Faced with a highly-competitive environment, every workplace requires its employee to acquire more knowledge in order to perform increasingly complex tasks. This has resulted in an increasing demand for organizations to augment the knowledge possessed by their employees so as to bring these organizations into line with the new era of a knowledge-based economy. Consequently, raising the productivity level of knowledge workers is critical to organizational development (Lenter, 2004: 114-115). Regarding today's knowledge-based economy, Kumar and Garnesh (2009: 163) viewed knowledge transfer as an essential tool in a wide array of activities, whether the knowledge exchanged is explicit or implicit in nature. Another meaning is that one agent receives and applies the knowledge provided by another agent. The agents could be an individual, team/department or an organization (Joshi et al., 2007: 323). In terms of meaning, knowledge transfer has been given various but related labels such as "knowledge sharing," "knowledge flows," "knowledge acquisition," and "knowledge mobilization" (Carmel and Nicholson, 2005; Gosain, 2007; Renzl, 2008 and Van Wijk et al., 2008). Levine and Gilbert (1998) mentioned 3 related important reasons for having knowledge transfer. First, knowledge is a tool for increasing the proportion of the total assets in many organizations. Second, employee involvement in organizations is increased by changing organizational structures so that hierarchical controls are more decentralized. Last, advancement in information technology plays an essential role by creating the improvement of knowledge transfer among employees.

To affirm the essence of knowledge transfer, Burgess (2005: 325) indicated the benefits of knowledge transfer in many ways. First, knowledge transfer can support succession planning by ensuring that key new staff members are equipped with essential information and knowledge from those that ignoring to obtain knowledge provided by the organization. Second, knowledge transfer is a tool that creates system and documentation methods instead of becoming stored in isolated parts. Also, information can be shared and available to other employees in the organization. Finally, it is important to maintain the existence of knowledge because this will enhance effective transitions and prevent hindrances in organizational work procedures.

With the aforementioned regarding the benefits of knowledge, this research will shed light on a particular public organization, Airports of Thailand Public Company Limited (AOT), which is a leading organization that provides aeronautical services in Thailand. AOT was established on July 1<sup>st</sup>, 1979 and now it is an organization that monitors 6 international main airports. The airports under its responsibility include Suvarnabhumi Airport, Don Mueang International Airport, Chiang Mai International Airport, Hat Yai International Airport, Phuket International Airport, and Mae Fah Luang-Chiang Rai International Airport. These airports provide both domestic and international flights. Even though AOT owns 6 international airports, management control mainly comes from the head office (Don Mueang). By owning the airport, AOT has the vision that all airports under AOT will be the leading airports providing excellent service and effective management in order to maintain the status of being the air transportation hub of the Southeast Asia Region (Airports of Thailand Public Company Limited, 2013). To accomplish excellent management and tasks, AOT's employees are essential for driving the organization's success. As a result, great employees should have proper knowledge in order to have better improvement in the organization for overall tasks.

In terms of employees, AOT began with 1,713 employees but now has 4,224 employees. Regarding to AOT's department, AOT began with only 15 departments but now it has rapidly increased to 54 departments (AOT Annual Report, 2012: 25). Because of AOT has increased the number of its employees, there are some problems that have occurred in the workplace as follows:

1) Because the specific type of work is about aeronautical operations, employees must know more and learn more about specific work tasks.

2) AOT reconstructs staff positions every 6 months. Some staff members have been remodeled across the division or departments within the same business unit or different business units. For example, a worker from the human resource department at Suvarnabhumi Airport was repositioned to the airport services division at Chiang Mai International Airport. As a result, changing work more often can cause incompatibility in the knowledge structures and work systems between partners that generate difficulties and conflict in joint work.

Presently, AOT has made an effort to transfer knowledge and increase the capability of AOT employees in many ways, such as employing more advance technology in the workplace, having orientations for new employees, providing internal successive training courses or training programs under sister airport agreements between Suvarnabhumi Airport and other internal airports for employees in the organization. All of these programs partially enhance the basic skills of employees (AOT, 2012: 109a-111).

Nevertheless, some scholars stated that other factors impact the enhancement of enhancing knowledge improvement as well. In support of this point, Lee and Grover (1999: 193) considered that the extent of knowledge improvement should suit the organizational structure. They affirmed that the extent of knowledge improvement with organizational structure indeed influences knowledge activities. When employees lack participation, they are not able to share ideas or decisions in the organization so knowledge transfer is not likely to exist. Therefore, the extent to which knowledge can be improved depends on the organizational structure because it clearly exerts an influence on knowledge-related activities. Moreover, giving incentives to employees will facilitate and motivate transfer within the organization. Both monetary rewards and recognition can inspire people to be more open with data and information so sharing of information is valued in the organization (Levine and Gilbert, 1998). In short, there are lots of factors that may impact the improvement of individual capability in AOT's knowledge transfer.

Although knowledge transfer is broadly acknowledged, skepticism and confusion remain about how it should be measured. Therefore, this paper offers a

framework for examining the factors influencing the extent of knowledge transfer within the AOT organization. It is important to study whether the major determinant factors really serve knowledge transfer in AOT or not. In addition, there is no current study that has explored the factors that influence the extent of AOT's knowledge transfer.

## **1.2 Research Objectives**

1.2.1 To assess the improvement of individual capability in AOT's knowledge transfer

1.2.2 To identify the factors that impact the improvement of the individual's capability to achieve knowledge transfer at AOT

1.2.3 To explain the relationship levels of the factors for the improvement of individual capability in AOT's knowledge transfer

1.2.4 To recommend appropriate management alternatives for utilizing key lessons for the improvement of the individual's to transfer knowledge at AOT

## **1.3 Research Questions**

1.3.1 How can the improvement in the individual's capability to transfer knowledge at AOT be assessed?

1.3.2 What are the identified factors that can serve as the key factors in the improvement of the individual's capability to transfer knowledge at AOT?

1.3.3 To what extent are the identified factors associated with the improvement of the individual's capability to transfer knowledge transfer at AOT?

## **1.4 Scope of the Study**

### **1.4.1 Area**

The improvement of individual's capability to influence knowledge transfer at the Airports of Thailand Public Company Limited is the area of this study.

The researcher will focus on the effects of organizational structure (mechanistic structure and organic structure), the people factors (training and incentives), and information technology on the improvement of the individual's capability to knowledge transfer at AOT.

#### **1.4.2 Population**

Employees working at the Airports of Thailand Public Company Limited are the target population of this study.

The researcher will employ quantitative and qualitative methods in this research in order to investigate the perceptions to AOT's employees. Nonetheless, the quantitative method will be mainly used.

### **1.5 Benefits of the Study**

Because major changes in many contexts present both opportunities and constraints for national development, human quality is the essential focus that will drive success for the organization. As a result, both private and public organizations must strive for survival in business, and knowledge is a significant issue of concern. This study will shed light on the organization named the Airports of Thailand Public Company Limited (AOT). Because there are numerous factors that may impact the improvement of the individual capability to influence the extent of knowledge, this paper will contribute facts and significant data for the benefit of academics, management, and organizations. Additionally, the study will alert the reader to the necessity and urgency of policy and implementation change.

#### **1.5.1 Organization Benefits**

The findings of this study will help to identify and suggest directions for a development criteria plan and policies to strengthen the job effectiveness and competitiveness of the organization.

### **1.5.2 Academic Benefits**

1.5.2.1 The findings of this study will contribute to organizational theory by identifying the physical and psychological dimensions, including organizational structure, people factors, and information technology that can improve the individual's capability to achieve knowledge transfer at AOT.

1.5.2.2 The findings of this study will contribute to a greater understanding and valuable assessment information of the impacts of the organizational structure, people factors, and information technology on the improvement of individual capability regarding AOT's knowledge transfer.

### **1.5.3 Management Benefits**

The findings of this study will help to identify and suggest directions for management criteria plan and policies aiming at the improvement of the individual's capability to transfer knowledge at AOT.

## **CHAPTER 2**

### **REVIEW OF THE LITERATURE AND A PROPOSED MODEL FOR ANALYSIS**

The purpose of this chapter is to provide the theoretical support for this dissertation by reviewing the relevant literature related to the topic of this research. This chapter is divided into 5 sections. The first section discussed the perspectives of knowledge transfer, beginning with definition of knowledge, knowledge management, and then job dimensions and the theories related to knowledge transfer. The second stage presents the organizational structure (mechanistic structure and organic structure), the people factors (training and incentives), and information technology as determinants influencing the individual capability in knowledge transfer and related theories. The third stage presents the empirical studies related to the identified variables. The fourth part presents a proposed model for this study. Lastly, the fifth stage discusses the research hypotheses, demonstrating the assertions of the proposal to be formulated for empirical testing.

#### **2.1 Knowledge Transfer**

##### **2.1.1 Knowledge**

Davenport and Prusak (2000: 5) defined knowledge as “awareness of familiarity gained by experience of fact or situation.” Furthermore, knowledge was considered by Drucker as “a fluid of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information” The necessity of knowledge has been more recognized in the economy since the basic source is no longer capital or natural resources (Drucker, 1995: 271). Knowledge is one resource that is difficult to replicate and hence is a key for achieving over other firms (Lubit, 2001: 166). According to the literature classification of knowledge, it has been expressed as follows:

1) In the current economy, where “the only certainty is uncertainty, the one sure source of lasting competitive advantage is knowledge” (Nonaka, 1991: 91).

2) Knowledge is information combined with experience, context, interpretation, reflection and perspective. Knowledge is something that resides in people’s mind rather than in computers and cannot be easily stored (Martensen, 2000: 208-209).

3) Little value of information cannot become knowledge until it is processed by the human mind. The process of transformation is affected through an individual’s attitudes and experiences, including the context in which they work (Martensen, 2000: 208-209).

4) Knowledge maybe used or unused. Also, it depends on social conditions, which are related to social power. Additionally, knowledge is information that alters something or someone (Drucker, 1989: 251).

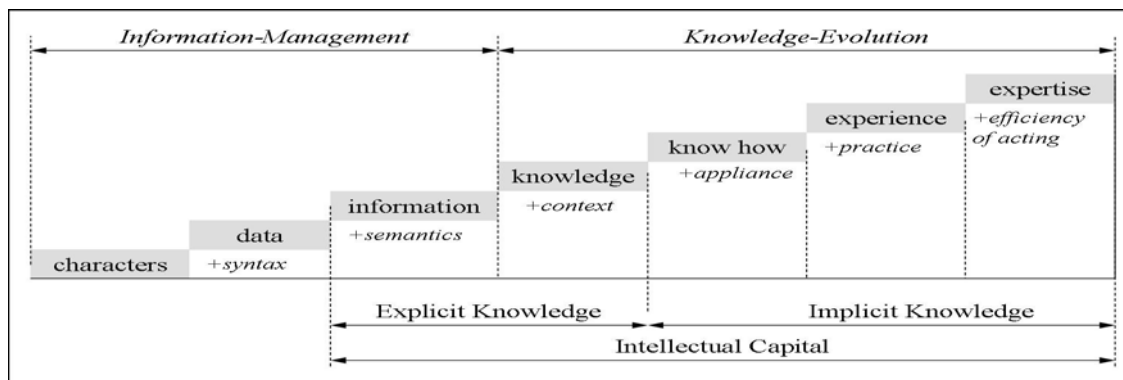
5) Knowledge is an intangible asset and is the art of creating value. In contrast to tangible assets, which depreciate when not used, knowledge grows when used and depreciates when unused. Out-of-date knowledge is considered a liability rather than as an asset. In addition, when referring to the loss of knowledge, it means loss of an ability to do or to understand something (Sveiby, 2001: 346).

“Knowledge is power” and is quickly becoming an organization’s key asset. At the organizational level, keeping valuable knowledge in-house is important to sustain a competitive advantage. Furthermore, retaining knowledge within the organization has long been a dilemma in public accounting firms as a problem that occurs with employee turnover (Taylor and Cosenza, 1998: 141). To remain at the forefront and maintain a competitive advantage, Martensen (2000: 204) argued that organizations must have good ability to organize, develop, and retain and utilize their employee capabilities. Therefore, it is important to view knowledge as an extremely critical factor for an organization’s future survival in the commercial sector, which is becoming increasingly fierce and competitive.

Knowledge can be tacit or explicit. Polanyi (1962: 88) indicated that tacit knowledge is difficult to communicate because it is a type of knowledge that is not captured by language or mathematics. In addition, tacit knowledge cannot easily be defined in detail. On the contrary, explicit knowledge is vocalized and can be written

down (Zack, 1999: 46). Davenport and Prusak (2000: 11-12) also explained that knowledge can be divided into two categories, which are explicit and tacit. Explicit knowledge is something that people can capture, document, and record. This includes research findings, lessons learned, toolkits, and so on. Tacit knowledge cannot be documented easily because it is from subconscious. It is context-specific and includes insights, intuitions, and experiences.

Auer and Sturz (2007: 199) explained the concept that was confirmed by Polanyi in the view of implicit and explicit knowledge as below:



**Figure 2.1** Knowledge Stairs

**Source:** Auer and Sturz, 2007.

From the left to the right and then upwards, information illustrated in a context forms of knowledge. Even though the knowledge can be kept away or stored away in electronic documents, it is accessible to authorize employees and can be further used in terms of explicitness. If employees now have background knowledge and become active in order to solve problems or to do work tasks, every active employee improves know-how and connects inseparably with this active ahead. If an employee carries out the problem solving or work task regularly, that employee wins experiences in comparable surroundings and can orientate himself or herself more easily. If a certain skill for a situation becomes experiences and moves to the next action step, this can be spoken of as an acquired expert's assessment.

### **2.1.2 Knowledge Management (KM)**

In terms of the knowledge management concept, there are many scholars that have pinpointed the concept of KM as follows:

2.1.2.1 Lee and Yang (2000: 784-785) defined KM as “the collection of process that governs creation, dissemination and leveraging of knowledge to fulfill organizational objectives.” Moreover, KM focuses on the organic and holistic way of understanding and employing the role of knowledge in the form of doing and managing work, Also, KM is an authentic guide for individuals and organizations to manage in the situation of complex environments.

2.1.2.2 Gurteen (1998: 6) indicated that KM is a set of organizational design processes, principles of operation, applications and technology involvement that is beneficial for knowledge employees to create new ideas and abilities for business.

The purpose of KM is to “do the right thing” instead of to “do things right” Also, it transforms information into knowledge (Lee and Yang, 2000: 785). Martin (2000: 21-22) affirmed that an organization is beneficial from KM through processes of knowledge sharing, knowledge acquisition and reusing of any knowledge aspects. In short, knowledge management contains a wide variety of interdependent functions including creation, valuation, storage, mapping and indexing, transport, distribution, and sharing knowledge (Bender and Fish, 2000: 126).

According to Mason and Pauleen (2003: 44-45), sharing is the single most important factor in terms of knowledge management implementation and leads to learning. Recently, therefore, “knowledge sharing” or “knowledge transfer” has begun to receive greater emphasis within the service industry. Knowledge sharing (KS) has been found to have a significant influence on service innovation. Furthermore, the importance of KM and KS in supporting innovation in an organization has been recognized (Hu et al.: 2009). Marques et al. (2008) concluded their study of the relationship between knowledge sharing behaviors and individual capabilities by pointing to a positive association between these behaviors and capabilities. From the details mentioned above, it can be seen that knowledge management (KM) is an essentially social process, which has been treated as an organizational resource procedures for the past few years (Alavi and Leidner, 2001: 115).

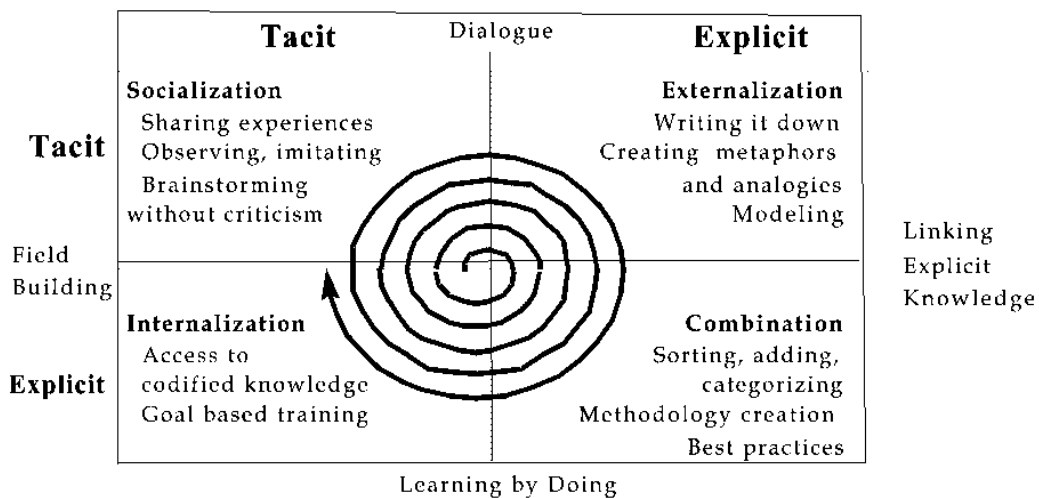
### **2.1.3 Knowledge Transfer Dimensions**

In terms of managing knowledge in the organizations, knowledge transfer is one of the essential strategies of concern and it has always been a challenge for many organizations. Its importance has grown in recent decades for three important related reasons (Levine and Gilbert, 1998). First, knowledge is a tool for increasing the proportion of total assets in many organizations. Second, employee involvement in organizations is increased by changing organizational structures so that hierarchical controls are more decentralized. With more employee involvement, there is more creativity of frontline employees and subunits, but obviously fewer organizational paths through which the transfer can occur. Last, advancement in information technology plays an essential role by creating the improvement of knowledge transfer among employees. All innovations such as the intranet, Internet, and Lotus Notes hold the potential for increased diffusion of innovations. However, technology itself cannot resolve knowledge transfer problems, organizational practices and structures must motivate and facilitate knowledge transfers in the organization (Levine, 1995: 31).

Bresman et al. (1999: 442) stated that the knowledge transfer process is the crucial aspect of knowledge management. The objective of knowledge transfer is to prepare the existing knowledge relevant to the company in the right quality and on time (Davenport and Prusak, 2000: 14). However, one of the important deficiencies in the studies on knowledge transfer is the lack of definitions of the concept. To facilitate an understanding of knowledge transfer, there are many definitions among the articles that might provide clear meaning for the concept.

Argote and Ingram (2000: 151) defined knowledge transfer as a process through which one unit is affected by the experience of another. Knowledge transfer must be imported or acquired by learning or sharing among others. Goh (2002: 24) indicated that transfer of knowledge is a conveyance of knowledge from one place or person to another. Also, it involves two or more parties and there must be a source and a destination. In another meaning, Garvin (1993: 87) mentioned that knowledge transfer is one aspect of learning, which knowledge can be obtained from an external entity. The aforementioned is well-summarized in a definition by Davenport and Prusak (2000: 18), which is “the transfer of knowledge then involves both the transmission of information to a recipient and absorption and transformation by that person or group.”

Within the past 20 years, extensive interest has been placed in the topic of knowledge transfer (Wiig, 1997: 7). The transferability of knowledge is especially important within firms and many organizations (Grant, 1996: 112). Considering transfer knowledge, Nonaka (1991: 97) stated that tacit and explicit knowledge are not totally separated from each other. They are rather mutually-complementary entities.



**Figure 2.2** Spiral of Knowledge

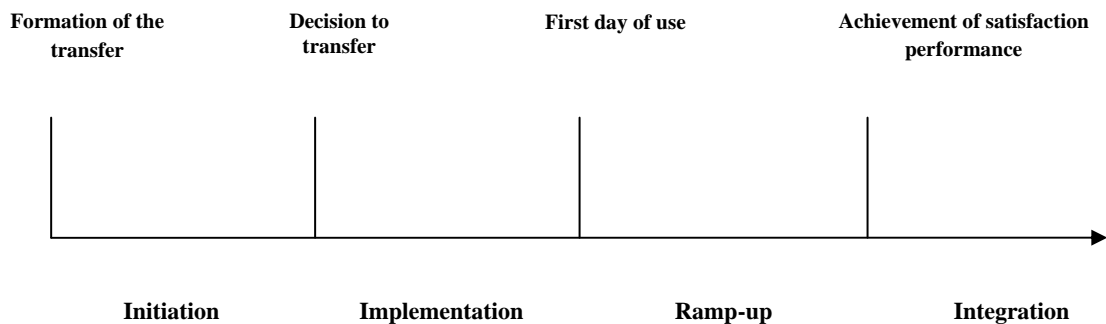
**Source:** Nonaka, 1991.

Nonaka (1991: 97-98) said that there are four stages of the conversion process, which are socialization, externalization, combination, and internalization. The first stage is called socialization. Tacit knowledge between individuals in this stage is transferred through observation, practice and imitation. The second stage is called externalization, which is triggered by collective reflection or dialogue. Also, this stage depends on analogy for the purpose of translating tacit knowledge into the form of processes and documents. The third stage is called combination. Combination is the process of reconfiguring explicit knowledge by way of adding, combining, sorting and categorizing procedures. The last stage is called internalization, which translates explicit knowledge into individual tacit knowledge.

Another model has also been indicated as a good illustration of the knowledge transfer model. It is from Szulanski's (2000), which relied on communication theory.

The process of knowledge transfer is seen as a procedure of transferring message from one source to recipient. Szulanski (2000: 21-22) proposed four sub-processes in the model, which are initiation, implementation, ramp-up, and integration.

### MILESTONE



**Figure 2.3** Knowledge Transfer Process Model

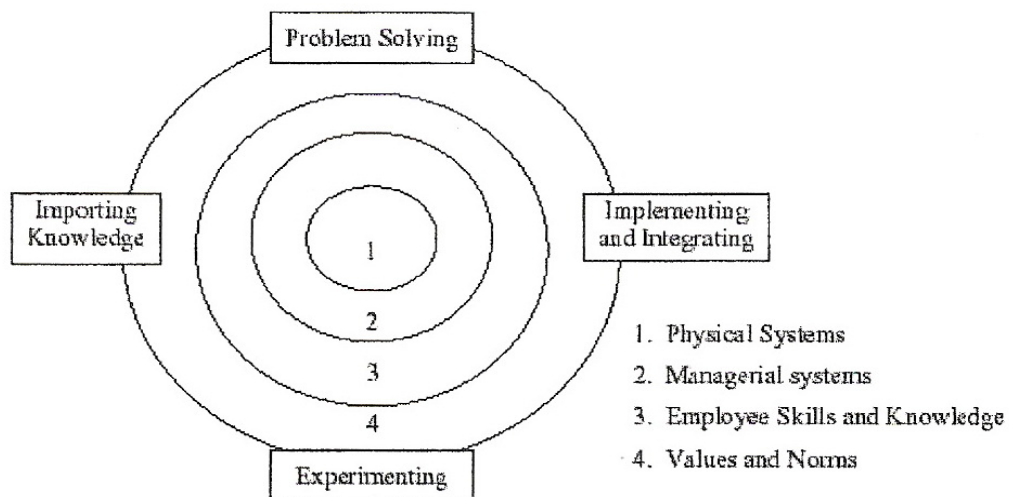
**Source:** Szulanski, 2000.

First, the opportunities to transfer are recognized in the initial stage and there is an apparent gap between what an entity knows and what it needs to know. The transfer includes all activities, which leads to the transfer decision results. When the decision on transfer has been made, the process switches to the actual interaction between the two entities. Consequently, communication moves from the initiation stage to the implementation stage. The necessary amount of knowledge will be received at some point along the process. Regarding the ramp-up stage, it begins whenever the knowledge is put to use. This stage serves as a testing ground for the new knowledge. Once a certain level of performance is achieved and all problems of first use are resolved, the integration stage begins. This stage is the last stage, in which the use of knowledge is integrated and routinized with the objective of the recipient and overall activities in the process.

With the similar meaning of knowledge sharing and knowledge transfer, both of their meanings have been recognized as the most essential discipline in the field of knowledge management (Dawson, 2001: 325). The terms of knowledge sharing was

defined by De Vries et al. (2006: 117) as two categories, which consist of knowledge donation and knowledge collection. Knowledge donation can be defined as observable behavior in which employees are willing to share knowledge and know-how in the organization. Knowledge collections indicate both observable and unobservable behavior in which employees are willing to gather and collect new knowledge and know-how with other employees in the organization.

Because the basic resource available to firms is knowledge, it follows that the company's individual and organizational capability are reflected in its ability to efficiently manage resources. Therefore, capabilities must constitute the key to the management of knowledge. Leonard-Barton (1995: 4-5) proposed the concept of "core capabilities", which defined as the capabilities that cannot be imitated easily and have been increased over time. Moreover, a comparative advantage is built up by these capabilities for an organization over other competitors. This concept presumes that there is an interaction of certain business processes and this interaction builds up the company's core capabilities. These knowledge-building activities draw upon the existing capabilities at the same time. The model is illustrated below:



**Figure 2.4** Core Capabilities and Knowledge-Building Activities

**Source:** Leonard-Barton, 1995.

In the figure, a core capability is comprised of four main dimensions. There are physical systems (database, software and infrastructure), managerial systems (reward and incentive, systems of training and education), employee skills and knowledge, and values and norms (corporate beliefs, rituals and culture). In order to grow and enhance the core capabilities, an organization must have major key activities in place. These activities create knowledge, which is absorbed by the individual and its organizational capabilities. In this study, it only focuses on individual capabilities because knowledge management improves individual skills and experiences by allowing individuals to work and share knowledge. As a result, individuals can learn and obtain knowledge from others in order to improve personal performance, which will lead to better career development in the future (Cong and Pandya, 2003: 27). In terms of improving AOT employee's capabilities, for example, by updating aeronautical knowledge and human resource procedures, this is expected to lead to a higher level of knowledge and skills among employees, thereby enabling them to operate more effectively within their respective sub-units and perform in a more professional manner. Hence, in terms of knowledge improvement, the main project goal of AOT is the enhancement of individual capability. In terms of knowledge transfer success, Watson and Hewett (2006: 141) argued that it relies on using and reusing existing knowledge. They mentioned two factors that are related to using and reusing knowledge. First, using existing knowledge is determined by the willingness to share knowledge among co-workers and how much they want to share. Second, reusing knowledge depends on the frequency in which co-workers can apply and utilize knowledge within the organization. In addition, Epple et al. (1991: 58) pinpointed other studies that measured successful knowledge transfer by extending the improvement of knowledge routines with the particular aspects of time, cost, and output.

According to the literature on knowledge transfer, the extent of knowledge transfer comes from the improvement of the individual's capability.

Nevertheless, Argote (1993: 42) has stated that the reasons for knowledge transfer difficulties are that "some of the knowledge acquired to learning by doing is idiosyncratic to the particular constellation of people, technology, structure and environmental conditions." In support of this point, Bloodgood and Salisbury (2001: 62)

proposed that technology is a key enabler for enhancing the extent of knowledge management programs and strategies. Technology is considered as the most effective tool for capturing, transforming, storing and disseminating information. Sveiby (2001: 348) had another point of view of technology in relation to acquiring knowledge. He said that people need to be considered on gaining more knowledge within the organization. People are true agents in business where tangible or intangible assets are the outcomes of human action. Moreover, outcomes depend ultimately on people for prolonged existence.

## **2.2 Factors Influencing Knowledge Transfer**

### **2.2.1 Organizational Structure**

Organization structure can be defined as a tool that people and jobs are arranged in order to perform work within the organization (Helms, 2000: 33).

“Every organized human activity-from the making of pots to the placing of a man on the moon-gives rise to two fundamental and opposing requirements: the division of labor into various tasks to be performed, and the coordination of these tasks to accomplish the activity.” It can be clearly described that the structure of an organization can classify labor into separated tasks and eventually achieves coordination among these tasks (Mintzberg, 1979: 2).

Lee and Grover (1999: 193-194) highlighted that organizational structure indeed influences knowledge-related activities. An effective organizational structure should facilitate working relationships among various entities in the organization and improve the working competence within the organizational units. Likewise, organizations should retain a set order and control to enable controlling the processes and support command for dealing with a mix of orders and a change of conditions while executing work tasks. Also, organizations should utilize the application of individual skills in order to improve high flexibility and creativity. Burns and Stalker (1961: 121) divided organizational structure into two types: mechanistic and organic. First of all, mechanistic structure was identified with high centralization, formalization, and high complexity. Mechanistic workers perform all routine tasks, which depend heavily on many programmed behaviors and are gradually slow in responding to unfamiliar

work. Pugh et al. (1968: 79) added that mechanistic structures have become an effective and efficient organizational structure for organizations to operate in a more stable and certain environment. To operate in a stable environment, organizations may not need to make decisions quickly. In addition, many operating procedures and day-to-day decisions may be centralized and formalized because there is no inherent requirement for constant change or innovation in the organization. In terms of knowledge transfer-related concept to organizational structure, mechanistic structures present vertical knowledge transfer through the type of typical chain of command. In contingency theory, Walczak (2005: 333) highlighted the term “mechanistic structure,” which is used to describe an organizational structure because this type of structure is designed to induce employees to behave in predictable and accountable ways. All employees working within a mechanistic structure are assigned specific duties that they must perform and are prohibited from taking additional duties when they are told to do so. Another type of organizational structure is organic structure. Burns and Stalker (1961: 122) stated that this type of structure is relatively flexible and adaptive and emphasizes lateral rather than vertical communication. Likewise, organic structure relies on knowledge and expertise rather than authority of position. This type of structure is more flexible on assigning responsibilities and has less rigid job definitions. Instead of giving specific directions, organic structure relies on exchanging data and information. In contrast to the mechanistic structure, organic structure inhibits horizontal knowledge transfer that presents coordinating among workers across the organization’s functional boundaries. In contingency theory, Walczak (2005: 334) indicated that the term organic structure is designed to promote flexibility so that employees can initiate change and adapt quickly to changing conditions. This flexible structure is more like a team environment in which all employees are able to handle any of the tasks at hand.

In contrast to the mechanistic structure, organic structure has the least specialization and possesses low level of hierarchy within the organization. To become an organic structure within the organization, employees should be identically leveled by having no classifications or rigid job definitions and encouraging kindly communication and coordination. Because organic structure shows the flexibility of work procedures and presents the power of communication among employees, it is

said to be the most adaptable form of organization. Also, it reacts quickly and easily to changes in the environment. With organic structure, the organization becomes a fluid network and contains multi-talented individuals that perform a variety of tasks (Amiri et al., 2010: 95). Last, technology is a useful supporter for the current structure, which heightens knowledge information and context within the organization. Furthermore, technology allows collaboration between separate parts of the organization and serves as an essential element in organizational structure, especially in the field of knowledge creation (Nidumolu et al. (2001: 116) and Gold et al. (2001: 198)).

Hosnavi and Ramezan (2011: 264-265) mentioned that organic structure within the organization is viewed by a collection of socializing, cooperating and competing between individual and social forces. Additionally, the organic structure has dimensional characteristics as follows:

1) Flat and team-based: This characteristic presents a shift from vertical decision making to horizontal collaboration among employees. Organizations are typically composed of 3 agents: top management, strategic groups and project teams.

2) Divisionalized: This characteristic erodes departmental barriers in order to facilitate cross-functional teams and specifies specialized sources of knowledge integration among employees.

3) Decentralization of power and control: Managers allow employees to promote a culture of openness and trust. Also, employees can proactively participate in organizational management.

4) A higher level of informality: This characteristic provides more informal communication and employees have freedom from rules. Face-to-face and two-loop communications are more encouraged within the organization. In addition, management is expanded by including people, technology, knowledge and processes. Likewise, there is general encouragement of interaction and cooperation among employees, which is considered as the main mechanism to create new knowledge.

**Table 2.1** Differences between Mechanistic and Organic Structure

<b>Characteristics</b>	<b>Mechanistic Organization Form</b>	<b>Organic Organization Form</b>
Task definition	Rigid	Flexible
Formalization	High	Low
Influence	Authority	Expertise
Distribution of tasks	Specialized differentiation of functional task into which tasks and problems are broken down in order to face a concern as a whole.	Nature of special knowledge and experience are contributed to the common task of concern.
Nature of individual tasks	The abstract nature of each individual task, which proceeds with many techniques and purposes, is more or less distinct from the concern as a whole. For example, the functionaries in organization are likely to pursue technical improvements of means rather than success at the ends of concern.	The realistic nature of the individual task is realized as a set according to the total situation of concern.
Who defines tasks	For each level in the hierarchy, the reconciliation of distinct performances by the superior is responsible in each relevant part of the main task.	The continual redefinition and adjustment of individual tasks have been done through interaction with others.
Task scope	The correct definition in technical methods, rights, and obligation attaches to each functional role.	In terms of responsibility, it is a limitation in the field of methods, rights, and obligations. It can be said that problems cannot be posted upwards or downwards. Also, it cannot be done sideways by pushing the problem to someone else's responsibility.
How is task conformance ensured?	The translation of methods, rights, and obligations is the responsibility of a functional position.	The spread of commitment of concern is beyond any technical definition.

**Table 2.1** (Continued)

<b>Characteristics</b>	<b>Mechanistic Organization Form</b>	<b>Organic Organization Form</b>
Structure of control and communication	Contractual/ Hierarchic	Presumed community of authority interest/network
Location of knowledge	The final reconciliation of the task and the assessment of relevance are made by the top of the hierarchy. In other words, top management has power to reinforce the location of knowledge actualities.	Infinite knowledge is no longer imputed to the head of concern because infinite knowledge of either a technical or commercial nature can be located anywhere in the workplace or network.
Communication members of concern	Vertical communication; i.e., between superior and subordinate	Lateral communication, i.e., between employees or between different ranks that resemble cooperation rather than command
Environment	When the environment is relatively stable, the mechanistic structure works best.	When the environment is relatively dynamic and uncertain, the organic structure works best.
Decision-making	When the environment is stable, there is no requirement for complex decision-making that involves employees from lower levels. As a result, decision-making is centralized at the top of the organization.	When the environment is dynamic and uncertain, there is a requirement for complex decision-making that involves employees from lower levels. Consequently, employees in lower ranks become more participative in making decisions.

**Source:** Burns and Stalker, 1961.

Nevertheless, Burns and Stalker (1961: 124) believe that there is no purely mechanistic or purely organic structure in any organization but it moves toward one or the other. A mechanistic structure suits a stable environment while an organic structure

suits a turbulent environment. In short, the organization that adjusts to the requirements of the environment is the most effective structure. Regarding the study of organizational structure associated with knowledge transfer, the empirical study of Rapert and Wren (1998: 299) examined the effect of organizational structure on the workforce and one of the findings was that enhanced individual and organizational capability was associated with a low level of mechanistic structure by having less centralization and formalization.

### **2.2.2 People Factors**

People are another essential element that must be considered in managing knowledge in an organization. People are said to be true agents in business where tangible or intangible assets are the outcomes of human action. Moreover, outcomes depended ultimately on people for prolonged existence (Sveiby, 2001: 348). Lim and Klobas (2000: 428) asserted that the organization manages knowledge by having strong human resource policies. The importance of people factors is supported by Rubenstein-Montano et al. (2001: 6), who stated that people and culture are the main driving forces that define the success and failure of knowledge management initiatives in any business. In the organization, employees are now considered as important asset that can produce effective work, so they have to open out beyond what they have been done in the past and face new challenges to a broader outlook of an interconnected and interdependent world.

In Advisory, Conciliation and Arbitration Service (Acas) (1991: 39), there are several significant reasons about the important issues of people as follows:

- 1) People are an essential asset to be developed.
- 2) People are the main stakeholder in the organization.
- 3) People want to be productive and take pride in their work .
- 4) People have a requirement for recognition.
- 5) People have a requirement to influence decisions that affect the workplace.
- 6) Empowering people contributes to personal and organizational growth.

In contemporary society, the need of expedite skill acquisition is becoming more common so training settings are essential elements as a tool to improve the employee's capability in the organization. An organization provides training as a set of systematic and planned activities to provide employees with the necessary competences that meet current and future job demands. Training will enable employees to take a more proactive and effective role in developing, implementing and evaluating the work practices (Harrison, 2004: 782-783). In terms of enhancing individual and organizational effectiveness, Goldstein and Ford (2002, p.3) mentioned that training is a critical factor of the systematic approach to improve the basic skills of employees towards learning and development. Zaharias et al. (2001: 468) argued that employees gain knowledge from training and learning, and the knowledge gained can be applied to the organization's routines, processes, job descriptions, and plans and strategies. Constant training should be given to employees for improving their knowledge and capabilities. Regarding learner characteristics and the work environment, Baldwin and Ford (1988: 64) posited that training inputs are vital determinants of the conditions of knowledge transfer. In the research of Van Noy et al. (2008), it was concluded that the need for training to enhance employees' knowledge and skills promotes a shift in workforce demands to lifelong learning. Also, training can be a tool to meet the needs in a knowledge-based economy.

By having new knowledge, a broader strategic context of human resource management highlights the concept of employee training and development as a plan to support employee's education and development. To increase the competitive advantage and preserve the obtained positions, the organization is required to be able to create new knowledge by providing continuous employee training and development. Not only does employee training and development imply obtaining new abilities, skills and knowledge, but also entrepreneurship is promoted by introducing employees to changes, guiding them in important business decisions, supporting changes in their attitude, and entailing them in the decision-making process (Vemic, 2007: 210-211).

Regarding the types of training, Hill (2001: 182) categorized training into two types: on-the-job training and off-the-job training. On-the-job training is the specific training that works as a catalyst in the increment of salary while off-the-job training does not have much effect on the salary. Switzer and Kleiner (1996: 13) mentioned

that the range of training has been described by the application of the technology as “hard” (through computing technology) and “soft” (through instructional design). Considering IT training, Williams (2001: 64) stated that there are many approaches to the delivery of training, i.e. stand-alone terminals with remote instruction, computer based training (CBT), hypermedia training, simulations, distance learning, role playing and behavior modeling, learning networks, internet based training, etc.

Levine (1995: 53-54) affirmed that employees need to be trained in problem solving. For instance, employees need to have an ability to think "outside the box" in order to generate identifying problems and possible counter measures, analyze root causes, implement solutions, and check whether the solution actually works. In addition, employees can enhance modern organizational skills in many ways such as how to initiate work training effectively as a team.

In terms of the training program, it provides an opportunity to influence workplace performance if the skills, knowledge, and attitudes are not applied to the job. Not only do workplace training programs focus on learning, but also their programs improve the work culture, contribute to the retention among employees, and promote incentives for better performance at both individual and organizational levels (Holton, 1996: 10; Kim, 2004: 498). Effective training programs require good support from top management. Training provided to such organizations should map employees' and organizational needs. Furthermore, training should be provided at the proper time. If organizations are committed to an effort to train and to finance the training programs, it will definitely pay off in terms of increasing the employee's motivation, skill-sets and knowledge transfer (Pate et al., 2000: 150-151).

Regarding knowledge transfer strategies, Broad and Newstrom (1992: 7) emphasized that organization must take careful consideration by focusing on pre-training and post- training outcomes. The results should focus on sharing responsibility between the supervisor, trainer, and trainee in order to assure that active participation of all stakeholders exists through the application on the job.

In contrast, Smith (2001: 311) argued that employees with a lack of adequate training fail to keep up with their work. To be most effective, according to Levine (1995: 59), companies should combine training in creativity and design solutions that include opportunities for validation and dissemination of new ideas. Therefore,

it is vital for the organization to have proper training programs to enable employees to obtain more knowledge and contribute to the creation of knowledge transfer within the organization.

Apart from training, Davenport and Prusak (2000: 33-34) mentioned that a number of indispensable incentives, as well as the necessary information technology support, are needed to build an effective external knowledge transfer. Churchill (2013) added that incentives are a great way for organizations to reach their employees in terms of performing in an appropriate and appreciated manner. Not only do employees work to improve the livelihood of the individual worker, but they also help to improve the livelihood of the organization as well. In addition, incentives need to be tailored to the particular desires and needs of the individual workplace. When the proper incentives are put into place, the results are easily noticeable and the organization will run much more smoothly. If incentives are not in place, the possibility arises that money will be lost by investing in unsuccessful and damaging incentives. With having good incentives, employees are able to take part in the success of the organization and feel like they are an integral part of the organization and the work which takes place within it.

In psychology, there is a great amount of literature covering the effect of financial incentives on both extrinsic and intrinsic motivation. Extrinsic motivation refers to motivation induced from direct external needs. It is most importantly through monetary compensation. On the other hand, intrinsic motivation refers to the motivation in performing a task or activity for its own sake when there is no apparent reward except for the activity itself. This type of motivation is induced by internal needs such as satisfaction, honor, pride, and decency (Frey and Osterloh, 2005: 101-102).

The “crowding out effect” has been a major criticism of the use of financial incentives on intrinsic motivation. It can be explained that monetary rewards reduce task-specific intrinsic motivation, which leads to a reduction of intrinsic effort (Osterloh et al., 2001: 234; Deci, 1971: 114). The cognitive evaluation theory is a major theoretical argument supporting this claim because it assumed that people have psychological desire regarding self-competence and determination (Ryan and Deci, 2000: 70). The reason is because external rewards would decrease intrinsic motivation. Thus, the desire for self-determination and competence is less satisfied. On the other side,

intrinsic motivation would be enhanced if external rewards were seen as reinforcement and informative feedback and were predicted to satisfy the demand for employee's competence (Osterloh et al. 2001: 234-235).

Regarding the work of experimental economists, another effect called "disappointment effect" could be occurred when a subject's reaction of financial reward being offered and then had been removed (Fehr and Falk, 2002: 717). When employees believe that they are entitled to a previously-paid reward but the reward is removed, disappointment and loss aversion would influence their motivational force. As a result, it is essential to understand the perceived limitations of financial incentives in order to motivate employees. Moreover, one needs to be aware that financial incentives or extrinsic rewards could provide limited ability to generate great forms of trust and cooperation (Fehr and Falk, 2002: 720). If the employee's intentions were perceived to be suspicious, the financial incentive system could not succeed easily (Benabou and Tirole, 2002: 516). Regarding the study of Osterloh et al., 2001: 237, other intrinsic motivators such as praise, acknowledgement, and encouragement could be tools to foster cooperation between employees. Likewise, intrinsic motivators have the potential to complement explicit financial incentives. Therefore, the management regarding both extrinsic and intrinsic motivation is an essential task to be concerned about when production is intensive, such as with a complex/large project.

Levine and Gilbert (1998) stated that, in order to create an environment that encourages the generation of new ideas, managers should pay attention to policies such as incentive pay for new ideas generated by groups or individuals. As a result, these policies can motivate employees to remain in the organization. Additionally, an organization should give credit to employees that generate creative ideas and spend energy sharing what they know. Extra incentives will be helpful when employees are in different units without common objectives. Incentives are a tool to encourage employees to create new ideas that are beneficial for others within the organization. Both monetary rewards and recognition can lead employees to be more open to information so sharing knowledge is valued by the organization. For example, managers give rewards for subordinates' participation or top management offers incentives to employees that generate creative projects for the organization. Regarding the study of the incentive design of management, Drake (2006) indicated that sharing rewards presented a positive relationship in

acquiring knowledge in the workplace. The reward will work perfectly well to induce all of the knowledge recipients for learning and enhancing employee's skills. In another study, Ko et al. (2005) concluded that extrinsic motivators such as pay and promotion were not significant determinants of knowledge transfer. However, it appeared that the most effective motivators for knowledge transfer depended on intrinsic motivators such as satisfaction or the individual's desire for the results.

In terms of work teams, Marshak and Radner (1972: 34) introduced important ideas into team-based incentive systems. They pinpointed that appropriate incentives can align team members' interests within the organization with two common incentive systems, which are paid employees and profit sharing incentive structures. According to Holmstrom (1979: 75), in the team with multiple agents, group incentive cannot achieve high competence or efficiency without breaking the budget-balancing constraints.

### **2.2.3 Information Technology**

Information technology is the application of telecommunication equipment and computers to store, transmit, retrieve and manipulate data usually in the context of a business or other enterprises. Technology is considered as the most effective tool for storing, capturing, disseminating and transforming information. Most literature reviews indicate that technology is a key factor in implementing and supporting successful knowledge management and contributing to an organization's effectiveness. Furthermore, information technology serves as an essential element in organizational structure, particularly with the regard to the creation of new knowledge and supported cooperation between separate parts within the organization (Gold et al. 2001: 198-199).

Blurton (1999) has stated that Information and Communications Technology (ICT) is a set of technological tools and resources that are utilized in the form of creating storing, communicating, disseminating, and managing information. In an increasingly globalized world, ICT plays a significant role in people's lives and in economics. Also, ICT is a vital component for various countries to enter into the "new economy," sometimes referred to as the "information society" or "knowledge-based society" (Daniels, 2004: 122). Last, information technology plays a central role in knowledge transfer within the organization. ICT can be said to be an enabling mechanism in order to promote knowledge transfer activities. Also, it can be explained that groupware, group

support systems, and computer-assisted communication technologies such as email, voicemail, video conferences, and the intranet and Internet can be used for knowledge sharing (Alavi and Leidner, 2001: 123-124; Huber, 1991: 89).

According to the United Nations (2013), ICT is a key factor for the organization in order to become more effective and efficient in performing its work. The availability of and developments in technology can have a powerful influence on knowledge transfer. Moreover, the organization should have capable ICT staff to meet ever-increasing demands of ICT as well.

Information technology plays a crucial role in terms of breaking down infrastructure boundaries that create the interaction and collaboration between individuals within an organization. The important role of information technology is the ability to support communication among employees, search for new knowledge, and enable collaborative learning (Marwick, 2001: 814). Information technology can be classified into two types. They are communication technology and decision-aiding technology. There are many forms of communication technology, such as e-mail, online chat, audio/video conferencing systems, discussion databases, and the intranet and Internet. This type of technology helps to reduce space and time constraints in communication, expands the depth and range of information access, and ultimately enables knowledge sharing more rapidly and conveniently (Song et al., 2001). Additionally, information technology enables communication and collaboration among people regardless of hierarchical boundaries and physical distance (Roberts, 2000: 430). Consequently, communication technologies can promote coordination between people and ease relational communication that creates effective knowledge transfer (Alavi and Leidner, 2001: 129). Another type of information technology is decision-aiding technology, which helps individuals to create models and develops solutions and alternatives in work tasks. Also, this type of technology includes various functions such as retrieving and storing large amounts of information ever faster and combining data more accurately (Song et al., 2001).

Information technology has revolutionized the entire business world by forcing organizations to improve knowledge outcomes. IT has become a tool for the innovative ability within organizations to systematically create, share, synthesize, acquire, and use insightful information. Organizations which are capable of operating

these valuable resources can successfully convert ideas into great value in the business, gain competitive advantage among others, and achieve business goals. As a result, managing knowledge assets is very important and beneficial for organizations that depend on smart people and extensive flows of ideas and information (Hansen et.al., 1999: 108).

Davenport and Prusak (2000: 52-53) has stated that information technology has already become a vital part of knowledge management. There are many kinds of technologies and information systems that support knowledge management processes, such as storage, transfer, creation, and application of knowledge. For example, neural networks, which are data mining techniques, find new patterns in data and increase knowledge creation. Other techniques such as knowledge repository databases that store and retrieve knowledge, knowledge directories, discussion forums, electronic bulletin boards, and other knowledge networks that are accurate and efficient in transferring knowledge. Additionally, advanced tools in information technology (e.g. web and internet systems, collaborative computing, virtual interaction, and immersion environments) have revolutionized the content and format of knowledge transfer, facilitated knowledge capture and sharing, and eliminated constraints of time and space.

To obtain more knowledge, Bloodgood and Salisbury (2001: 59) have stated that employees should be able to access computer facilities easily and conveniently. Having good technology can eliminate barriers between parts of the organization and allow cooperation among employees even in separate parts of the organization (Gold et al., 2001: 198). Technology can also enhance knowledge management by putting the right knowledge to the right person. Additionally, technology can improve employee's communication in the workplace. The richness of communication allows knowledge employees to more effectively communicate with each other than they were able to do in 10 years previously (Davenport and Prusak, 2000: 55).

In terms of employees, they can access technology in many ways. For instance, employees can use technology through organization networks, information databases, hardware and software, or any relevant terminal equipment. An organization's knowledge management is beneficial by having the support of technological tools. However, each organization might not use the same technological tools in order to accomplish their goals. Consequently, there is no correct technology that suits each organization (Alavi and Leidner, 2001: 133-134).

Apart from the access to technology, Teece (2000: 36-37) mentioned that employees' abilities or skills in ICT provide opportunities to work with one another as well as independently to perform and accomplish a variety of tasks. To be considered as an ICT literate, employees need to acquire various skills. Moreover, employees can obtain ICT know-how by have computer literacy and existing know-how information by means of written communication. The more knowledge and skills employees acquire, the more knowledgeable they will be in utilizing all of the ICT facilities and the better the creation of knowledge transfer will be. As a result, it is important to be computer literate in the world these days because it enables employees to acquire basic skills and knowledge and to become an essential part of the workforce in any ICT-equipped environment. With the aforementioned, many studies have stated that information technology is a significant predictor that has a positive effect on knowledge management capabilities (Gold et al., 2001). Additionally, Lee and Choi (2003) indicated that IT support is found to be a significant factor, which assists employees in the work procedures in terms of the acquisition, integration, processing, synthesis, and dissemination.

In short, every aspect of human activity is impacted by the ongoing revolution in the field of ICT. There are some differences in terms of the access to ICTs such as the Internet and computers, which have created a "digital divide" between people that can receive the benefit provided by ICTs and the people that cannot (Jung et al., 2001: 515).

### **2.3 Empirical Studies on the Critical Factors of Knowledge Transfer**

Previous empirical research studies in support of the framework of this study include organization structure, people factors, and information technology in the improvement of the individual's capability to transfer knowledge. These studies are sources for the construction of a model for the analysis in this study. They are as follows.

Sopko (2010) studied the variables involved in transferring tacit and know-how knowledge from retiring workers in U.S. This study focused on the variables that were used to transfer tacit and know-how knowledge in order to maintain efficiency and sustainability in a government agency while experiencing significant knowledge loss due to workers' retirements. The research found that many variables such as training, computers, and skills have a significant impact on the transfer of tacit and know-how knowledge.

Peachery (2006) studied the effects of cultural, climate, structural and technological factors on the extent of sharing knowledge. Among all of these variables, the researcher found that there as no significant impact on organization culture or structure which influenced the extent of knowledge transfer. However, technological capability was on significant predictor revealed in this study.

Managing knowledge assets in the organization in the role of incentives and information systems was studied by Zhang (2005). The study reported that incentives are necessary not only to induce workers to exert best efforts but also to achieve the desirable knowledge management properties, such as knowledge sharing, full knowledge transfer, and truthful reporting of knowledge levels. Apart from the incentives, information technologies also have a significant impact on knowledge sharing and learning within a team. Information technology increases the amount of sharing and learning within the team. As a result, having a level of information systems will allow the firm to achieve optimal profit. In summary, appropriate reward structures and necessary IT support provide sufficient trust for knowledge providers to share their knowledge in the organization.

Regarding the study on analysis of knowledge management implementation effectiveness, Warangkana Jakawattanakul (2007) mentioned that the variables associated with the concept of policy implementation are political will, resources, the implementer's attitude, incentives, and the implementing agency's capacity. The results, particularly focusing on incentives, indicated a direct relationship with the knowledge management implementation effectiveness. Even though the impact showed a small influence, it was beneficial to the employees that were in a high position in the revenue department's head office.

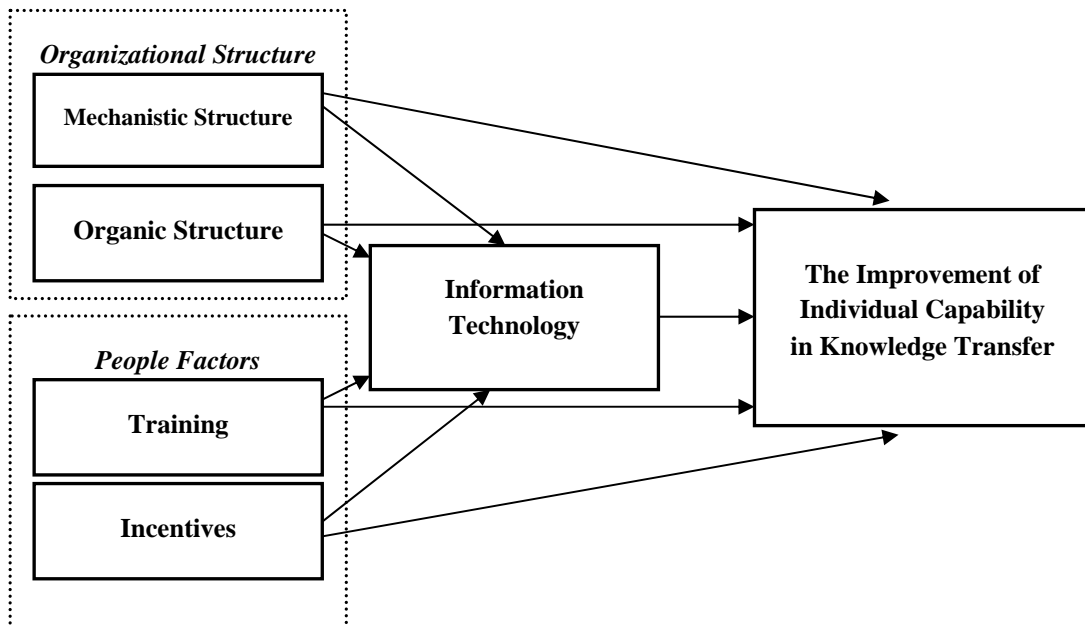
Facteau et al. (1995) studied the impact of social support on training motivation and transfer. By utilizing self-support with more than 950 trainees, it showed that the supervisor's support of training improved the learner's motivation to learn and to attend the training. Also, trainees increased greater transfer of knowledge when peers and subordinates supported their training efforts.

A multi-center study of knowledge transfer was carried out by Holton et al. (2003), and was conducted with three organization types, eight organizations, and nine training types. Moreover, the study included profit, non-profit, and public sector employers.

The study not only indicated statistically-significant differences in transfer systems across training and organization types, but also found that trainees showed a significant weakness towards organizational transfer systems.

A study on training and knowledge transfer was carried out in Thailand by Yammill and McLean (2005) using a translated version of the LTSI, including 1,256 employees in 552 government and private organizations. The type of organization illustrated the greatest variance in the perceive transfer system factors between employees, particularly between private and government organizations.

## 2.4 Proposed Model for Analysis



**Figure 2.5** Proposed Model for Analysis

### 2.4.1 Dependent Variable

The dependent variable is the improvement of individual capability in knowledge transfer.

### 2.4.2 Independent Variables

The independent variables are organizational structure (mechanistic structure and organic structure), people factors (training and incentives), and information technology.

## **2.5 Research Hypotheses**

Hypothesis I: Mechanistic structure, organic structure, training, and incentives are likely to have positive effects on information technology.

Hypothesis II: Mechanistic structure, organic structure, training, incentives, and information technology are likely to have positive effects on the improvement of the individual's capability in knowledge transfer.

## **CHAPTER 3**

### **AIRPORTS OF THAILAND PUBLIC COMPANY LIMITED**

This chapter discusses the general information about AOT, including its history, business character, the planning of AOT, policy, and objectives. Moreover, this chapter presents independent variables (organization structure, information technology, and people factors) that influence the improvement of individual capability in AOT's knowledge transfer.

#### **3.1 History**

Prior to the setting up of the Airports of Thailand Public Company Limited on 17 December 1903, the Wrights Brothers succeeded in flying an engine aircraft which was the real beginning of flying in the world. As a result, various nations were quick to appreciate the future importance of flying. Eight years later, a Belgian pilot, Van den Born, flew to Thailand, taking the "Orville Wright" to perform the first flight from 2 – 8 February 1911 at Sa Pathum Horse Racing Course, now known as the Royal Bangkok Sports Club.

Thailand displayed an active interest in having airplanes for self-protection and air transport. On 28 February 1911, Thailand sent three officers to train in France. They were Major Luang Sakdi Sanlayawut (Sunee Suwanprateep), Captain Luang Arwut Sikikorn (Long Sinsuk), and First Lieutenant Tip Ketuthat. All three officers attended a flying training course in France where flying was at an advanced stage of development.

Having completed their training, they also visited many places in Europe and returned to Thailand on 2 November 1913 with eight airplanes that the Thai government had ordered. The four Breguets and four Nieuports were the first batch of Thai aircraft. Fittingly, the three new pilots became the first group of pilots in Thailand and were honored to be the forefathers of the Royal Thai Air Force.

The Ministry of Defence transferred the aviation activities to be under the command of the Army Engineer Inspector General Department and then a temporary hangar was constructed in back of the Police Patrol School, Pathumwan. Today, this is the location of the Police Department. Part of the Sa Pathum is constructed in back of the Police Patrol School, Pathumwan. Part of the Sa Pathum Horse Racing Course, called Sa Pathum airfield, was Thailand's first airport.

Don Mueang (International) Airport (also the former Bangkok International Airport) is one of the airports located in Bangkok. The airport was officially opened on March 27, 1914, although the field had been in use earlier. The main field before the opening of Don Mueang International Airport was the Sa Pathum airfield. On September 28, 2006, the airport was replaced by Suvarnabhumi Airport. At that time, the airport was only in use for charter flights.



**Figure 3.1** Main Office of Airports of Thailand Public Company Limited

Don Mueang was an important hub of Asia and the hub of Thai Airways International and had the most air traffic in Thailand. As of 2005 more than 80 airlines served the airport and over 38,000,000 passengers, 160,000 flights, and 700,000 tons of cargo were handled at this airport per year. In 2005 it was the 18th busiest airport in the world and the 2nd in Asia by passenger volume.

Don Mueang is a joint-use facility with the Royal Thai Air Force's Don Mueang Royal Thai Air Force Base, being the home of the RTAF the 1<sup>st</sup> Air Division, consisting primarily of non-combat aircraft. Vibhavadi Rangsit Road is the main route linking the airport with downtown Bangkok. Besides the possibility of traveling by

road, there is train service connecting to Hua Lamphong station in the center of town. The railway station is across the highway and is linked with the airport by a walkway bridge.

Within a month of transferring to Suvarnabhumi Airport, several low-cost airlines were asked to move back to Don Mueang. The Airports of Thailand resisted the move and the government's Department of Aviation rejected the plan. As Suvarnabhumi Airport is currently operating at high capacity, the idea of re-opening Don Mueang International Airport for low-cost airlines was being considered to help ease the traffic at Suvarnabhumi Airport.

In addition to its current use as a terminal for charter flights, military aircraft and civil aviation at Don Mueang might become a hub for aircraft maintenance (Airports of Thailand Public Company Limited, 2013).

### **3.2 Business Character**

The Airports of Thailand Public Company Limited (AOT) was corporatized from a state enterprise, namely the Airports Authority of Thailand (AAT), to be a public limited company on September 30, 2002. AOT is a leader of Thailand's airport business. Its main business lines are managing, operating, and developing airports. Presently, AOT has 6 international airports under its responsibility, which are Don Mueang, Phuket, Chiang Mai, Hat Yai, Mae Fah Luang - Chiang Rai, and Suvarnabhumi Airports. All of these airports accommodate both domestic and international flights. With the opening of commercial operations on September 28, 2006, Suvarnabhumi Airport serves as the main airport replacing Don Mueang International Airport, because Don Mueang International Airport was unable to accommodate the overwhelming air traffic growth. During the initial stage, Suvarnabhumi Airport had the capacity to accommodate up to 45 million passengers and 3 million tons of cargo per year. Within a single hour, the airport can operate up to 76 Flights (AOT, 2012b: 34-35).

AOT is a shareholder in the nine companies which provide services related to AOT's business, namely as Suvarnabhumi Airport Hotel Company Limited, Airport Duty Free Company Limited, Thai Aviation Refueling Company Limited, Phuket Air Catering Company Limited, Airport Associated Company Limited, Don Mueang

International Airport Hotel Company Limited, Bangkok Aviation Fuel Service Public Company Limited, Thai Airports Ground Services Company Limited, and Trade Siam Company Limited.

AOT's operating revenues mainly comprise aeronautical and non-aeronautical revenues. The aeronautical revenues include landing charges, parking charges, passenger service charges, and aircraft service charges. The non-aeronautical revenues include concession revenue, office, and real property rents and service revenues. In the management of airport operations, AOT has to acquire external operators to provide some required ground services for passengers as agreeable under contracts with AOT. They are, for example, Thai Airways International Public Company Limited and Thai Airports Ground Services Company Limited. The operators of retail shops, warehouse facilities, limousines, parking services, and other conveniences have to pay for concession fees, and rent and service charges. Other non-contract tenants running services within AOT airports pay rent and service charges to AOT (AOT, 2012a: 40-41).

### **3.2.1 AOT Expertise in Airport Operation Management**

Regarding to management, AOT management team has accumulated employees' experiences and excellent expertise in airport operation, including airport development planning and airport improvement to meet required international standards and to be able to respond to various clients' needs. To enhance AOT's competitive edge in the international arena and to achieve the ambition in order to set Thailand as an aviation hub in Southeast Asia, AOT has developed the following strategies:

#### **3.2.1.1 Airport Development for Competitiveness**

The commencement of Suvarnabhumi Airport for full commercial operations on September 28, 2006 was a significant strategy in increasing national competitiveness in the world arena. As becoming the well-known international airport in Thailand, Suvarnabhumi is fully equipped with facilities and highly-efficient modern technology as well as has international standard security measures. Initially, the airport was able to accommodate up to 45 million passengers per year. When the airport is developed to its full potential, it will be able to accommodate up to 100 million passengers per year. Mapping out the strategic plans during the fiscal years

2006-2008, AOT aimed that Suvarnabhumi Airport will achieve a 1 out of 10 in the international world-ranking airports with the highest number of passengers. Moreover, AOT would like to upgrade its airport service quality to the world-class level, which will enable Suvarnabhumi Airport to compete with other international airports.

#### 3.2.1.2 Role of Airports in National Logistic System Development

The opening of Suvarnabhumi Airport has a main purpose to drive the airport forward toward a national logistic system. With free zone cargo management, the freight transportation and cargo management at Suvarnabhumi Airport will be quicker, and more convenient and efficiency. As a result, it has boosted growth in cargo transportation through Suvarnabhumi, and has increased Thailand's competitive potential in the air transport industry. For regional airports, AOT will swiftly develop strategies that support logistics and tourism while implementing expansion of these airports and increased routing networks to cover all corners of the globe. In short, AOT will establish Thailand as a logistic hub in air freight to the greater Mekong sub-region countries and the countries in South Asia. Meanwhile, Phuket and Chiang Mai International Airports will be developed to be the regional gateways of the country (AOT, 2012a: 29-30).

### 3.3 Planning of AOT

#### 3.3.1 Vision

“Airports of Thailand Public Company Limited is Asia’s Leading Airport Business”

#### 3.3.2 Mission Statement

Every airport under AOT’s management will be operated with outstanding service standards and will be equipped with service-oriented personnel as well as the right technology for each customer group. AOT intends to accomplish this with good accountability to all stakeholders including the surrounding community, society, and environment.

### 3.3.3 Core Values

3.3.3.1 Safety and security are the core values of AOT's operations.

3.3.3.2 Mind of Service is essential for AOT's operations. AOT recognizes the importance of the meaning of "service" and is willing to serve clients with "Service in Mind."

3.3.3.3 AOT pays attention on cooperation among workers. So, good teamwork and unity are essential to continue AOT's growth.

3.3.3.4 Continuous learning is crucial for AOT's business. AOT is eager to learn what is going on in the changing environment in order to strengthen its competitiveness with others. Additionally, AOT intends to improve its knowledge and skills in response to the changes brought about by globalization.

3.3.3.5 AOT focuses on transparency and accountability. AOT is fully responsible for actions which impact the stakeholders, customers, business partners, society and the country (Airports of Thailand Public Company Limited, 2013).



**Figure 3.2** Suvarnabhumi Airport and Airside

### 3.4 AOT Policy

3.4.1 AOT maintains and develops services to serve as a great international airport.

3.4.2 AOT creates intensive driving development as well as builds good operations and more facilities to all users at Suvarnabhumi Airport.

3.4.3 AOT prepares and supports a new organizational structure to manage and operate Suvarnabhumi Airport effectively.

3.4.4 Marketing has been used in order to increase AOT's revenue (Airports of Thailand Public Company Limited, 2013).

### **3.5 AOT Objectives**

3.5.1 Safety and security is the heart of operations.

3.5.2 Service with conscious understanding is the meaning of service.

3.5.3 AOT's employees work together as a harmonious team, focusing on the organizations' goals rather than personal goals.

3.5.4 Employees' willingness on learning develops knowledge of operations and provide better performance.

3.5.5 Determining transparency and a sense of responsibility to customers, shareholders, social partners, and the nation is essential to AOT's achievement (Airports of Thailand Public Company Limited, 2013).

### **3.6 AOT's Organizational Structure**

Regarding AOT's structure, the management is operated under AOT's Board of Directors. Based on AOT's articles of association state, AOT must be managed by a committee comprising at least 5 directors but not more than 15 directors elected by the shareholders in a shareholders' meeting. Additionally, the number of independent directors must not be fewer than three and must be at least one third of the total member of directors. Half of the total number of directors must reside in the country and the directors' qualifications must be complied with the law as well as AOT's articles of association. At least one director must also be an expert in accounting and finance (AOT, 2012a: 43).

Presently, AOT still uses the fiscal year (beginning with the 1<sup>st</sup> of October through the 30<sup>th</sup> of December). As of 30 September 2012, the names of AOT's Board of Directors were as follows:

**Table 3.1** Names of AOT's Board of Directors

<b>Number</b>	<b>Name</b>	<b>Position</b>	<b>Date of Appointment</b>
1.	Air Chief Marshall Sumet Photimanee	- Chairman - Independent Director	29 September 2011
2.	Police Major General Peerapan Premabhuti	- Vice-Chairman - Independent Director	29 September 2011
3.	Police Major General Montien Prateepavanich	- Independent Director	20 June 2012
4.	Mr. Pongsak Semson	- Independent Director - Chairman of Audit Committee - Member of Nomination Committee - Member of Risk Management Committee - Member of Corporate Governance Committee	14 March 2008
5.	Mr. Thanapich Mulapruk	- Independent Director - Member of Nomination Committee	17 February 2009
6.	Flying Officer Noranuch Ployyai	- Independent Director - Chairman of Nomination Committee - Chairman of Risk Management Committee - Chairman of Remuneration Committee	29 September 2011
7.	Mr. Wuttisak Lapcharoensap	- Independent Director - Chairman of Corporate Governance Committee	17 February 2009
8.	Mr. Arkhom Termpittayapisith	- Director	14 March 2008
9.	Mr. Somchai Poolsavasdi	- Director - Member of Remuneration Committee	13 October 2011
10.	Mrs. Chantima Sirisaengtaksin	- Independent Director - Member of Audit Committee - Member of Remuneration Committee	11 November 2011
11.	Mr. Thanin Angsuwarangsi	- Independent Director - Member of Risk Management Committee	11 November 2011
12.	Mr. Wattana Tiengkul	- Independent Director - Member of Risk Management Committee - Member of Audit Committee	29 September 2011

**Table 3.1 (Continued)**

<b>Number</b>	<b>Name</b>	<b>Position</b>	<b>Date of Appointment</b>
13.	Miss Porntip Paksanont	- Independent Director - Member of Corporate Governance Committee	11 November 2011
14.	Miss Sutthirat Rattanachot	- Director	27 January 2012
15.	Flying Officer Anirut Thanomkulbutra	- Director and Secretary - President - Member of Risk Management Committee - Member of Corporate Governance Committee	

Regarding the members of The Board of Directors, it consists of 2 groups. They are groups of the directors and the independent directors. However, the qualifications of both groups are different. In accordance with the Article 5 of the Standard Qualifications Act for the Board of Directors, Companies Act, and State Enterprise Officials (Issue 6) in 2007 and AOT's regulations, the qualifications of the directors are seen below:

- 1) Not over 65 years of age
- 2) Holding director position at fewer than 3 state enterprises
- 3) Have never been given a prison sentence by the supreme court except for offenses committed by negligence or petty offences.
- 4) Not a state official, with the exception of director positions allowed by law.
- 5) Do not hold a position of director or official position in political parties.
- 6) Have never been discharged from state offices due to malfeasance.
- 7) Not a shareholder of a state enterprise or its legal entity.
- 8) Do not hold a position in any legal entities where the state enterprise is a shareholder, except for positions assigned by the Board.
- 9) Not a director, executive, or stakeholders of concessionaries or joint ventures of a state enterprise. Also, the directors must not be involved in the

interest of a state enterprise, except the chairman, directors, and executives assigned by the state enterprise (AOT, 2012a: 44).

However, in conformity with AOT's regulations pertinent to the number of independent directors, the number of the Board of Directors must be at least one-third of the total numbers of directors and must not be fewer than 3. In 2012, AOT's Board of Directors consisted of 11 independent directors, which were more than the required number according to the regulations. The organization imposes stricter qualification requirements than the minimum requirements stipulated by the Stock Exchange of Thailand (SET) and the Securities and Exchange Commission (SEC). AOT has stipulated the independent directors' qualifications according to AOT's Board and the Corporate Governance Committee opinions as follows:

- 1) Independent directors are entitled to less than 0.5% of the total voting shares of AOT, associated and affiliated companies and legal entities, which may have conflicts of interest.

- 2) Independent directors must not be involved with any management and must not be advisors or employees with a monthly salary, legal consultants, audit consultants or any other types of advisor. Furthermore, they are not to be persons with authority over AOT, associated or affiliated companies or legal entities that may have conflicts of interest. Also, they must not have stakes or benefits in such a manner for at least 2 years.

- 3) Independent directors must not have any business relationships as trading partners, customers, financial creditors/debtors, or trade creditors/debtors with the company. Furthermore, independent directors must not have direct or indirect benefits in the finances or management of AOT, or associated and affiliated companies or legal entities, which may have conflicts of interest that may diminish their independence in the performance of their duties.

- 4) Independent directors must not have relationships or be relatives, which may have conflicts of interest. Moreover, this can impede the independency of the management and major shareholders of AOT, associated and affiliated companies and legal entities. Additionally, independent directors should not be appointed to represent or protect the benefits of major shareholders or any directors in AOT.

5) Independent directors may be assigned duties by AOT's Board of Directors to make decisions on the business operations of the subsidiaries, same-level affiliates, parent company and legal entities with conflicts of interest by means of collective decisions (AOT, 2012a: 44).

Besides the Board of Directors, AOT's Board appoints sub-committees to screen important tasks based on AOT's regulations. The term of office is one year starting from the period during the annual general meeting of shareholders in the appointed year to the annual general meeting of shareholders in the following year (AOT, 2012a: 50). The sub-committees' responsibilities are stipulated in five charters as follows:

### **3.6.1 The Audit Committee**

The Audit Committee is appointed by the Board, which comprises at least three directors. At least one director possessing financial and accounting competence. This committee must also possess qualifications as required by securities and stock of exchange laws (AOT, 2012a: 50). As of 30 September 2012, the Audit Committee was comprised of 3 independent directors as follows:

**Table 3.2** Names of the Audit Committee Members

<b>Name</b>	<b>Position</b>
1. Mr. Pongsak Semsan	Chairman of Audit Committee (Independent Director)
2. Mrs. Chantima Sirisaengtaksin	Member of Audit Committee (Independent Director)
3. Mr. Wattana Tiengkul	Member of Audit Committee (Independent Director)

### **3.6.2 The Nomination Committee**

Based on AOT's Articles of Association, the Nomination Committee is appointed by AOT's Board. The committee must consist of at least three directors. At

least one director must be independent (AOT, 2012a: 52). As of 30 September 2012, the Nomination Committee was comprised of three members that are all independent directors as seen below

**Table 3.3** Names of the Nomination Committee Members

Name	Position
1. Flying Officer Noranuch Ployyai	Chairman of Nomination Committee (Independent Director)
2. Mr. Thanapich Mulapruk	Member of Nomination Committee (Independent Director)
3. Mr. Pongsak Semson	Member of Nomination Committee (Independent Director)

### 3.6.3 The Remuneration Committee

AOT's Board appoints the Remuneration Committee, which comprises at least three directors. At least one director must be independent. The chairman in the committee must be an independent director while the other two members must be experts, have knowledgeable, and be capable of performing in the committee (AOT, 2012a: 52). As of 30 September 2012, the committee consisted of 3 members as follows

**Table 3.4** Names of the Remuneration Committee Members

Name	Position
1. Flying Officer Noranuch Ployyai	Chairman of Remuneration Committee (Independent Director)
2. Mrs. Chantima Sirisaengtaksin	Member of Remuneration Committee (Independent Director)
3. Mr. Somchai Poolsavasdi	Member of Remuneration Committee

### 3.6.4 The Corporate Governance Committee

Based on AOT's Articles of Association, the Corporate Governance Committee is appointed by AOT's Board. The committee must comprise at least three directors with at least one director being independent (AOT, 2012a: 52). As of 30 September 2012, the committee consisted of 4 members, three of which are independent directors as seen below

**Table 3.5** Names of the Corporate Governance Committee Members

Name	Position
1. Mr. Wuttisak Lapchareonsap	Chairman of Corporate Governance Committee (Independent Director)
2. Mr. Pongsak Semsan	Member of Corporate Governance Committee (Independent Director)
3. Ms. Pornthip Paksanont	Member of Corporate Governance Committee (Independent Director)
4. President	Member of Corporate Governance Committee

### 3.6.5 The Risk Management Committee

The Risk Management Committee is appointed by AOT's Board, which consists of at least three directors (AOT, 2012a: 53). As of 30 September 2012, the committee was comprised of 5 members as follows

**Table 3.6** Names of the Risk Management Committee

<b>Name</b>	<b>Position</b>
1. Flying Officer Noranuch Ployyai	Chairman of Risk Management Committee (Independent Director)
2. Mr. Pongsak Semsan	Member of Risk management Committee (Independent Director)
3. Mr. Thanin Angsuwarangsri	Member of Risk Management Committee (Independent Director)
4. Mr. Wattana Tiengkul	Member of Risk Management Committee (Independent Director)
5. President	Member of Risk Management Committee

With aforementioned, the management structure under supervising by the Board of Directors including the current of all AOT departments, it can derive organizational chart as seen below:



AOT's organizational structure emphasizes the specialization and the clear division of tasks. Normally, each department has its own duties and job descriptions to work in accordance with AOT's processes. However, in some cases, several departments will have an opportunity to work together if AOT launches a new project and it requires staff from many departments to it. For example, if the board of directors has a new policy to create a new medical program for AOT staff, there are lots of departments that must be involved in this project such as the Legal Department, the Human Resources Management Department, the Medical Department, the Budgeting Department, the Accounting Department, and the Finance Department. Regarding work duties, the Legal Department will revise the medical regulations for AOT and execute new rules in terms of having new medical benefits. The Human Resources Management Department will be the center to join information from every department and report the progress of the project to the policy makers. The Medical Department will offer suggestions about new medical benefits to project teams in order to make the right project decisions. Last, the Budgeting Department, Accounting Department, and Finance Department will control AOT's expenses.

Although the organizational structure looks rigid because it indicates clear departments under AOT management's chart, some situations allow several departments to work together that will construct the good cooperation across departments and are likely to bring achievement to the organization.

### **3.7 People Factors at AOT**

AOT realizes the importance of human resources because people are invaluable assets and are the driving forces of the organization in order to attain sustainable success, especially during the time of rapid change and complication. Therefore, AOT stresses "Human Resource Development," which is an essential tool for airport management, coping with changes, and creating value for the organization. The operational skills of human resources must be developed in accordance with the achievement in air transportation international standards so that the company can become Asia's leading business airport (Airports of Thailand Public Company Limited, 2013).

AOT has dedicated the development of human resources potential according to international standards and to increase business growth by developing Suvarnabhumi Airport, regional airports, and extending Don Mueang International Airport's commercial activities. These will drive forward the organization in order to fulfill the vision and achieve sustainable success. Because AOT regards employees as one of the key factors for AOT's success, it is vital to pay attention to how to increase their productivity.

The organization sets plans to enhance the capability of employees at all levels on an ongoing basis throughout the year. One of the main actions is to provide effective training. With training, AOT has launched plans every year in order to level-up the capability of employees (AOT, 2012b: 116). For example, AOT's plans for the year 2011 and 2012 were illustrated in detail below.

Regarding the year 2011, AOT's (2012) defined constant and additional implementation of training of human resource development as follows

1) The successive training courses under the Annual Human Resource Development Plan were:

(1) Airport courses such as the Orientation Program, Airport Operations, and the three levels of Airport Management, i.e. primary, intermediate, and advance level.

(2) Operation courses such as the Private Pilot License (PPL), Instrument Rating Ground (IRG), Accident/Incident Investigation and Root Cause Analysis, Airport Safety the Review of Body Armor Practice, Review of the Baggage Conveyor System, the Review of Emergency Lighting System, etc.

(3) Business and general management training courses such as the International Financial Reporting Standard of the Board and Officers, Foreign Languages (Japanese, Korean and Chinese), IT Auditing, Occupational Safety Regulations, Work Manual, etc.

(4) Courses for AOT's Board of Directors and senior executives such as the Justice Management Program, the Director Accreditation Program, the State Enterprises' Policy Office's Quality Appraisal System Seminar, Thailand Development Research Institute's Reduction of Inequality and Business Opportunity Seminar, etc.

(5) Overseas training, seminars, and conferences such as the International Visitors Leadership Project, Senior Crisis Management Seminar and Advance Imaging Technology International Policy Summit in the United States, ACI Asia-Pacific Human Resources Best Practice Seminar in Malaysia, the 28<sup>th</sup> ASEAN International Airports Association Conference in Singapore, etc.

2) Additional projects/training courses

(1) AOT's Public Airports Managers Program

This program enables the general manager and deputy general manager of AOT's airports to understand the standards, laws and procedures of public airports and comply with regulations of the Board of Directors of Civil Aviation.

(2) The training program under sister airports agreements between Suvarnabhumi Airport and other international airports for officers in the organization

This program is designed to provide airport officers with an opportunity to learn, exchange ideas and experiences, develop capabilities, and be prepared to cope with various airport operations. AOT has signed sister airport agreements with the following airports 1) Munich International Airport by sending employees to attend on the job training (OJT) workshops on aviation marketing and terminal services. 2) Korea's Incheon Airport by sending employees to attend courses on airport planning and design, airside operations, and customer satisfaction.

(3) State Enterprise Performance Appraisal (SEPA) Program

This program provides executives and employees with knowledge, understanding and correct practice of SEPA's appraisal of the State Enterprise Policy Office (SEPO). Furthermore, it enables executives and employees to develop the system within the organization required by the SEPA.

(4) AOT's Competency Development Program

This program is designed to serve AOT's corporate plan and management strategies for high efficiency plan and the Strategic Improvement Plan (SIPs) on human resources development. The aims of this program are to improve AOT's competency model, i.e. core competency, managerial competency, and functional competency as well as apply the competency system to manage human resources in the organization.

(5) AOT's English Program for Employees through Self-learning via Tell Me More on E-learning

This program is designed to enhance English skills of the frontline employees and promote the self-learning method, which encourages AOT's becoming a learning organization (AOT, 2012a: 117-119).

In fiscal year 2011, AOT had 48 human resource development programs/training courses with 4,216 participants (AOT Annual Report, 2011: 119). The statistics on providing courses are shown as follows:

- 1) Airport management training
  - (1) 112 programs/training courses or 26.17%
  - (2) 1,127 participants or 26.75%
- 2) General management training
  - (1) 78 programs/training courses or 18.22%
  - (2) 746 participants or 17.10%
- 3) Functional and operations training
  - (1) 165 programs/training courses or 38.55%
  - (2) 1,612 participants or 38.24%
- 4) Soft skills training
  - (1) 73 programs/training courses or 17.06%
  - (2) 731 participants or 17.31%

Later, AOT continued emphasizing the development of its personnel to build employees' competency in managing and operating the airports according to standards on air transportation of domestic and international agencies; namely, the Department of Civil Aviation, International Civil Aviation Organization (ICAO) and other international aviation standard services offices such as the Federal Aviation Administration of USA: FAA, etc. In addition, training emphasizes integrated cooperation regarding resources and practices for the utmost benefits of the aviation service agencies under the Ministry of Transports as well as preparing its personnel for the upcoming ASEAN Economic Community (AEC) in 2015, where tourism and aviation will be one of the Thailand's major responsibilities. Therefore, employees' competency will be the major force that drives the organization forward in order to fulfill its visions and achieve business success. Regarding training, it will also

promote Thailand's good image to all member countries and at the international level in terms of airport management (AOT, 2012a: 109).

Regarding the Annual Report (2012), the human resource development of AOT for fiscal year 2012 was carried out according to the annual human resource development plan and AOT master plan on human resource administration and development, called Annual Human Resource Development Plan. This plan conducts internal training courses seminars and sends personnel to attend training/seminars/lectures/courses organized by training institutes, government agencies, and overseas with the objectives to provide every level of AOT personnel with the ability to be capable, knowledgeable, skillful and have potential in airport management in the following fields:

- 1) Airport courses such as the Orientation Program, Public Airport Manager Course, Airport Operation, and three levels of Airport Management Course, i.e. primary, intermediate and advance level.

- 2) Airport management courses such as the Aviation Assets Management, Airport Master Planning, and Airport Management.

- 3) Operation courses such as the Instrument Rating Ground (IRG), Private Pilot License Course (PPL), Airport Safety Management System (for primary, intermediate and advance level), 3M Training Course, Aerodrome Physical Standard Annex 14, Review of the Use of Personal Firearms and Dangerous Goods Technical Course, etc.

- 4) Business and general management training courses such as the State Enterprise Performance Appraisal (SEPA), Translation Quality Assessment (TQA) Criteria, Preparation Courses for joining the ASEAN Economic Community, Foreign Languages Courses (Japanese, Korean and Chinese), IT Auditing, Extreme Marketing, Logistics and Transportation Development, and Risk Management and Internal Control.

- 5) Courses for the AOT's Board of Directors and senior executives such as the Corporate Governance for Directors and Top Executives of State Enterprises Public Organizations, Corporate Governance for Middle Management, Director Accreditation Program (DAP), Company Secretary Program (CSP), Public Economy Management for Senior Executives, The State's National Defense in

Collaboration with the Private Sectors, Military Chief of Staff, Air Force College, Military College and Naval College, Transport Managerial Courses (primary and intermediate), Advanced Justice Management Courses for Senior Executives, Advance Insurance Courses, and Finance for Non-Finance Executives.

6) Overseas training and conferences and seminars, such as the Airport Operation Course in Korea, Airport Carbon Management in Korea, Security Risk and Crisis Management in Singapore, Aviation Security Instructors Certification in Malaysia, ICAO Regional Workshop on Airport Pavements Design of Evaluation in People's Republic in China (PRC), IATA Slot Conference in Spain, and ACI-Asia Pacific Regional Operational Safety Committee in Singapore (AOT, 2012a: 109-111).

By comparing the years 2011 and 2012, it shows that some of the main courses are still provided every year because they are the cornerstone of the AOT's business. However, AOT tries to offer extra courses both in administration and operation courses in order to support more knowledge for the employees. With more knowledge, employees will definitely enhance their capabilities in order to increase AOT's achievement.

Besides the training that AOT provides to employees in order to increase the knowledge transfer, incentives are another crucial factor that is quite essential as well. AOT makes an effort by using incentive systems through extrinsic or intrinsic motivations in order to encourage employees to share knowledge to obtain goals and gain personal satisfaction from doing the job. Examples of extrinsic motivation are increased salaries, bonuses and promotions. Examples of intrinsic motivation are the application of more "soft" instruments such as acknowledgements or personal development. Regarding AOT, both kinds of incentives are part of their personal development plan (Airports of Thailand Public Company Limited, 2013). Examples of AOT's actions in terms of offering incentives are listed below:

1) Incorporate sharing of personnel competencies - this action allows cross-functional employees to work together under the cooperative plan of AOT. For example, executive operation employees the know airport operations well will teach and share knowledge with administrative employees either in terms of theory or practice.

2) “Send” employees to conferences/meetings and ask for reports - this action is beneficial in terms of knowledge sharing because only one person that has been sent to the conferences can share all of the details via written reports. In this way, other employees will be able to gain similar knowledge from the report that has been submitted.

3) Reward employees for ideas that are picked up by others. For instance, AOT will reward personnel or group work in creating the AOT provident fund logo or the Suvarnabhumi Airport logo. This can lead AOT employees in terms of sharing ideas or creating new innovation for AOT’s symbol of unity.

4) Reward employees that become an AOT’s idol of the year - this kind of incentive will reward employees that have created good value and innovative ideas for AOT. Behavior of idol is publicized to other employees. In this way, all employees will know about the behavior of the rewarded person via the published details either from the intranet or the AOT website. Presently AOT offers several types of rewards to AOT’s employees as follows:

(1) AOT’s yearly awards - these types of awards are given to 2 groups of employees, which are best employees and outstanding employees. Regarding the awards, there are 3 objectives. First of all, this award can create conditions in which employees are willing to work with initiative interest and enthusiasm. The second objective is to build a positive work environment and to foster a spirit of healthy competition by honoring dedicated or deserving employees. Finally, this award is part of the things which increase loyalty of employees within the organization. Specifically, the person that receives this type of award must exhibit excellent behavior, administrative work, and demonstrate good self-governance. An example of this type of award is Ms. Sopinpan Raiwa, Senior Airport Officer, who has been working in the one-stop service center at Suvarnabhumi Airport. She received this award because of her work with a good service mind, was willing to give a great assistance to every passenger with friendliness and never received any complaints from the passengers. Another type of award is given to the outstanding employee. The person that receives this award must have outstanding or conspicuous performance. An example of this type of award is Mr. Charnarong Kierkit, Airport Security Officer, who caught a thief at the airport and found cash amounting to \$50,000, including a golden necklace.

(2) The employees of the month reward in every department - this reward will be given to employees in order to motivate them to become as a role model for others, to show good capability to others, and to let others make an attempt to be a role model as well. Regarding Suvarnabhumi Airport, there are two kinds of motivations that AOT gives to employees: the employee service excellence awards and the team service excellence awards. Employees that are eligible to receive these awards must contribute to the company's success and serve customers without being asked for help. An example of employee service excellence awards is Ms. Wanlabha Pattawichaiporn, Airport Services Officer. She has devoted herself to offering excellent service to passengers. One instance was when an Austrian passenger lost his passport and was unable to check in at the immigration counter. She decided to contact luggage service, called the center to make an announcement about losing the passport, and informed the airline as well as the Austrian Embassy. She managed to ask for all possible help, although her regular work hours had passed. Furthermore, she provided food, drinks, and an SIM card for the passenger so that he could contact his family members. For almost 24 hours with her effort, the passenger then got help from the Embassy by issuing a temporary passport on the next day and was able to enter the country. In addition, AOT has given rewards for team service for excellent performance. Every team will get the appreciation from passengers for providing outstanding service in the airport and are suitable for receiving AOT's honorable rewards. Examples of this are the Landside Operation Department, Service Delivery Support Department from Thai Airways, Smile Teams from Loxley-ICTS Consortium and Passenger Service Team from Bangkok Airways (Airports of Thailand Public Company Limited, 2013).

### **3.8 Information Technology at AOT**

In terms of information technology, AOT makes an attempt to increase the level of high technology by providing information facilities as much as possible in order to satisfy employee's needs and to create a comfortable work environment. Presently, AOT provides computers for almost everyone, especially employees that work in the office and require the use of a computer for their duties. Regarding the

information technology system, AOT has created a management information system (MIS), including 20 minor systems, for real use located at the main office (Don Mueang) and has continually expanded the scope of the use of the MIS system to the regional airports (Chiang Mai International Airport, Mae Fah Luang - Chiang Rai International Airport, Hat Yai International Airport, and Phuket International Airport) in order to create system linkage between the head office (Don Mueang) and all regional airports in terms of sending and retrieving information with high efficiency (AOT, 2012a: 15).

The MIS system is composed of the IT work system, and the system can be divided into 3 groups. The first group is called the administrative and finance work group. This group uses a package program for developing the work flows in the organization. This program is flexible and can evaluate results as an integrated system. The second group is called the airport operation work group. This group uses a package program as the basis for developing the work flows in the organization, which is a system for administrative management within the airport providing airline information. The last group, called the supportive airport business work group, provides support to the first two groups; however, all 3 groups can link all of the information via the MIS system (AOT Information Technology Master Plan, 2012: 15).

As can be seen from the above, AOT has continually developed its information technology system to support all of its electronic work such as the Internet, intranet, e-mail, e-document, e-meeting, drawing storage management system, medical registration, information technology for executives, etc. Moreover, AOT has developed a system in order to support its connection with state agencies and private institutes in accordance with the government policy (AOT Information Technology Master Plan, 2012: 15).

Regarding Suvarnabhumi Airport, which is the main business unit of AOT, AOT has created a modernized technology system for the management in order to make Suvarnabhumi Airport one of the international airport leader in the world. Also, this modernized system will operate efficiently the administrative management of the airport. For example, AOT has provided and installed a management system and information technology for the airport under the project “Airport Information Management System (AIMS)” and other projects that will be beneficial to AOT’s

business. Additionally, AOT has provided work systems that are designed and mainly focus in terms of connection and exchange of information automatically under the AIMS project such as the Flight Information Display System (FIDS), the Closed Circuit Television System (CCTV), the Visual Docking Guidance System (VDGS), the Access Control System, etc. (AOT Information Technology Master Plan, 2012: 15-16). The main system under the AIMS project is composed of 10 systems as follows: 1) Flight Information Management System (FIMS) and Airport Operational Database (AODB) 2) Common Used Terminal Equipment (CUTE) 3) Passenger Baggage Reconciliation System (PBRs) 4) Enterprise Resource Planning (ERP/AMDB) 5) Local Departure Control System (LDCS) 6) Central Monitoring System (AIMS View) 7) Website and E-business System 8) Integration Platform 9) Report System

Moreover, AOT has applied the administrative management system to an airport's free zone called the Airport Cargo Community System (ACCS). This system will be very useful for users because it is extremely convenient and can make quick process of airport cargo operations. Also, this system is composed of various minor systems, including a connection process with customs' EDI system (AOT, 2012b: 16).

Because AOT recognizes the tendency toward information technology improvement in the near future, the overall target image of information technology system has been defined with 4 targets under AOT's information technology master plan (year 2011-2014). First, AOT emphasizes the unity and integration of information technology within the organization. Second, AOT highlights the readiness in developing its core business applications along with operating business process management and airport operations. Third, AOT pays attention to the development and management of information technology together with IT governance theory (IT governance theory is composed of governance, risk, and compliance). Last, AOT adjusts its organization work process of information technology in order to support new changes for the organization. From all 4 target images, it can be seen that AOT has established an information technology system that can be developed into 5 groups. They are the Strategic Management Group, the Airport Operation Group, the Back Office Group, the Exchange and Communication Group, and the Infrastructure and Support Group (AOT, 2012b: 63).

In terms of developing and adjusting the 5 groups of the information technology system, effective management of information technology is required. Therefore, management must have productive work groups in order to increase the potential of the IT administrative management, support development, and administrative management of AOT information technology as well as develop the potential of IT for AOT's employees (AOT, 2012b: 63). To illustrate the overall development plan of each group, it can be clarified as follows:

1) Strategic Management Group: The purpose of developing information technology for this group is to support strategy focusing of service excellence, information excellence, and governance. Regarding the main idea of developing information technology in this group, it is to push AOT forward as the organization that drives strategy effectively, integrates good governance, copes with risk management, and operates workflows under laws and regulations. As a result, this can make AOT a modern organization that fully utilizes the information technology system. The type of strategic management, administrative organization, and the use of information technology has become essential tools for AOT's success. To shape the right direction of the organization under this group, AOT has determined 4 development plans for its information technology. They are the Strategic Management Plan, the Data Infrastructure Plan, the Customer Relationship Management Plan (CRM), and the Governance and Risk Compliance Plan (GRC).

(1) The Strategic Management Plan: This is a plan for developing information technology that supports the strategic management of AOT. This plan provides a convenient system for executives to analyze and make decisions in various management situations. The system displays proper reports from multidimensional viewpoints and the reports present the right information and at the right time. Moreover, the information is very useful for executives to make decisions in business terms and the system for this plan is more modernized than the AOT current system. Furthermore, this plan covers information technology in relation to financial planning and budgeting, which is an essential tool for helping the organization to convert strategy into the fulfillment of AOT's purposes.

(2) The Data Infrastructure Plan: This is a plan for developing the integration of various databases into a type of ready database information. This plan

was developed along with data governance in order to obtain standard information and unity, which creates good quality information technology. Also, these databases seem to be an information technology center in order to manage the system effectively. Examples of database information are Enterprise Planning and Management (EPM), Governance, Risk Management and Compliance (CRC), Business Intelligence (BI), and Customer Relationship Management (CRM).

(3) The Customer Relationship Management Plan (CRM): This is a plan to manage successful customer relationships and to implement them in real use. With this plan, AOT must develop strategies for customer relations as well as an information technology system to support the customer relations process. If AOT manages good relations with customers and other stakeholders and provides excellent information technology, it definitely will upgrade the services and create more customer satisfaction for AOT.

(4) The Governance and Risk Compliance Plan (GRC): This is a plan to support and develop administrative management along with Good Corporate Governance (GCG). This plan creates long-term reliability for AOT by developing an integrated function system that supports governance and risk management, together with AOT regulations.

The overall work system in the Strategic Management Group is newly developed. However, the success of developing the work system of this group has been realized by the users and the timing of development is suitable (AOT, 2012b: 64-66).

2) The Airport Operation Group: The purpose of developing information technology for this group is to support strategy focusing on airport excellence and service excellence. The information technology system under this group supports airport operations and provides services to passengers and entrepreneurs. To shape the right direction of the organization under this group, AOT has created 5 development plans for information technology. They are the Flight Information Plan, the Passenger Processing Plan, the Baggage Information Plan, the Resource Planning and Monitoring Plan, and the Free Zone Plan.

(1) Flight Information Plan: This is a plan for an information technology system that deals with managing aeronautical information in order to

support good operations, such as providing aeronautical services and flights, calculating aeronautical revenues, evaluating flight information and analyzing the details of management. Furthermore, this plan covers the resource planning of the airport, including even long-term, short-term, daily, and post-operations and data analysis plans. In terms of development, this plan employs modern ideas to be applied to airport management, such as the Terminal Operations, a New Generation Airport Operational Database (AODB), the Resource Management System (RMS) and Web-based and Rich Internet Applications (RIA). All of these modern ideas provide distinct benefits, which also provide AOT with a modern and unique system. This system can be applied to all airports because it can consolidate and evaluate information very quickly and conveniently. In the beginning of the development stage, it reduces several redundant processes by decreasing much of the manual work. Moreover, this plan focuses on specifying similar standard operation processes for every airport under the AOT management.

(2) Passenger Processing Plan: This is a plan to prepare the readiness for the procedure of issuing tickets, which is of course very important for the airport management process. AOT must provide excellent service for every airline. Under this plan, there are many information technology systems, such as Commonly-Used Terminal Equipment (CUTE), Commonly-Used Self Service (CUSS), Commonly-Used Passenger Processing (CUPP), Application Service Provider (ASP), and e-Check-in and Commonly-Used Back Drop.

This plan has 3 essential targets. First, it provides exact requirements for every airline, provides reliable service, and offers other options to the airlines when needed. Second, AOT invests in an excellent information technology system for the airport and plans to receive revenues from users. Third, this plan must match with the airport standards and follow the changes regarding the airport industries.

(3) Baggage Information Plan: This is a plan to adjust related systems in checking the passengers' baggage before boarding and developing a system to manage, which is called the Baggage Sorting Message (BSM). The purpose of the development of this plan is to provide a work system that meets the airline requirements, increases the management of information through the system of Baggage Sorting Message. This system can reduce problems of message loss by

providing the correct information to passengers in order to check their baggages. The plan can sort baggage through the Baggage Handling System (BHS) and can check passengers' baggage before boarding. Presently, this system has been used only at Suvarnabhumi Airport; however, AOT will develop this plan for the regional airports in the near future.

(4) Resource Planning and Monitoring Plan: This is a plan to develop an information technology system in order to support administrative management and airport integration, both at the terminal and airside. This plan focuses on airports that have a high quantity of air traffic and passengers. Presently, this plan has already been applied to Suvarnabhumi Airport and Phuket International Airport. With the plan, the Airport Operation Center is installed in order to manage the air traffic and the flow of passengers. The system under this plan provides a connection or receives information from every department and then evaluates the overall current results of the service for every flight. Moreover, this system provides facilities in passenger terminals such as check-in counters or passport checking. Last, this system notifies information to related departments in terms of joining and managing services on time. There are numerous benefits from developing a system under this plan. First, it can be followed up and problems of allocating resources can be solved in order to increase the efficiency of airport management. Moreover, this system can increase the comfort and satisfaction of the passengers.

(5) Free Zone Plan: This is the plan to adjust the information technology system concerning the Airport Cargo Community System in order to support work processes and the rules of e-customs and support import-export in the Suvarnabhumi Airport free zone. In addition, this plan can develop the capability of supporting connections with the information technology system of air transportation for both domestic and international flights. Last, this plan represents an attempt to make Suvarnabhumi Airport the Air Cargo Hub in the Asia in the near future. Examples of the work system under this plan are the Cargo Management System and the Back Office System. The benefits from this information technology under this plan are working along with the rules and regulations of Airport Customs and providing a basic structure for stakeholders (AOT, 2012b: 66-69).

3) Back Office Group: The purpose of developing information technology for this group is to support strategy focusing for internal process excellence and human capital excellence. To shape the right direction for the organization under this group, AOT has created 3 development plans for information technology. They are the Enterprise Resource Plan (ERP), the Administration Plan, and the Knowledge Management Plan. All of these plans are handled by the management, focusing on the business process. The Enterprise Resources Plan provides a system of management for a transaction-based system. The Administration Plan provides a system of management for a non-transaction or content-based system. Last, Knowledge Management Plan provides a system that is related to knowledge management within the organization and the process of increasing the skills and capabilities of employees. All 3 development plans are illustrated below:

(1) The Enterprise Resource Plan: This is the plan to develop a human resource system within the organization called the ERP. The main idea of this plan is to integrate standard work system, so employees must work at the same standards within the organization. Furthermore, this plan will focus on problem solving concerning how to use the system efficiently. Last, this plan will develop every function in the system in order to fulfill the needs of users and support new rules and standards such as International Financial Standards (IFRS), etc. Moreover, this plan generates 3 benefits. First, AOT can make adjustments to work processes so that they are more efficient and continually developed to be a good model in the future. Second, AOT is well-prepared for every function in order to use information technology system efficiently. Last, AOT information technology can be a unified system and become an enterprise-wide integrated system in the near future.

(2) Administration Plan: This is a plan for supporting an administrative, modernized work system and for increasing efficiency at work. This plan focuses on conformity in the work system and defines proper work steps. For example, this system includes a method of recording the work time of employees or managing the sequence of e-documents. There are 3 benefits for the organization. First, this plan provides an automatic work process. Second, it reduces hard copy documents and the time of working. Last, this plan is very convenient and safe for users.

(3) Knowledge Management Plan: This is a plan to support accumulative knowledge and to develop the self-learning of employees. As a result, employees can apply their knowledge in terms of implementing their work and improving success within the organization. There are 3 benefits of this plan. First, this plan develops organization into a learning one. Second, employees can share knowledge within the organization systematically. Third, the expenses of the information technology training are reduced (AOT, 2012b: 69-71).

4) Exchange and Communication Group: The purpose of developing information technology for this group is to support the strategy focus on service excellence only. Therefore, this group sheds light on the service of providing information and applies an electronic channel in order to increase the efficiency of work and communication. To shape the right direction of the organization under this group, AOT had created 2 development plans for its information technology. The first plan is a Web Portal and e-Service. The second plan is about personnel and group communication.

(1) Web Portal and E-Service Plan: This is the plan to develop an information technology system for providing information services via many types of electronic channels, such as a Web Portal or communication system. This plan is designed to serve the needs and satisfaction of employees, customers, the airlines, entrepreneurs, and passengers.

(2) Personnel and Group Communication Plan: This is a plan to develop information technology for communication among individuals or within groups in order to fulfill the needs and satisfaction of employees and customers within the organization (AOT, 2012b: 71-72).

5) Infrastructure and Support Group: The purpose of developing the information technology for this group is to support the strategy focusing on infrastructure excellence only. This group emphasizes developing and adjusting the basic structure in every function to become modernized, safe and sufficient at work. It covers the network system, the security system and any other instruments concerning the information technology system. This group focuses on providing sufficient tools and instruments for users in every workplace unit in the organization. Furthermore,

this group develops and adjusts the efficiency of the main network to become modernized and proper for the organization. Last, this group makes an attempt to provide easy management by using virtualization technology. Under this group, 2 development plans have been created. The first plan is the Infrastructure and Support Plan and the second plan is the IT Security and Audit Plan.

(1) Infrastructure and Support Plan: This comprises of 4 minor plans. 1) Data Center and Disaster Recovery Center: This minor plan is to adjust the data center and disaster recovery center in the main office (Don Mueang) and Suvarnabhumi Airport. 2) Airport Network System: This is a plan to adjust the network system, the security system, and the connection system both inside and outside the organization. 3) Hardware and Peripherals: This is a plan to adjust all of the computer tools and information technology instruments. 4) Infrastructure Control and Management: This is a plan to adjust any actions for on controlling and managing all of the basic structures such as computer virus, etc.

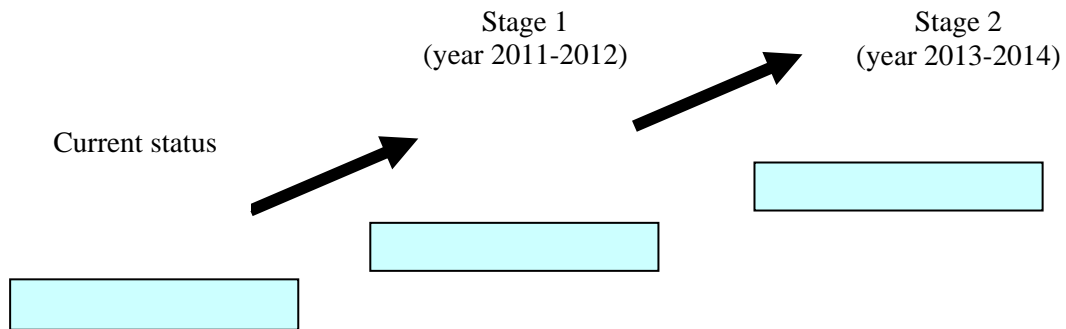
(2) IT Security and Audit Plan: This is the plan to develop and adjust IT policy in terms of evaluating and analyzing business risks. Moreover, this plan develops a stability process for information technology in order to conform to the standards and regulations of ISO/IEC 27001:2005 (AOT, 2012b: 72-73).

Regarding the time frame for developing the information technology system, AOT's information technology master plan is divided into 2 stages. There are many reasons that are essential for establishing the developing stages, such as the time frame of development, urgent work, etc. The 2 stages of the AOT information technology master plan are described below:

1) First stage: This was the stage between the years 2011 and 2012 . The information technology system at this stage had already been provided for employees by the year 2012. Examples of successful development in the first stage are the Enterprise Data Warehouse, Time Attendance, Enterprise Resource Planning (ERP), and the Website and Intranet Portal.

2) Second stage: This represents the long-term development of AOT's information technology master plan. Some parts of the information technology system must be added and developed within this stage. There are many work systems that are

going to be developed and used in real work. They are the systems of IT for airport operations, business intelligence, CRM, and EDMS (AOT, 2012b: 73-74).



**Figure 3.4** Development Stages of AOT's Information Technology Master Plan

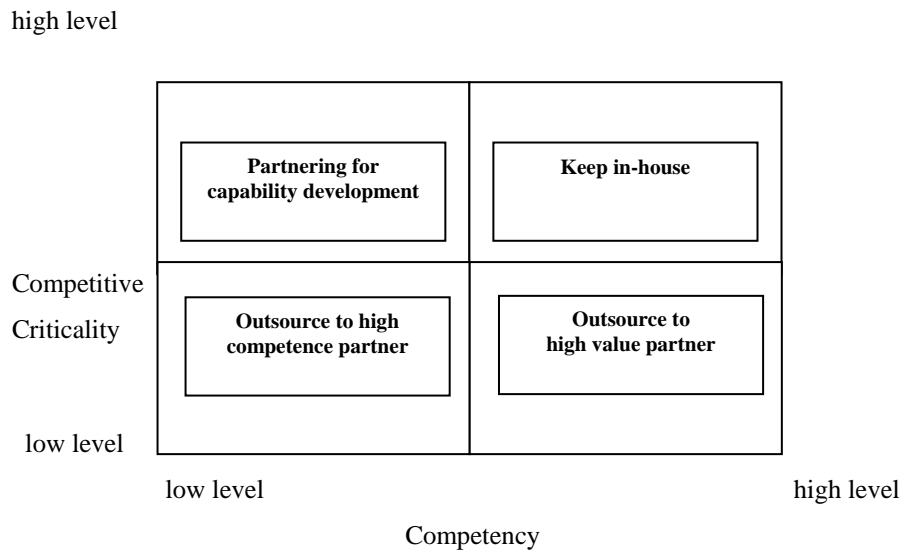
Regarding the direction of developing and providing an information technology system, AOT has continually changed its method from self-management and self-investment to other methods. For example, AOT uses business process outsourcing, which means that AOT hires another company to deal with some of its business activities, either in terms of management or maintenance. Examples of an outsourcing system are the CUTE system or website system. In general, there are 3 options for developing and providing AOT's information technology system. They are In-house development, partnering, and outsourcing. Each option still has its own minor level of development as follows:

The first option is in-house development. This is the type of IT development that uses a lot of money for the first investment because AOT must have to buy all of ground systems and other requirements for the IT system. Examples are hardware, licenses, and training and expenses in support of maintenance in the first stage. In the next stage, there are more expenses in terms of maintenance of hardware, software, licenses, and upgrading of the system. Furthermore, AOT may have another expense in adjusting features and functions along with the needs of users. Besides the direct expenses of in-house development, changes in information technology in many industries are of concern as the risk that AOT will need to follow the changes and adhere new standards along with the new technology development.

Second option is partnering. It is the degree of cooperation that AOT and its partner will have more or less depends on the requirement of the organization. One example is short-term partnering between AOT and another company. The purpose is to adjust the work process in order to create organizational capability. Then, AOT may apply this process to the development of the organization in the next stage.

Last option is outsourcing. It is the type of IT development, which does not require the investment of a lot of money in the first stage but the expenses are in the form of monthly or yearly payments to the outsourcing company. AOT only makes a payment when the IT system has been developed, installed and is ready to use. Outsourcing is beneficial because it can reduce the risks that may occur when there are lots of changes in technology, and AOT needs to update its information technology along with these changes. However, the overall costs for outsourcing are higher than in-house development through the duration of usage (AOT, 2012b: 74-75).

It is essential for AOT to choose the suitable option for the type of developing and providing information technology system. In order to fulfill the IT master plan, there are 2 factors that AOT needs to be concerned about. First, AOT must pay attention to the IT competency level, which covers the current skills and IT competency within the organization. Second, AOT must understand the work process and risk management that can become a competitive edge within the business.



**Figure 3.5** Strategy for Providing Information Technology System

In general, the organization must provide in-house development if the work process is very important for the business strategy and if the organization has already gained lots of knowledge and skills in the work process. The organization must use its partnering in order to create or develop organizational capability if it does not have any knowledge or skills about information technology. Last, outsourcing is suitable for the organization if the work process is less important for the business strategy and if the organization personnel have little knowledge or skills regarding information technology (AOT, 2012b: 75-76).

## **CHAPTER 4**

### **RESEARCH METHODOLOGIES**

To accomplish comprehensive and meaningful findings, this research used a quantitative approach, which is a method that is used to standardize measures that fit diverse opinions and experiences into predetermined response categories to provide statistical aggregation of data. This study focuses on the factors influencing the improvement of individual capability regarding knowledge transfer. Furthermore, the study provides additional suggestions by asked open-ended questions in order to receive more opinions from respondents that would be beneficial for the research.

In this chapter, the researcher focuses on the methodologies. This chapter includes: 1) the population and sampling procedure; 2) operationalizations of the independent and dependent variables; 3) the tests of validity and reliability of the questionnaire; 4) collection of the data for this research; and 5) analyses of the collected data.

#### **4.1 Population and Sampling Procedure**

The population is a total collection of group element and target population. The population is interested in describing and making statistical inferences. In a research project, the target population must be specified and relate to the research study (Cooper and Schindler, 2002: 98). Since the objective of the study was to examine the factors influencing the improvement of individual capability regarding knowledge transfer, the researcher targeted AOT employees that were involved in the improvement of individual capability in this regard. Therefore, the unit of analysis was at the individual level. In conducting this research study, the AOT employees consisted of six different airport units, which were located at Don Mueang (Main office), Suvarnabhumi, Chiang Mai, Mae Fah Luang-Chiang Rai, Hat Yai, and Phuket. The population of this study was 4,224 employees, which were divided into 1,323 employees at Don Mueang, 2,303 employees at Suvarnabhumi, 170 employees

at Chiang Mai, 106 employees at Mae Fah Luang - Chiang Rai, 142 employees at Hat Yai, and 180 employees at Phuket.

The survey study employed a random sampling procedure to obtain a sample in proportion to the size of AOT's different airport units. Each member of that population had an equal probability of being selected. In this study, the sample was drawn only from AOT employees. Zikmund (1997: 414) indicated that random sampling is the process of reducing a large population to a small number of items.

In addition, when the characteristic of respondents is homogeneous, the respondents from any areas can represent the total population. Although AOT had six different units, the respondents in the study were chosen only from Don Mueang and Suvarnabhumi Airports. The reason was because the number of employees at Chiang Mai, Mae Fah Luang-Chiang Rai, Hat Yai, and Phuket compared to Don Mueang and Suvarnabhumi was small. Therefore, the results would not have been different if the majority of the respondents were only from Don Mueang and Suvarnabhumi Airports.

For this study, the sample size was determined by using the theoretical sample size suggested by Taro Yamane (1973: 37), as seen in the table below.

**Table 4.1** Theoretical Sample Size for Different Sizes of Population

<b>Size of population</b>	<b>Percent of Error</b>
500	222
1,000	286
1,500	331
2,000	333
2,500	345
3,000	353
3,500	359
4,000	364
4,500	367

Because the majority of AOT's employees are working at Don Mueang (Main office) and Suvarnabhumi, the respondents were chosen from these two areas. Based on the information from the table, with the allowance for a sampling error of a 5% at 95% confidence level, the sample size of 4,224 AOT employees should be 367 respondents.

The researcher distributed 500 questionnaires to AOT the employees working at Don Mueang (Main main office) and Suvarnabhumi in April, 2013 and 460 questionnaires were returned. Even though some of the questionnaires had a few missing values, they still could be used in terms of statistical analysis. Therefore, the 460 questionnaires represented 92.0 percent of the population.

## **4.2 Operational Definitions and Measurements**

After the conceptual model was developed from various literature reviews and previous research that related to the factors influencing the improvement of individual capability regarding knowledge transfer, an operational definition of each variable needed to be determined in order to conduct the research. Each variable required both an operational definition and a measure. The following section explains the measurement scales of the dependent and independent variables used in this study.

### **4.2.1 Operationalization of Dependent Variable**

In this study, the dependent variable was the improvement of individual capability in knowledge transfer. A five-point Likert scale ranging from 1 - 5 was used to determine the degree of agreement of each item as: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. The level of measurement was ordinal scale.

**Table 4.2** Operationalization of the Improvement of Individual Capability in Knowledge Transfer

<b>Variable</b>	<b>Operational Definition</b>	<b>No. of Items</b>	<b>Question No.</b>
<b>Improvement of Individual Capability in Knowledge Transfer</b>	Knowledge that employee will be shared or work together in order to enhance the individual work skill	7	36-42

#### 4.2.2 Operationalization of Independent Variables

In this study, the independent variables consisted of mechanistic structure, organic structure, information technology, and training and incentives. All independent variables were measured by a five-point Likert scale ranging from 1 – 5 as: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The level of measurement of these variables was ordinal scale.

**Table 4.3** Operationalization of Mechanistic Structure, Organic Structure, Training, Incentives, and Information Technology

<b>Variable</b>	<b>Operational Definition</b>	<b>No. of Items</b>	<b>Question No.</b>
<b>Mechanistic Structure</b>	The degree of knowledge base for employees responding to the typical chain of command that relies on routine work processing and use	5	1-5
<b>Organic Structure</b>	The degree to which employees initiate change and become more participative in the organization	8	6-13

**Table 4.3** (Continued)

<b>Variable</b>	<b>Operational Definition</b>	<b>No. of Items</b>	<b>Question No.</b>
<b>Training</b>	The degree of a systematic or planned activity to enable employees to take a more proactive and effective role in the work practices	7	14-20
<b>Incentives</b>	Monetary rewards or recognition that can prompt employees to be more open with information and share information	8	21-28
<b>Information Technology</b>	The degree to which employees can access computer facilities easily and that are convenient within the organization	7	29-35

Additionally, the respondents' demographic factors were used in the questionnaire as shown in table 4.4, including gender, education attainment, working sites, tenure, and rank. Descriptive statistics were used to show information about these factors, although the factors influencing the improvement of individual capability in knowledge transfer were mainly focused on.

**Table 4.4** Operationalization of the AOT Employees' Demographic Factors

<b>Variable</b>	<b>Operational Composition</b>	<b>Level of Measurement</b>	<b>Question No.</b>
<b>Gender</b>	1) Male 2) Female	Nominal Scale	1
<b>Education Attainment</b>	1) Lower than Bachelor 2) Bachelor 3) Higher than Bachelor	Ordinal Scale	2
<b>Work Sites</b>	1) Main Office and Don Mueang Airport 2) Suvarnabhumi Airport	Nominal Scale	3
<b>Tenure</b>	1) < 1 years 2) 1 – 5 years 3) 5 – 10 years 4) > 10 years	Ordinal Scale	4
<b>Rank</b>	1) Level 3 - 4 2) Level 5 – 6 3) Level 7 – 8 4) Level 9 - 12	Ordinal Scale	5

### 4.3 Validity and Reliability Tests

#### 4.3.1 Questionnaire Design

The researcher designed the questionnaire based on the theories and empirical studies of several scholars found in the literature review. Furthermore, the questionnaire was reviewed and approved by the dissertation advisory committee.

#### 4.3.2 Pre-testing of the Questionnaire

One principle for improving validity and reliability is to use a pretest or pilot version of the measurement before applying a final version in the hypothesis-testing

situation. This process is likely to produce reliable measures even though it takes time and effort. Moreover, it will provide direct information and better material than providing mediocre material immediately. Kalaya Wanichbancha (2003: 27) stated that the number of respondents should be at least 25 to conduct a pre-test. In this case, the researcher attempted to remove the respondents' misunderstandings about the questions by testing validity and reliability of the questionnaire in order to achieve a higher percentage of representations. Therefore, 35 questionnaires were pre-tested by distributing them to 35 employees at Thai Airways International Public Company Limited, and 32 questionnaires were returned.

After the researcher analyzed the pre-testing responses, the questionnaire was revised in order to obtain higher validity and reliability. The items for each variable that were used in the questionnaire are shown in tables 4.5 – table 4.10.

**Table 4.5** Improvement of Individual Capability in Knowledge Transfer Items

<b>Construct</b>	<b>Items</b>
<b>Improvement of Individual Capability in Knowledge Transfer</b>	<ol style="list-style-type: none"> <li data-bbox="724 1182 1414 1272">1) When I learn something new, I like to share it with my colleagues. (Question no.36)</li> <li data-bbox="724 1294 1414 1384">2) I share regularly what I am doing with my colleagues. (Question no.37)</li> <li data-bbox="724 1406 1414 1496">3) My colleagues are willing to share or transfer the way they do things. (Question no.38)</li> <li data-bbox="724 1518 1414 1664">4) When my colleagues are good at something, they teach me how to do it where necessary and appropriate. (Question no.39)</li> <li data-bbox="724 1686 1414 1832">5) If my performance is not what it should be, my colleagues will help me to improve. (Question no.40)</li> <li data-bbox="724 1854 1414 1984">6) I regularly have conversations with my colleagues about how to improve my knowledge. (Question no.41)</li> </ol>

**Table 4.5** (Continued)

<b>Construct</b>	<b>Items</b>
	7) I engage in knowledge sharing or knowledge transfer among the individuals in my organization. (Question no.42)

For the first, second, fourth, and sixth items, the scales were based on what was indicated by De Vries et al. (2006). The third item was supported by Goh (2002). The fifth item was suggested by Argote and Ingram (2000), and the seventh item was from Garvin (1993).

**Table 4.6** Mechanistic Structure Items

<b>Construct</b>	<b>Items</b>
<b>Mechanistic Structure</b>	1) My organizational structure encourages interaction among employees. (Question no.1) 2) My organizational structure facilitates the transfer of knowledge across structural boundaries. (Question no.2) 3) My organization has processes to facilitate co-workers' knowledge exchange across functional boundaries. (Question no.3) 4) My organization uses technology that allows employees to collaborate with other persons inside the organization. (Question no.4) 5) My organization uses technology that allows for the search of new knowledge. (Question no.5)

The scale was based on what was offered by Walczak (2005) for the first item. The second and third items were used by Pugh et al. (1968). The fourth item was from Gold et al. (2001). Further, the fifth item presented in the scale was suggested by Davenport and Prusak (2000).

**Table 4.7** Organic Structure Items

Construct	Items
<b>Organic Structure</b>	<ol style="list-style-type: none"> <li data-bbox="639 730 1398 819">1) I am encouraged to share knowledge between project teams. (Question no.6)</li> <li data-bbox="639 842 1398 931">2) My organizational structure promotes collective rather than individualistic behavior. (Question no.7)</li> <li data-bbox="639 954 1398 1043">3) My organizational structure encourages employees to go where they need to for knowledge. (Question no.8)</li> <li data-bbox="639 1066 1398 1155">4) My organization has many cross-functional teams. (Question no.9)</li> <li data-bbox="639 1178 1398 1312">5) The structure in my organization is rather flat so employees can easily communicate ideas about their work across divisions or departments. (Question no.10)</li> <li data-bbox="639 1335 1398 1469">6) My organization uses technology that allows people in multiple locations to learn as a group from a single source or at single point in time. (Question no.11)</li> <li data-bbox="639 1491 1398 1626">7) My organization uses technology that allows people in multiple locations to learn as a group from multiple sources or at multiple points in time. (Question no.12)</li> <li data-bbox="639 1648 1398 1812">8) My organization uses technology that allows for the generation of new opportunities in conjunction with its partners. (Question no.13)</li> </ol>

The first and second organic structure items were supported by Burns and Stalker (1961). The third and fourth items were from Amiri et al. (2010). The fifth item that was shown in the scale was confirmed by Nonaka and Takeuchi (1995). Finally, the sixth, seventh, and eighth items were proposed by Nidumolu et al. (2001).

**Table 4.8** Training Items

Construct	Items
<b>Training</b>	<ol style="list-style-type: none"> <li data-bbox="639 730 1305 819">1) Training will increase my personal productivity. (Question no.14)</li> <li data-bbox="639 842 1283 931">2) With technology involvement, training will be effective. (Question no.15)</li> <li data-bbox="639 954 1350 1043">3) Technology provides additional data for learners to gain more knowledge in training. (Question no.16)</li> <li data-bbox="639 1066 1374 1200">4) I would understand less than I used if the training did not provided technology equipment (such as computers or projectors). (Question no.17)</li> <li data-bbox="639 1223 1347 1312">5) After training, I always share the knowledge I have learned with my colleagues. (Question no.18)</li> <li data-bbox="639 1335 1390 1424">6) My colleagues encourage me to use the new skills that I have learned in training. (Question no.19)</li> <li data-bbox="639 1447 1390 1536">7) The methods used in training are similar to how we do it on the job. (Question no.20)</li> </ol>

The first item in the scale was confirmed by Holton (1996). Bloodgood and Salisbury (2001) suggested the second, third, and fourth items. For the fifth and sixth items, they were proven by Baldwin and Ford (1988). The last item was supported by Broad and Newstrom (1992).

**Table 4.9** Incentives Items

<b>Construct</b>	<b>Items</b>
<b>Incentives</b>	<ol style="list-style-type: none"> <li data-bbox="639 461 1398 600">1) My organization provides appropriate monetary rewards for employees that help to implement changes. (Question no.21)</li> <li data-bbox="639 622 1398 712">2) Appropriate incentives are provided to encourage knowledge sharing/transfer behavior. (Question no.22)</li> <li data-bbox="639 734 1398 869">3) Incentives are visibly rewarded to the person/ work group that shares knowledge in the organization. (Question no.23)</li> <li data-bbox="639 891 1398 1025">4) Incentives are visibly rewarded to the person/ work group that uses knowledge in the organization. (Question no.24)</li> <li data-bbox="639 1048 1398 1137">5) Incentives are given to employees with emphasis on group performance. (Question no.25)</li> <li data-bbox="639 1160 1398 1249">6) Incentives for employees are communicated personally. (Question no.26)</li> <li data-bbox="639 1272 1398 1361">7) Incentives for employees are communicated within group-related work. (Question no.27)</li> <li data-bbox="639 1384 1398 1592">8) Technology (such as computers, the organization's network system) plays an essential role in informing us about motivational information within the organization. (Question no.28)</li> </ol>

The first item was from Frey and Osterloh (2005). Churchill (2013) confirmed the second item in the scale. The third, fourth, sixth, and seventh were proposed by Levine and Gilbert (1998). The fifth item was proven by Marshak and Radner (1972). Furthermore, the eighth item was recommended by Davenport and Prusak (2000).

**Table 4.10** Information Technology Items

Construct	Items
<b>Information Technology</b>	<ol style="list-style-type: none"> <li data-bbox="662 456 1385 600">1) I have access to technology that allows me to locate specific knowledge that helps me in my job. (Question no.29)</li> <li data-bbox="662 622 1385 712">2) I have access to technology that allows me to search for knowledge. (Question no.30)</li> <li data-bbox="662 734 1385 878">3) I have access to technology that allows me to use knowledge about my organization's products and services. (Question no.31)</li> <li data-bbox="662 900 1385 990">4) I have access to technology that allows me to access organizational knowledge. (Question no.32)</li> <li data-bbox="662 1012 1385 1102">5) I have access to technology that allows me to systematically store knowledge. (Question no.33)</li> <li data-bbox="662 1124 1385 1267">6) I have access to technology that allows me to collaborate with people inside the organization. (Question no.34)</li> <li data-bbox="662 1290 1385 1433">7) I have access to technology that allows me to collaborate with co-workers regardless of location. (Question no.35)</li> </ol>

Blurton (1999) suggested the first item. The second and third items were supported by Davenport and Prusak (2000). The fourth and fifth items were offered by Daniels (2004), and Gold et al. (2001) confirmed the sixth and seventh items.

### 4.3.3 Validity

It was essential to spend time focusing on validity in order to gain accurate and valid results. Validity concerns whether an indicator truly captures the meaning of the construct in the study which relies on it (Neuman, 1997: 138).

Regarding the content of validity of the questionnaire items, it has been proven by many scholars such as Gold et al., 2001, Davenport and Prusak, 2000, Daniels, 2004, Levine and Gilbert, 1998, Amiri et al., 2010, and Burns and Stalker, 1961. Additionally, the validity of questionnaire items was approved and review by the dissertation advisory committee.

The scale of this study was reviewed and approved by the advisor and the scales were all in English. When the researcher translated them into the Thai language in order to be used in the study, an expert translator gave great assistance with the back translation process to ensure the correct meaning of the questionnaire's items. Additionally, factor analysis was used to test the construct validity, to identify the groups of inter-related variables, to reduce the number of variables, and to confirm for the researcher which variables belonged to which group.

#### 4.3.3.1 Improvement of Individual Capability in Knowledge Transfer

Improvement of Individual Capability contains 7 items in this research. Table 4.11 presents the factor analysis results and states that only one component could be extracted.

**Table 4.11** Factor Analysis of Improvement of Individual Capability in Knowledge Transfer

Variable	Content	Factor Loading I
Factor I:	IMPROVEMENT OF INDIVIDUAL CAPABILITY IN KNOWLEDGE TRANSFER	
IMPROV6	I regularly have conversations with my colleagues about how to improve my knowledge.	.828
IMPROV3	My colleagues are willing to share or transfer the way they do things.	.801
IMPROV4	When my colleagues are good at something, they teach me how to do it where necessary and appropriate.	.794

**Table 4.11** (Continued)

<b>Variable</b>	<b>Content</b>	<b>Factor Loading I</b>
IMPROV7	I engage in knowledge sharing or knowledge transfer among the individuals in my organization.	.790
IMPROV2	I share regularly what I am doing with my colleagues.	.789
IMPROV5	If my performance is not what it should be, my colleagues will help me to improve.	.787
IMROV1	When I learn something new, I like to share it with my colleagues.	.739

The results from the factor analysis in table 4.11 show that the scale measuring improvement of individual capability regarding knowledge transfer, had factor loading scores of 0.739–0.828, which indicated all of the items carried good questions for the improvement of individual capability in knowledge transfer.

#### 4.3.3.2 Mechanistic Structure

The scale measuring adaptive performance was comprised of 5 items. The results of the mechanistic structure factor analysis indicated only one component.

**Table 4.12** Factor Analysis of Mechanistic Structure

<b>Variable</b>	<b>Content</b>	<b>Factor Loading I</b>
Factor I:	MECHANISTIC STRUCTURE	
MECHA3	My organization has processes to facilitate co-workers' knowledge exchange across functional boundaries.	.836

**Table 4.12** (Continued)

<b>Variable</b>	<b>Content</b>	<b>Factor Loading I</b>
MECHA2	My organizational structure facilitates the transfer of knowledge across structural boundaries.	.821
MECHA4	My organization uses technology that allows employees to collaborate with other persons inside the organization.	.798
MECHA5	My organization uses technology that allows for the search of new knowledge.	.794
MECHA1	My organizational structure encourages interaction among employees.	.713

The factor analysis produced factor loading scores for the mechanistic structure between 0.713–0.836, which showed that all of the items were good questions.

#### 4.3.3.3 Organic Structure

According to table 4.13, the factor analysis results reported only one component for organic structure, which consisted of 8 items.

**Table 4.13** Factor Analysis of Organic Structure

<b>Variable</b>	<b>Content</b>	<b>Factor Loading I</b>
Factor I:	ORGANIC STRUCTURE	
ORGAN7	My organization uses technology that allows people in multiple locations to learn as a group from multiple sources or at multiple points in time.	.845

**Table 4.13** (Continued)

<b>Variable</b>	<b>Content</b>	<b>Factor Loading I</b>
ORGAN6	My organization uses technology that allows people in multiple locations to learn as a group from a single source or at single point in time.	.839
ORGAN8	My organization uses technology that allows for the generation of new opportunities in conjunction with its partners.	.813
ORGAN5	The structure in my organization is rather flat so employees can easily communicate ideas about their work across divisions or departments.	.741
ORGAN3	My organizational structure encourages employees to go where they need to for knowledge.	.698
ORGAN2	My organizational structure promotes collective rather than individualistic behavior.	.678
ORGAN1	I am encouraged to share knowledge between project teams.	.669
ORGAN4	My organization has many cross-functional teams.	.651

The results produced by the factor analysis reported one component and the factor loading scores were between 0.651–0.845. It can be stated that all of the questions for organic structure were good.

#### 4.3.3.4 Training

The factor analysis results reported only one component for training, as presented in table 4.14. Even though one item had the lowest score in this component (0.501), it was still loaded into the same scale as other factors.

**Table 4.14** Factor Analysis of Training

<b>Variable</b>	<b>Content</b>	<b>Factor Loading I</b>
Factor I:	TRAINING	
TRAIN2	With technology involvement, training will be effective.	.834
TRAIN1	Training will increase my personal productivity.	.819
TRAIN3	Technology provides additional data for learners to gain more knowledge in training.	.801
TRAIN5	After training, I always share the knowledge I have learned with my colleagues.	.706
TRAIN6	My colleagues encourage me to use the new skills that I have learned in training.	.641
TRAIN4	I would understand less than I used if the training did not provided technology equipment (such as computers or projectors).	.628
TRAIN7	The methods used in training are similar to how we do it on the job.	.501

The factor analysis produced results and reported one component with a validity of scale between 0.501–0.834. These scales revealed that all of the items were good questions for the training.

#### 4.3.3.5 Incentives

For the incentive scale of 8 items, the factor analysis results produced only one component, as shown in table 4.15.

**Table 4.15** Factor Analysis of Incentives

<b>Variable</b>	<b>Content</b>	<b>Factor Loading I</b>
Factor I:	INCENTIVES	
INCEN3	Incentives are visibly rewarded to the person/work group that shares knowledge in the organization.	.878
INCEN4	Incentives are visibly rewarded to the person/work group that uses knowledge in the organization.	.865
INCEN5	Incentives are given to employees with emphasis on group performance.	.848
INCEN2	Appropriate incentives are provided to encourage knowledge sharing/transfer behavior.	.847
INCEN7	Incentives for employees are communicated within the group-related work.	.835
INCEN1	My organization provides appropriate monetary rewards for employees that help to implement changes.	.827
INCEN6	Incentives for employees are communicated personally.	.798
INCEN8	Technology (such as computers, the organization's network system) plays an essential role in informing us about motivational information within the organization.	.607

The factor analysis reported factor loading scores for incentive between 0.607–0.878, which indicated that all of the questions regarding the incentives were good.

#### 4.3.3.6 Information Technology

The scale measuring information technology was comprised of 7 items. According to table 4.16, the results of the factor analysis on information technology produced only one component.

**Table 4.16** Factor Analysis of Information Technology

<b>Variable</b>	<b>Content</b>	<b>Factor Loading I</b>
Factor I:	INFORMATION TECHNOLOGY	
INFOR5	I have access to technology that allows me to systematically store knowledge.	.874
INFOR3	I have access to technology that allows me to use knowledge about my organization's products and services.	.861
INFOR2	I have access to technology that allows me to search for knowledge.	.849
INFOR6	I have access to technology that allows me to collaborate with people inside the organization.	.834
INFOR1	I have access to technology that allows me to locate specific knowledge that helps me in my job.	.819
INFOR4	I have access to technology that allows me to access organizational knowledge.	.801
INFOR7	I have access to technology that allows me to collaborate with co-workers regardless of location.	.798

Using the factor analysis, the results reported one component and all of the items were confirmed with a high construct validity of the scale (0.798–0.874), which indicated that all of the items were good questions for information technology.

Furthermore, the Kaiser-Meyer-Olkin (KMO) and Barlett's Sphericity tests were conducted by the researcher. The results are demonstrated in table 4.17 below. Because all of the KMO values was not lower than 0.5, this confirmed the adequacy of the sample in the research, which indicated that the sample size as large enough to provide the required precision of the survey or test results (Kaiser 1974, p.35). Additionally, the variables were uncorrelated in the population as indicated in the Barlett test results.

**Table 4.17** Kaiser-Meyer-Olkin's Measure of Sampling Adequa and Barlett's Test of Sphericity

Scale	KMO	Barlett's Test (Sig.)
Improvement of Individual	.853	.000
Capability in Knowledge Transfer		
Mechanistic Structure	.765	.000
Organic Structure	.860	.000
Training	.782	.000
Incentives	.872	.000
Information Technology	.893	.000

#### 4.3.4 Reliability

Neuman (1997: 144) stated that reliability is the information provided by the indicators and does not vary as a result of the characteristics of the indicators, the instrument, or the measurement device itself. Reliability is an indication of dependability, stability and consistency. In terms of reliability, the Statistical Package for the Social Sciences (SPSS) program version 13 was used. To test the reliability of the items, Cronbach's alpha, which is a model of internal consistency based on the average inter-item correlation, was used and the results are stated in table 4.18.

**Table 4.18** Reliability Coefficients of the Scale Items

Scale	Number of Items	Reliability Coefficients (Cronbach's Alpha)
Improvement of Individual Capability in Knowledge Transfer	7	.848
Mechanistic Structure	5	.850
Organic Structure	8	.834
Training	7	.868
Incentives	8	.860
Information Technology	7	.850

The results of the reliability test for all scales used in this research are presented in table 4.18. For testing reliability, Sekaran (2003: 202) suggested that a reliability value of at least 0.6 be considered reliable. As a result, all of the scales (improvement of individual capability in knowledge transfer, mechanistic structure, organic structure, training, incentives, and information technology) had reliability coefficients with alpha values ranging from 0.834–0.868.

## 4.4 Data Collection

### 4.4.1 Primary Data

Primary data were distributed by hand and mail using a self-administered of open-ended questionnaire at different survey sites. A five-point Likert scale was used for this research, ranging from 1-5 ( 1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Neutral, 4 = Somewhat Agree, and 5 = Strongly Agree). Moreover, open-ended questions were used for this research in order to deeply explore the respondents' points of view, feelings and perspectives. This provided insightful and useful data analysis.

#### **4.4.2 Secondary Data**

Document analysis was used in the research as secondary data in order to evaluate historical and contemporary public records, government reports and opinions. Moreover, the relevant information was used and analyzed from several sources such as newspapers, journals, books, official reports, magazines, and electronic references.

### **4.5 Analyses of Primary Data**

#### **4.5.1 Quantitative Analysis**

In this process, the analysis of the data was carried out by using the Statistical Package for the Social Science (SPSS) program version 13 in order to analyze and decode the raw materials (questionnaires).

##### **4.5.1.1 Descriptive statistics**

Descriptive statistics were utilized in the research in order to determine the frequency, percentages, means, minimum, maximum, and standard deviations of variables.

##### **4.5.1.2 Pearson Correlation and Collinearity Diagnostics**

To investigate multi-collinearity problems, Pearson correlations and collinearity diagnostics such as variance inflation factors (VIF) and tolerance values were used in order to present the relationships among the variables.

##### **4.5.1.3 Path Analysis**

To evaluate the causal models, path analysis is a type of statistical analysis that was used by investigating the relationships between the dependent variable and two or more independent variables of this study. Also, it is a tool for examining the direct and indirect effects of the independent variables on the dependent variable (Shipley, 2002: 130). Regarding this research, path analysis was used to test the hypotheses of the direct and indirect effects on a set of independent variables-mechanistic structure, organic structure, training, incentives, and information technology-on the dependent variable regarding the improvement of individual capability of knowledge transfer. The effects, called path coefficients, were reflected in the analysis. The interpretations of the path coefficients for this research are shown in table 4.19 and are according to Vaus's (2002: 98).

**Table 4.19** Strength of the Interpretation of the Path Coefficients

<b>Coefficients</b>	<b>Strength of Relationship</b>
0.00	No relationship
0.01 – 0.09	Trivial
0.10 – 0.29	Low to moderate
0.30 – 0.49	Moderate to substantial
0.50 – 0.69	Substantial to very strong
0.70 – 0.89	Very strong
0.90	Near perfect
1.00	Perfect

**Source:** Vaus, 2002.

#### 4.5.1.4 Stepwise Regression Analysis

The stepwise regression analysis investigated the significant factors influencing the improvement of individual capability regarding knowledge transfer at AOT.

#### 4.5.2 Open-Ended Questions

Besides using quantitative analysis in this study, the researcher asked open-ended questions, included in the questionnaire, of AOT's employees in order to receive their opinions about: 1) what the internal factors were that could affect the improvement of individual's capability to transfer knowledge at AOT; and 2) what the factors of external partners or external environments were that could improve the individual's capability to transfer knowledge at AOT.

## **CHAPTER 5**

### **RESEARCH FINDINGS AND DISCUSSION**

This chapter sheds light on the research findings, comprising: 1) the descriptive characteristics of the demographic data and the independent variables of this study, in which frequency, percentages, minimum, maximum, means, and standard deviations are described; 2) data analyses, the answers to the research questions, and the hypotheses of this study by presenting the effects of organizational structure, information technology, and people factors on the improvement of individual capability in AOT's knowledge transfer; 3) the opinions of the respondents to the open-ended questions; and 4) a summary of the chapter.

#### **5.1 Descriptive Characteristics of the Demographics**

##### **5.1.1 Descriptions of the Demographic Data**

This section focuses on the personal demographic data of the employees working at the Airports of Thailand Public Company Limited. The researcher distributed 500 questionnaires to all expected respondents and 460 questionnaires were returned, which made  $N = 460$  for this study. Even though some of questionnaires had a few missing values, they still could be used in terms of statistical analysis. Therefore, these 460 questionnaires represented 92.0 percent of the population of employees at Airports of Thailand Public Company Limited.

Regarding table 5.1, 255 respondents (55.4%) were female and 201 respondents (43.7%) were male. However, 4 respondents (0.9%) did not provide information about gender.

The majority of respondents (50.4%) had earned a bachelor's degree, followed by 40.4% that had completed higher than a bachelor's degree, and only 7.4% graduated with less than a bachelor's degree. Eight respondents (1.7%) did not answer this question.

Concerning work sites, 260 respondents (56.5%) were working at Suvarnabhumi Airport and 190 respondents (41.3%) were working at the main office and Don Mueang airport. In this question, 10 respondents (2.2%) did not provide an answer.

Regarding tenure, 33.9 percent of the respondents had been working at AOT for more than 10 years, followed by 5–10 years (30.7%), 26.1 percent had been working there for 1–5 years, and 7.6 percent had been working there for less than one year. However, 8 respondents did not provide information in this regard, counting as 1.7 percent.

The last demographic factor was the rank in AOT, where the majority were at level 3–4 (41.3%). Around one-third (33.7%) were at level 5–6, followed by 20 percent at level 7–8, and only 3.3 percent were at level 9–12. Eight respondents (1.7%) did not answer this question.

**Table 5.1** Percent of Demographic Data of AOT Employees (N= 460)

No.	Items	Operational Compositions	Number (Person)	Percent (%)
1.	Gender	Male	201	43.7
		Female	255	55.4
		No answer	4	0.9
		<b>Total</b>	<b>460</b>	<b>100.0</b>
2.	Education Attainment	Lower than Bachelor	34	7.4
		Bachelor	232	50.4
		Higher than Bachelor	186	40.4
		No answer	8	1.7
		<b>Total</b>	<b>460</b>	<b>100.0</b>
3	Working Sites	Main Office and Don Mueang Airport	190	41.3
		Suvarnabhumi Airport	260	56.5
		No answer	10	2.2
		<b>Total</b>	<b>460</b>	<b>100.0</b>

**Table 5.1** (Continued)

<b>No.</b>	<b>Items</b>	<b>Operational Compositions</b>	<b>Number (Person)</b>	<b>Percent (%)</b>
4.	Tenure	< 1 year	35	7.6
		1 – 5 years	120	26.1
		5 – 10 years	141	30.7
		> 10 years	156	33.9
		No answer	8	1.7
		<b>Total</b>	<b>460</b>	<b>100.0</b>
5.	Rank	Level 3 – 4	190	41.3
		Level 5 – 6	155	33.7
		Level 7 – 8	92	20.0
		Level 9 – 12	15	3.3
		No answer	8	1.7
		<b>Total</b>	<b>460</b>	<b>100.0</b>

### 5.1.2 Descriptions of Independent Variables

The researcher conducted a descriptive procedure with the independent variables, which were mechanistic structure, organic structure, training, incentives, and information technology. The percentages of the responses for each variable item can be seen in table 5.2, table 5.3, table 5.4, table 5.5, and table 5.6.

**Table 5.2** Percent of the Mechanistic Structure Items (N = 460 )

<b>Item</b>	<b>Label</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>No Answer</b>
MECHA1	My organizational structure encourages interaction among employees.	10.2	49.1		6.1	0.7	
		59.3	33.9	6.8		-	
MECHA2	My organizational structure facilitates the transfer of knowledge across structural	8.9	35.9		13.0	2.2	
		44.8	40.0	15.2		-	
MECHA3	My organizational has processes to facilitate co-workers' knowledge exchange across functional boundaries.	8.5	35.2		15.0	2.2	
		43.7	39.1	17.2		-	
MECHA4	My organizational uses technology that allows employees to collaborate with other persons inside the organization.	11.3	41.7		9.3	2.2	
		53.0	35.4	11.5		-	
MECHA5	My organizational uses technology that allows for the search of new knowledge.	12.8	46.1		10.4	2.6	
		58.9	28.0	13.0		-	

Regarding the name of independent variable as MECHA, the researcher computed percentage of the respondents' opinions from questions that belonged to mechanistic structure, which contained 5 items. Among the 5 items of the mechanistic structure in this study, the respondents agreed mostly on MECHA1 (59.3%), that the organizational structure of AOT encourages interaction among employees, followed by MECHA5 (58.9%), MECHA4 (53.0%), MECHA2 (44.8%), and MECHA3 (43.7%).

According to the results, the highest percent of disagreement was on MECHA3 (17.2%), where the respondents did not agree that AOT had a process to facilitate co-workers' knowledge exchange across functional boundaries.

**Table 5.3** Percent of the Organic Structure Items (N = 460)

Item	Label	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Answer
ORGAN1	I am encouraged to share knowledge between project teams	9.3	43.5		8.0	1.7	
			52.8	37.4	9.7		-
ORGAN2	My organizational structure promotes collective rather than Individualistic behavior.	15.9	43.9		7.6	2.8	
			59.8	29.8	10.4		-
ORGAN3	My organizational structure encourages employees to go where they need to for knowledge.	10.2	39.3		12.6	2.0	
			49.5	35.9	14.6		-
ORGAN4	My organizational structure has many cross-functional teams.	8.7	42.2		13.5	3.0	
			50.9	32.6	16.5		-
ORGAN5	The structure in my organization is rather flat so employees can easily communicate ideas about their work across divisions or departments.	9.3	35.2		16.5	4.3	
			44.5	34.6	20.8		-

**Table 5.3** (Continued)

<b>Item</b>	<b>Label</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>No Answer</b>
ORGAN6	My organization uses technology that allows people in multiple locations to learn as a single source or at single point in time.	7.4	32.8		16.5	3.3	
		40.2	40.0	19.8		-	
ORGAN7	My organization uses technology that allows people in multiple locations to learn as a group from multiple sources or at multiple points in time.	8.3	28.0		15.7	3.5	
		36.3	44.6	19.2		-	
ORGAN8	My organization uses technology that allows for the generation of new opportunities in conjunction with its partners.	8.9	30.4		15.4	1.5	
		39.3	43.7	16.9		-	

The researcher computed all 8 items that belonged to organic structure and named them as ORGAN. Regarding the organic structure, the item for which the respondents agreed mostly was ORGAN2 (59.8%), where AOT's employees felt that the organization structure promoted collective rather than individualistic behavior. The next percentage was ORGAN1 (52.8%), where AOT's employees were encouraged to share knowledge between project teams. Additionally, the next score item was ORGAN4 (50.9%), followed by ORGAN3 (49.5%), ORGAN5 (44.5%), ORGAN6 (40.2%), ORGAN7 (36.3%) and ORGAN8 (39.3%).

More than 20 percent of respondents did not agree that the structure at AOT was rather flat so that employees could easily communicate ideas about their work across divisions or departments. Also, fewer than 10 percent of the respondents disagreed with ORGAN1 (9.7%).

**Table 5.4** Percent of the Training Items (N = 460)

Item	Label	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Answer
TRAIN1	Training will increase my personal productivity	22.2	56.5		2.4	0.7	
		78.7		17.0	3.1		1.3
TRAIN2	With technology involvement, training will be effective.	25.0	55.9		2.4	0.4	
		80.9		15.0	2.8		1.3
TRAIN3	Technology provides additional data for learners to gain more knowledge in training.	31.7	51.7		1.3	0.2	
		83.4		13.5	1.5		1.5
TRAIN4	I would understand less than I used if the training did not provided technology equipment (such as computers or projectors).	23.7	52.8		3.3	0.7	
		76.5		19.6	4.0		-
TRAIN5	After training, I always share the knowledge I have learned with my colleagues.	11.1	51.1		4.6	0.4	
		62.2		32.8	5.0		-

**Table 5.4** (Continued)

<b>Item</b>	<b>Label</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>No Answer</b>
TRAIN6	My colleagues encourage me to use the new skills that I have learned in training.	11.5	44.8		4.6	0.9	
		56.3	38.3		5.5		-
TRAIN7	The methods used in training are similar to how we do it on the job. training.	7.6	53.9		35	0.0	
		61.5	35.0		3.5		-

Because there were 7 items that belonged to training, the researcher computed all of the items and named them as TRAIN. From the 7 items of the training variable in this study, the respondents agreed mostly that technology provided additional data for learners to gain more knowledge in training (TRAIN3). This percentage of agreement (83.4%) was higher than the other items on the same scale. The next percentage of items were TRAIN2 (80.9%), TRAIN1 (78.7%), TRAIN4 (76.5%), TRAIN5 (62.2%), TRAIN7 (61.5%), and TRAIN6 (56.3%).

Only two items, where respondents disagreed and the percentage was not less than 5 percent, were TRAIN6 (5.5%) and TRAIN5 (5.0%). The respondents did not think that their colleagues encouraged them to use the new skills that they had learned in training. Moreover, they did not agree that the methods used in training were similar to how they did it on the job.

**Table 5.5** Percent of the Incentives Items (N = 460 )

<b>Item</b>	<b>Label</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>No Answer</b>
INCEN1	My organization provides appropriate monetary rewards for employees that help to implement changes.	7.4	28.7		16.3	6.5	
		36.1	41.1		22.8		-
INCEN2	Appropriate incentives are provided to encourage knowledge sharing/transfer behavior. changes.	7.0	27.2		16.1	6.1	
		34.2	41.5		22.2		2.2
INCEN3	Incentives are visibly rewarded to the person/ work group that shares knowledge in the organization.	8.5	31.7		11.1	3.7	
		40.2	42.2		14.8		2.8
INCEN4	Incentives are visibly rewarded to the person/ work group that uses knowledge in the organization.	8.9	32.6		9.8	4.3	
		41.5	44.3		14.1		-
INCEN5	Incentives are given to employees with emphasis on group performance.	6.1	33.7		12.0	2.8	
		39.8	42.6		14.8		2.8
INCEN6	Incentives for employees are communicated personally	5.2	31.5		12.8	3.0	
		36.7	43.9		15.8		3.5

**Table 5.5** (Continued)

<b>Item</b>	<b>Label</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>No Answer</b>
INCEN7	Incentives for employees	7.0	33.9		11.5	2.6	
	are communicated with in group-related work.		40.9	45.0	14.1		-
INCEN8	Technology (such as computers, the organization's network system) plays an essential role in informing us about motivational information within the organization.	16.7	51.3		2.4	1.3	
			68.0	28.3	3.7		-

Regarding the name of the independent variable as INCEN, the researcher computed percentage of the respondents' opinions from questions that belonged to incentives, which contained 8 items. Among the 8 items of the incentives in this study, the highest percentage that the respondents agreed on was INCEN8 (68.0%) because they perceived that technology (such as computer and the organization network system) played an essential role in informing them about motivational information within the organization. The percentage of agreement (68.0%) was much higher than the other items on the same scale and clearly corresponded to the organization type. The rest of the items were INCEN4 (41.5%), INCEN7 (40.9%), INCEN3 (40.2%), INCEN5 (39.8%), INCEN6 (36.7%), INCEN1 (36.1) and INCEN2 (34.2%).

The highest disagreement was on INCEN1. The respondents disagreed that AOT provided appropriate monetary rewards for employees that helped to implement changes. However, the lowest percentage of disagreement was INCEN8 (3.7%).

**Table 5.6** Percent of the Information Technology Items (N = 460)

<b>Item</b>	<b>Label</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>No Answer</b>
INFOR1	I have access to	12.8	52.2		3.9	1.5	
	technology that allows me to locate specific knowledge that helps me in my job.	65.0		29.6	5.4		-
INFOR2	I have access to	14.6	52.0		4.3	1.3	
	technology that allows me to search for Knowledge.	66.6		27.8	5.6		-
INFOR3	I have access to	10.4	48.9		5.0	0.9	
	technology that allows me to use knowledge about my organization's products and services.	59.3		34.8	5.9		-
INFOR4	I have access to	8.3	53.5		5.0	0.2	
	technology that allows me to access organizational knowledge.	61.8		33.0	5.2		-
INFOR5	I have access to	10.2	44.3		6.3	0.4	
	technology that allows me to systematically store knowledge.	54.5		38.7	6.7		-
INFOR6	I have access to	7.6	48.5		7.8	0.7	
	technology that allows me to collaborate with people inside the organization.	56.1		35.4	8.5		-

**Table 5.6** (Continued)

<b>Item</b>	<b>Label</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>No Answer</b>
	I have access to	10.7	43.0		7.4	3.3	
INFOR7	technology that allows me to collaborate with co-workers regardless of location.		53.7	35.7	10.7		-

The researcher computed all 7 items that belonged to information technology and named them as INFOR. Among the information technology items, INFOR7 showed the lowest percent (53.7%) of the respondents' agreement, while INFOR2 (66.6%) had the highest percent. The percentage of agreement (66.6%) showed that employees had accessed to technology because they were able to search for knowledge easily.

Low percentages were shown for the disagreement on all items. The highest percent of disagreement was on INFOR7 (10.7%), where the respondents did not agree that they had accessed to technology in order to collaborate with co-workers regardless of location.

### **5.1.3 Descriptions of Dependent Variable**

A descriptive procedure was also conducted with the dependent variable measurement, which was the improvement of individual capability of knowledge transfer. Table 5.7 presents the percentages of agreement and disagreement for each measurement item.

**Table 5.7** Percent of the Improvement of Individual Capability Regarding Knowledge Transfer Items (N = 460)

Item	Label	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	No Answer
INFORV1	When I learn something new, I like to share it with my colleague.	12.0	55.7		1.7	0.9	
			67.7	29.8	2.6		-
INFORV2	I share regularly what I am doing with my colleagues.	11.7	49.8		2.2	1.3	
			61.5	35.0	3.5		-
INFORV3	My colleagues are willing to share or transfer the way they do things.	11.1	47.4		3.3	1.1	
			58.5	37.2	4.4		-
INFORV4	When my colleagues are good at something, they teach me how to do it where necessary and appropriate.	12.0	43.0		6.7	0.9	
			55.0	37.4	7.6		-
INFORV5	If my performance is not what it should be, my colleagues will help me to improve.	10.2	49.3		4.1	1.3	
			59.5	35.0	5.4		-
INFORV6	I regularly have conversations with my colleagues about to improve. how to improve my knowledge.	10.9	48.5		3.5	1.5	
			59.4	33.9	5.0		1.7

**Table 5.7** (Continued)

<b>Item</b>	<b>Label</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>No Answer</b>
INFORV7	I engage in knowledge sharing or knowledge transfer among the individuals in my organization.	10.0	50.0		3.7	1.1	
		60.0	35.2	4.8	-		

Because there were 7 items that belonged to the improvement of the individual's capability of knowledge transfer, the researcher computed all items and named them as IMPROV. Regarding the improvement of the individual's capability of knowledge transfer measurement, more than 55 percent of the respondents agreed on all items. The highest percentage of agreement was IMPROV1. This item indicated that the respondents would like to share knowledge with their colleagues when they learned something new (67.7%).

Less than 10 percent of all items indicated that the respondents did not agree with the result. The highest percent of disagreement was on IMPROV4 (7.6%), where the respondents did not agree that their colleagues taught them in an appropriate way whenever their colleagues were good at something. Further, fewer than 6 percent disagreed on IMPROV5 (5.4%), IMPROV6 (5.0%), IMPROV7 (4.8%), IMPROV3 (4.4%), IMPROV2 (3.5%), and IMPROV1 (2.6%).

## **5.2 Data Analyses and Results of the Study**

### **5.2.1 Correlation Matrix and Means and Standard Deviations of the Independent and Dependent Variables**

5.2.1.1 Independent Variables (Mechanistic Structure, Organic Structure, Training, Incentives, and Information Technology)

In order to investigate the multi-collinearity problem, Pearson Coefficients are conducted by the researcher to determine the relationships among mechanistic

structure (MECHA), organic structure (ORGAN), training (TRAIN), incentives (INCEN), and information technology (INFOR). Table 5.8 presents the correlation coefficients, minimum, maximum, means, and standard deviations of the variables.

**Table 5.8** Correlations Coefficients between the Independent Variables (N = 460)

<b>Variable</b>	<b>MECHA</b>	<b>ORGAN</b>	<b>TRAIN</b>	<b>INCEN</b>	<b>INFOR</b>
<b>MECHA</b>	1	.737**	.444**	.560**	.547**
<b>ORGAN</b>	.737**	1	.488**	.637**	.568**
<b>TRAIN</b>	.444**	.488**	1	.464**	.459**
<b>INCEN</b>	.560**	.637**	.464**	1	.513**
<b>INFOR</b>	.547**	.568**	.459**	.513**	1
<b>Minimum</b>	6	11	14	8	7
<b>Maximum</b>	25	40	35	40	35
<b>Mean</b>	17.38	27.01	27.22	26.75	25.35
<b>SD</b>	3.500	5.460	3.610	5.870	4.613

**Note:** \*\* Correlation is significant at the .01 level (2-tailed).

From the Pearson correlation analysis, the researcher found that the correlations between the independent variables ranged from 0.444-0.737. The highest correlation of 0.737 was between mechanistic structure (MECHA) and organic structure (ORGAN). All of the coefficients were still lower than the recommend acceptable level of correlation value proposed by Kumari (2008: 91), which is 0.80. Regarding the independent variables, it was concluded that it had no multi-collinearity problem in this research.

Furthermore, the tolerance and variance inflation factor (VIF) tests were conducted by the researcher in order to measure the degree of multi-collinearity of the variables in the regression model (O'Brien, 2007: 674). The results of the tests are presented in table 5.9.

**Table 5.9** Collinearity Statistics on the Independent Variables (N = 460)

Variable	Collinearity	
	Tolerance	VIF
MECHA	.412	2.429
ORGAN	.357	2.799
TRAIN	.679	1.472
INCEN	.556	1.799
INFOR	.553	1.809

According to the results in table 5.9, the tolerance of the independent variables ranged from 0.357-0.679 and the smallest tolerance was 0.357, which was not less than 0.10 as suggested by Kumari (2008: 93). It showed that the variables did not have a multi-collinearity problem. Moreover, the VIF values confirmed the results because none of the values was higher than 10 (Kumari, 2008: 93).

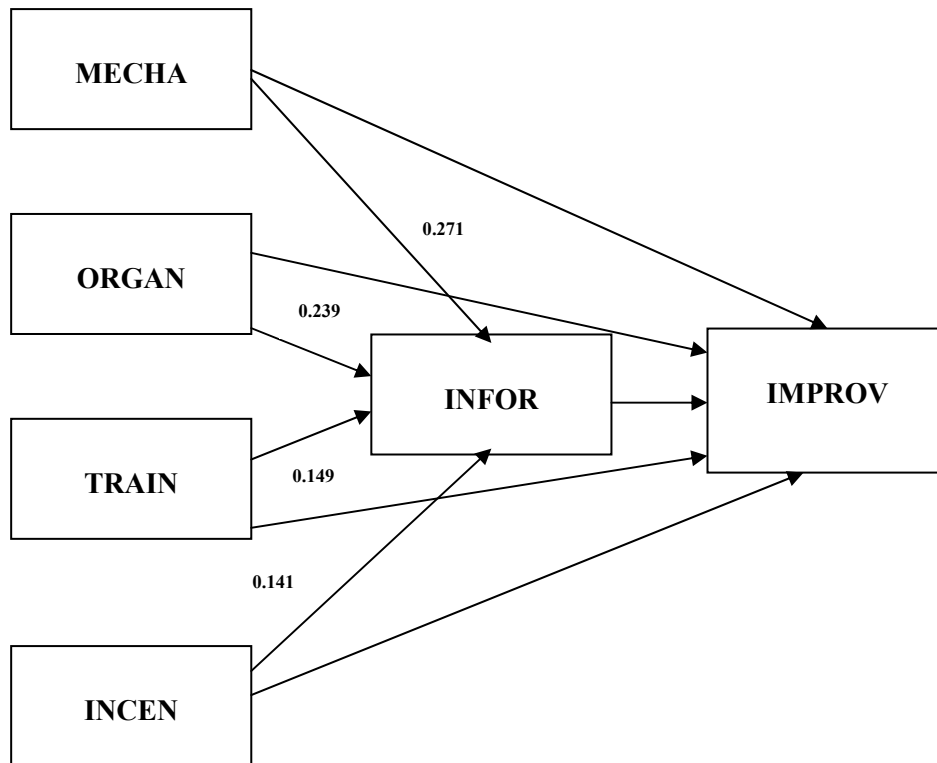
Table 5.10 indicated the minimum, maximum, means, and standard deviations of the dependent variable measurement dimensions as listed below:

**Table 5.10** Minimum, Maximum, Means, and Standard Deviations of Dependent Variable Dimensions (N = 460)

Variable	IMPROV
Minimum	7
Maximum	35
Mean	25.63
SD	4.249

### 5.2.2 Causal Relations between Independent Variables and the Improvement of Individual Capability in Knowledge Transfer

The application of the path analysis was proposed to test the hypotheses of this research. The path diagram is shown in figure 5.1 in order to present the results that answered hypothesis 1.



**Figure 5.1** Path Model for the Factors of Mechanistic Structure, Organic Structure, Training, and Incentives Regarding Information Technology of AOT Employees (N = 460)

**Note:** Coefficients were significant at the .05 level.

5.2.2.1 Hypothesis 1: Mechanistic Structure, Organic Structure, Training, and Incentives are more likely to have Positive Effects on Information Technology.

Figure 5.1 illustrates the fact that there was a significant and positive relationship between mechanistic structure and information technology (Beta = 0.271). When the employees had to respond to the typical chain of command from the managers or executives and their jobs relied on routine work processing and use, employees are more convenient and more helpful by obtaining computer facilities in order to reduce their burden of work.

This figure also confirmed that the organic structure was significantly and positively related to information technology (Beta = 0.239). Therefore, hypothesis 1 was supported because the more that employees initiated change and participated

more in the organization, the more information technology involvement (e.g. design program or web-board) that took place in sharing the work outcome.

In addition, training was another factor that showed a significant positive relationship with information technology (Beta = 0.149). The finding revealed that the more of that the organization provided training for employees, the greater requirement of information technology that employees needed to obtain for accessing any additional data more easily and more quickly.

Last, the results disclosed that incentives are positively influenced by information technology (Beta = 0.141). It can be stated that whenever the organization gave some monetary rewards or recognition to employees in order to encourage their performance, the action was realized more through the channel of information technology by way of the organizational website or the intranet at work.

Table 5.11 presents a summary of the relationship analyses of mechanistic structure and organic structure in relation to information technology.

**Table 5.11** Causal Relations of Mechanistic Structure, Organic Structure, Training, and Incentives Regarding Information Technology

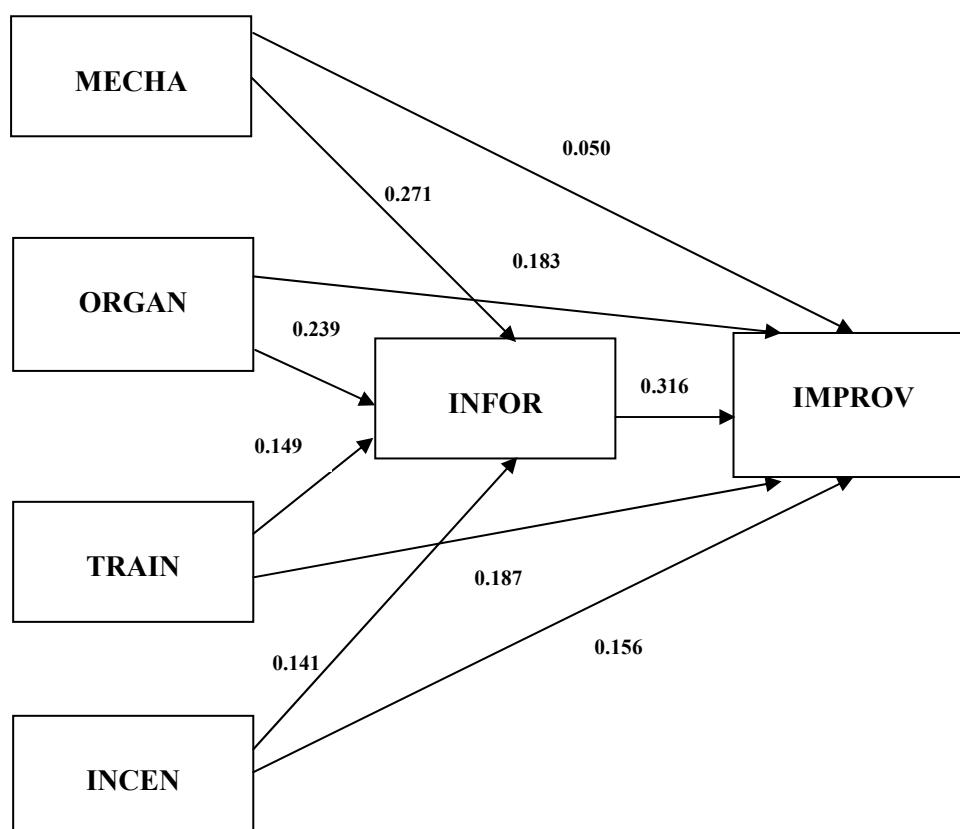
<b>Independent Variable</b>	<b>Direct Effect</b>
Mechanistic Structure	.271
Organic Structure	.239
Training	.149
Incentives	.141

**Table 5.12** Summary of Analyses of Mechanistic Structure, Organic Structure, Training, and Incentives Regarding Information Technology

Variable	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	B	S.E. <sub>est</sub>	$\beta$	t	Sig
MECHA	.642	.412	.409	.359	.076	.271	4.743*	.000
ORGAN	.603	.363	.362	.199	.052	.239	3.858*	.000
TRAIN	.659	.434	.429	.195	.059	.149	3.303*	.001
INCEN	.667	.445	.439	.110	.039	.141	2.809*	.005

**Note:** S.E.<sub>est</sub> (INFOR) = 3.448, \*Significant at the 0.05 level.

The path model in figure 5.2 displays the results in answer to hypothesis 2 of this study.



**Figure 5.2** Path Model for the Factors of Mechanistic Structure, Organic Structure, Training, Incentives, and Information Technology in Relation to the Improvement of Individual Capability in Knowledge Transfer of AOT Employees (N = 460 )

5.2.2.2 Hypothesis 2: Mechanistic Structure, Organic Structure, Training, Incentives, and Information Technology are More Likely to Have Positive Effects on the Improvement of Individual Capability in Knowledge Transfer.

In figure 5.2, the researcher explained the effects by dividing them into direct and indirect effects as seen below:

1) Direct effects of Mechanistic Structure, Organic Structure, Training, Incentives and Information Technology on the Improvement of Individual Capability in Knowledge Transfer

As anticipated, figure 5.2 exhibits the fact that the mechanistic structure was significantly and directly related to the improvement of individual capability in knowledge transfer (Beta = 0.050). When employees responded to the job or became experienced in the work task as defined in the organization's structure, the more the more they had an opportunity to share knowledge with their colleagues.

Additionally, organic structure was found to be significantly and directly related to the improvement of individual capability in knowledge transfer, as indicated in hypothesis 2 (Beta = 0.183). The higher the participation in the work project or new organizational plan, the more the employees shared knowledge in the organization.

Training was also found to be related to the improvement of individual capability in knowledge transfer in a significant and direct way (Beta = 0.187). The positive relation between the two variables can be clearly described because when the organization provided more training for the employees, they were likely to learn from their colleagues.

Moreover, figure 5.2 exhibits the results that indicate that the incentives were found to significantly and directly related to the improvement of individual capability in knowledge transfer (Beta = 0.156). The more grants of monetary rewards or recognition were given to motivate the employees, the more the employees were willing to share their knowledge with others.

Lastly, the results of the path model disclosed that information technology was clarified to directly influence the improvement of individual capability regarding knowledge transfer (Beta = 0.316). It can be explained that when employees could access the computer facilities easily, they were able to gain

knowledge sharing from any source, participated with others more comfortably, and accelerated their work.

## 2) Indirect Effect of Mechanistic Structure, Organic Structure, Training, Incentives and Information Technology on the Improvement of Individual Capability in Knowledge Transfer

The causal relationships among the variables also showed the indirect effects of the variables by using path model analysis on the multiple regression results. The indirect relationship of mechanistic structure, organic structure, training, and incentives on the improvement of individual capability in knowledge transfer was calculated and is discussed below:

### (1) Indirect Relationship between Mechanistic Structure and the Improvement of Individual Capability in Knowledge Transfer

$$\text{MECHA} \longrightarrow \text{INFOR} \longrightarrow \text{IMPROV} \quad .271 \times .316 = .086$$

Where:

MECHA = Mechanistic Structure

INFOR = Information Technology

IMPROV = Improvement of Individual Capability in Knowledge Transfer

According to the diagram and calculations presented above, the mechanistic structure showed an indirect effect on the improvement of individual capability for knowledge transfer (Beta = 0.086). The possible reason for this is that when employees have sufficient computer facilities to foster and reduce the work routine, the higher is the probability of their sharing knowledge or experience with their colleagues. As a result, the degree of knowledge transfer between employees increased.

### (2) Indirect Relationship between Organic Structure and the Improvement of Individual Capability in Knowledge Transfer

$$\text{ORGAN} \longrightarrow \text{INFOR} \longrightarrow \text{IMPROV} \quad .239 \times .316 = .076$$

Where:

ORGAN = Organic Structure

INFOR = Information Technology

IMPROV = Improvement of Individual Capability on Knowledge Transfer

Similar to the mechanistic structure, the organic structure also had an indirect effect on the improvement of individual capability in knowledge transfer (Beta = 0.076). This can be explained by the fact that when the organization allowed employees to work as a group, it led employees to participate more in sharing ideas, and provided a sufficient computer infrastructure that enabled them to quickly and easily access the work, and this brought about greater opportunities to share knowledge among employees.

(3) Indirect Relationship between Training and the Improvement of Individual Capability in Knowledge Transfer

$$\text{TRAIN} \longrightarrow \text{INFOR} \longrightarrow \text{IMPROV} \quad .149 \times .316 = .047$$

Where:

TRAIN = Training

INFOR = Information Technology

IMPROV = Improvement of Individual Capability in Knowledge Transfer

Referring to the diagram and calculations shown above, the training also had an indirect effect on the improvement of the individual's capability to transfer knowledge but did not have much of an influential impact (Beta = 0.047). This implies that when there was a higher degree of knowledge sharing among employees, adequate training along with sufficient computer facilities must be provided to them. As a result, employees would share the knowledge that they obtained with other employees where necessary and appropriate.

(4) Indirect Relationship between Incentives and the Improvement of Individual Capability in Knowledge Transfer

$$\text{INCEN} \longrightarrow \text{INFOR} \longrightarrow \text{IMPROV} \quad .141 \times .316 = .045$$

Where:

INCEN = Incentives

INFOR = Information Technology

IMPROV = Improvement of Individual Capability in Knowledge Transfer

According to the calculated indirect effects, incentives had an influence on the improvement of the individual's capability to transfer knowledge; however, the effect was small and indirect (Beta = 0.045). It can be interpreted that the higher the improvement in knowledge transfer or sharing among employees, the more techniques were provided in offering monetary rewards or recognition to them and the more that information technology channels were used, such as the intranet and websites for easy access to the information within the organization.

Table 5.13 indicates the direct and indirect effects of the variables (mechanistic structure, organic structure, training, incentives, and information technology) on the improvement of the individual's capability regarding knowledge transfer. Table 5.14 then presents a summary of the analyses of these independent variables in relation to the improvement of the individual's capability to transfer knowledge.

**Table 5.13** Direct, Indirect, and Total Causal Effect of Mechanistic Structure, Organic Structure, Training, Incentives, and Information Technology Regarding the Improvement of Individual Capability in Knowledge Transfer

Independent Variable	Sources of Causation		
	Direct	Indirect	Total
Mechanistic Structure	.050	.086	.136
Organic Structure	.183	.076	.259
Training	.187	.047	.234
Incentives	.156	.045	.201
Information Technology	.316	-	.316

**Table 5.14** Summary of Analyses of Mechanistic Structure, Organic Structure, Training, Incentives, and Information Technology Regarding the Improvement of Individual Capability in Knowledge Transfer

Variable	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	B	S.E. <sub>est</sub>	β	t	Sig
MECHA	.544	.296	.294	.059	.066	.050	.904*	.005
ORGAN	.620	.384	.381	.136	.044	.183	3.071*	.002
TRAIN	.662	.438	.433	.218	.050	.187	4.330*	.000
INCEN	.679	.460	.455	.109	.033	.156	3.275*	.000
INFOR	.718	.516	.509	.282	.043	.316	6.610*	.000

**Note:** S.E.<sub>est (IMPROV)</sub> = 2.900, \*Significant at the .05 level

According to the results of direct and indirect effects above, as presented in table 5.13, even though the information technology showed only a direct effect on the improvement of the individual's capability to transfer knowledge, it indicated the highest effect among the other variables. Presently, we are in the era of globalization and employees have begun to use computer facilities to reduce the workload and to search for additional data. As a result, modern technology is continually involved in the daily life of every employee. Information technology such as computers, printers, the intranet or websites are beneficial to them in terms of their ability to share knowledge or to communicate with colleagues, managers, executives or other partners. Specifically, the linkages of the Internet and websites can be seen as essential channels for sharing knowledge. For those reasons, information technology itself was the most significant factor in the improvement of the individual's capability in the knowledge transfer of AOT's employees.

Organic Structure was considered as the second highest influential factor in the improvement of influential individual's capability to transfer knowledge, which disclosed both a direct and indirect effect. If the organization encouraged employees to work cooperatively and this led them to share ideas or attitudes that made work more productive, the knowledge sharing would be improved within the organization.

Also, information technology was a support in terms of fulfilling the goal of cooperation and communicating among employees.

Among all of these factors, training and incentives were considered as people factors, which produced a similar impact on the improvement of the individual's capability regarding knowledge transfer. Also, these two variables showed both direct and indirect effects. Employees gained knowledge from training with information technology supplements such as computers, printers or new software. After training, employees would share the knowledge that they obtained with other employees, either through conversations or implementations on the job. Regarding the incentives, it can be stated that when monetary rewards or recognition were offered to the employees by way of the intranet and websites, the employees would improve their knowledge transfer or increase their sharing among employees.

Among all of the variables, the lowest degree in the improvement of the individual's capability to transfer knowledge was in relation to the mechanistic structure. In this sense, the mechanistic structure produced a very small influence on the improvement of the individual's capability regarding knowledge transfer, for both direct and total effects. Compared to the other variables, the effect of mechanistic structure produced two times less than the effect of information technology. On the other hand, mechanistic structure showed the highest indirect effect and the results show that information technology played an essential role as a moderating variable in the effect of mechanistic structure on the improvement of knowledge sharing among employees. If the employees used the computer or other information technology instruments in order to reduce their work routine, they might have more time and be more able to communicate or share ideas with others than if they did not engage in such use.

For greater clarity, the equation forms for the models of INFOR AND IMPROV are presented as follows:

$$1) \text{ INFOR} = .271 \text{ MECHA} + .239 \text{ ORGAN} + .149 \text{ TRAIN} + .141 \text{ INCEN}$$

(Eq.1)

(4.743)	(3.858)	(3.303)	(2.809)
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$$R = .667, R^2 = .445, SEE = 3.448, F = 78.009, \text{ Sig of } F = .005$$

$$2) \text{ IMPROV} = .136 \text{ MECHA} + .259 \text{ ORGAN} + .234 \text{ TRAIN} + .201 \text{ INCEN} + .316 \text{ INFOR}$$

(Eq.2)

$$(0.904) \quad (3.071) \quad (4.330) \quad (3.275) \quad (6.610)$$

$$R = .718, R^2 = .516, SEE = 2.900, F = 81.724, \text{ Sig of } F = 0.000$$

### 5.3 Additional Responses to Open-Ended Questions

The target participants also provided responses to the researcher in which they mentioned their ideas, opinions, and suggestions on the issues below:

#### 5.3.1 Question 1: What are the Internal Factors That Could Affect the Improvement of the Individual's Capability to Transfer Knowledge at AOT?

For this question, the researcher listed the following factors that could affect the improvement of the individual's capability regarding knowledge transfer. All of the employees' answers were derived from the open-end questions. Notably, many of the answers were relevant to the factors proposed in the conceptual framework of this dissertation.

5.3.1.1 Organizational Structure 1) Flat structure with less hierarchy and bureaucracy 2) Use fluid job description and job rotation 3) Promote collective knowledge rather than individual behavior

5.3.1.2 Information Technology 1) Create structure of information technology network, which enables individual to deposit and share knowledge 2) Provide a variety of information systems and technologies to support the knowledge transfer process 3) Maintain and update the information technology system in the organization

5.3.1.3 Incentives 1) Establish well-designed incentive system to encourage participation and to meet the expectations of employees 2) Offer a variety of types of incentives 3) Boost cooperative behavior which is likely to create more participation in knowledge transfer

5.3.1.4 Training 1) Arrange appropriate training regarding the work of employees 2) Launch new courses/programs to provide additional knowledge for employees

5.3.1.5 Create Knowledge Sharing Environment 1) Encourage a trusting culture 2) Build knowledge sharing as a job requirement

5.3.1.6 Communication 1) Encourage informal meetings 2) Use one-way and two-way communication in order to enhance effective knowledge sharing

5.3.1.7 Leadership 1) Be a role model to foster knowledge sharing in the organization 2) Reduce barriers regarding employees' resistance to knowledge sharing in the organization

5.3.1.8 Senior Management Support 1) Grant additional information or motivate employees to share knowledge within the organization 2) Participate in training or attend social activities

### **5.3.2 Question 2: What are the Factors of External Partners or External Environments That Could Improve the Individual's Capability to Transfer Knowledge at AOT?**

Few respondents answered this question. The only the factor of external partners or external environments that the respondents considered could improve the individual's capability to transfer was to encourage external participation/training. This could improve the exchange of data or relevant information with other organizations.

## **5.4 Chapter Summary**

Regarding this research, the researcher distributed 500 questionnaires and 460 questionnaires were returned. All of the returned questionnaires were usable, even though some of them had a few missing values. Regarding the respondents, 255 respondents (55.4%) were female and 201 (43.7%) were male. Concerning work sites, 260 respondents (56.5%) were working at Suvarnabhumi Airport and 190 respondents (41.3%) were working at the main office and Don Mueang Airport.

The research was confirmed by the tolerance and variance inflation factor (VIF) tests, which indicated that there was no multi-collinearity problem among the independent variables for this study, which were mechanistic structure, organic structure, training, incentives, and information technology.

The results were provided through the processing of the path model, which indicated that mechanistic structure, organic structure, training, and incentives had significant direct positive effects on information technology. The interpretation of the results showed that when the employees had to respond to the typical chain of command from the manager or executives that relied on routine work processing and use, it was more convenient and more helpful when they were able to obtain computer facilities to reduce burden of their work. In addition, when employees initiated more changes and become more participative in the organization, more information technology involvement (e.g. design program or web-board) was helpful in sharing in the work outcome. Regarding training, the more that the organization provided training to employees, the greater was the requirement of information technology that the employees needed for accessing any additional data more easily and quickly. Last, whenever the organization gave some monetary rewards or recognition to the employees in order to encourage their performance, the action was realized more from the channel of information technology through the organizational website or intranet at work.

Furthermore, the results demonstrated that there were significant positive effects of mechanistic structure, organic structure, training, incentives, and information technology on the improvement of individual capability regarding knowledge transfer. Among all five variables proposed in the model, the highest effect on the improvement of the individual's capability to transfer knowledge was from information technology. Information technology was the single factor that generated only a direct effect, while the other variables (mechanistic structure, organic structure, training, and incentives) indicated both direct and indirect effect on the improvement of the individual's capability regarding knowledge transfer. Surprisingly, even though information technology showed only a direct effect, it indicated the highest effect among other variables. This can be explained by the fact that employees nowadays continually have begun to use information technology such as computers, printers or new software for facilitating their work tasks or reducing their workload. Specifically, the linkages of the Internet and websites were considered as essential channels for sharing knowledge. Therefore, information technology itself was the most significant factor in the improvement of the individual's capability to

share knowledge among AOT employees. Other factors-which were organic structure, training, and incentives produced both direct and indirect effects and had similar impacts on the improvement of individual capability regarding knowledge transfer because the total effects were quite close for these three variables. The last factor was mechanistic structure, which had the lowest direct effect and total effect on the improvement of individual capability in knowledge transfer. Compared to other variables, the effect of mechanistic structure produced two times less than the effect of information technology. On the other hand, mechanistic structure showed the highest indirect effect and the results indicate that information technology played an essential role as a moderating variable in the effect of mechanistic structure on the improvement of knowledge sharing among employees. When the employees used the computer or other information technology instruments in order to reduce the work routine, they had more time and were able to communicate or share ideas with others more than before.

For the analyses of the qualitative session, the researcher asked the respondents to provide recommendations on the factors that influenced the improvement of the individual's capability to transfer knowledge regarding both the internal factor and external partners or external environments. The suggestions and ideas from the respondents were found to closely match the factors indicated in the proposed model of the research.

## **CHAPTER 6**

### **SUMMARY OF THE FINDINGS, CONCLUSIONS, CONTRIBUTIONS, AND RECOMMENDATIONS**

This chapter contains: 1) a summary of the findings to provide answers to the research questions; 2) the conclusion of the study; 3) the contributions of the findings; 4) recommendations to organizations and management; 5) implications for future research.

#### **6.1 Summary of the Findings**

This research investigates the impact of mechanistic structure, organic structure, training, incentives, and information technology on the improvement of the individual's capability to transfer knowledge. For the demographic factors, the researchers asked respondents about gender, education attainment, work sites, tenure, and rank.

The target participants for this research were employees that had been working in the Airports of Thailand Public Company Limited at Don Mueang (main office) and Suvarnabhumi, which were two major work sites for the employees.

A self-administered survey was employed by the researcher and 500 questionnaires were distributed to 500 respondents. Four hundred sixty questionnaires were returned and all of them could be used in the statistical analysis, even though some of them had a few missing values.

There were 4 objectives in for this research, which were: 1) to assess the improvement of individual's capability in AOT's knowledge transfer; 2) to identify the factors (mechanistic structure, organic structure, training, incentives, and information technology) that were seen to improve the individual's capability to achieve knowledge transfer at AOT; 3) to explain the relationship levels of the factors for the improvement of individual capability in AOT's knowledge transfer; and 4) to

recommend appropriate management alternatives for utilizing key lessons for the improvement of the individual's to transfer knowledge at AOT.

### **6.1.1 Summary of the Findings Based on the Research Questions**

This section sheds light on the findings based on 2 research questions as below:

6.1.1.1 Research Question 1: How can the Improvement in the Individual's Capability to Transfer Knowledge at AOT be Assessed?

From the findings in the research, the proposed model was developed on the basis of management theories in order to perceive which factors had an influential impact on the improvement of the individual's capability at AOT to transfer knowledge. From the research, the factors that were arrived at were organizational structure (mechanistic structure and organic structure), people factors (training and incentives), and information technology.

6.1.1.2 Research Question 2: What are the Identified Factors that can Serve as the Key Factors in the Improvement of the Individual's Capability to Transfer Knowledge at AOT?

The findings in the research confirmed that all of the factors (mechanistic structure, organic structure, training, incentives, and information technology) were proven to serve as the key factors in the improvement of the individual's capability in relation to knowledge transfer. The research mentioned that all of the factors played essential roles but indicated different degrees of effects regarding this improvement.

6.1.1.3 Research Question 3: To What Extent are the Identified Factors Associated with the Improvement of the Individual's Capability to Transfer Knowledge at AOT?

According to the findings, information technology played the most important role in terms of predicting the improvement of the individual's capability to transfer knowledge. Even though the effect of information technology was only direct, the total effect was the highest (total effect = 0.316) compared to the other variables, which generated both direct and indirect effects. The reason is that employees nowadays continually use information technology such as computers,

printers or new software for facilitating work tasks or reducing their workload. Specifically, the linkages of the Internet and websites were essential channels of sharing knowledge. Therefore, information technology itself was the most significant factor in the improvement of the individual's capability to share knowledge among AOT's employees. Besides the effects of information technology, the total effects from organic structure, training, incentives, and mechanistic structure were 0.259, 0.234, 0.201, and 0.136 respectively. This indicates that the other 4 variables also showed positive effects but to a lesser extent than information technology itself. On the other hand, mechanistic structure produced the highest value for the indirect effect, even though it showed the lowest effect in terms of direct and total effect. The result of the analysis indicates that information technology played an essential role as a moderating variable in the effects of mechanistic structure on the improvement of knowledge sharing among employees. When the employees used the computer or other information technology in order to reduce the work routine, they had more time and were able to communicate or share ideas with others more than before.

Therefore, it can be concluded that the individual's capability regarding knowledge transfer increases when mechanistic structure, organic structure, training, incentives, and information technology increase.

### **6.1.2 Summary of the Findings Based on the Hypothesis Testing**

Table 6.1 shows the results of the hypothesis testing. The summary demonstrates that mechanistic structure, organic structure, training, and incentives had positive relationships with information technology. Significantly, mechanistic structure, organic structure, training, incentives, including information technology, served as key factors that impacted the improvement of the individual's capability to transfer knowledge.

Regarding the results for the impacts of the factors on the improvement of the individual's capability to transfer knowledge, all of the identified variables (mechanistic structure, organic structure, training, incentives, and information technology) were indicated to have a powerful impact on the improvement of the individual's capability to transfer knowledge.

**Table 6.1** Summary of the Results of the Hypothesis Testing

No.	Hypothesis	Result
H1	Mechanistic structure, organic structure, training, and incentives are likely to have positive effects on information technology.	Fail to reject
H2	Mechanistic structure, organic structure, training, incentives, and information technology are likely to have positive effects on the improvement of the individual's capability in knowledge transfer.	Fail to reject

To summarize the analyses from table 6.1, there was a positive relationship of mechanistic structure, organic structure, training, and incentives on information technology. In other words, information technology performs better and to a greater extent when mechanistic structure, organic structure, training, and incentive increase.

Additionally, all of the variables were confirmed to have positive effects on the improvement of the individual's capability to transfer knowledge. In this regard, mechanistic structure, organic structure, training, and incentives were stated to have direct and indirect positive effects on the improvement of the individual's capability to transfer knowledge while information technology presented only a direct effect on this capability.

## 6.2 Conclusions of the Study

This study aimed to assess the improvement of the individual's capability at AOT to transfer knowledge, to explore the major factors that impacted the

improvement of the individual's capability to transfer knowledge, to explain the relationship levels of the factors, and to recommend appropriate management alternatives for utilizing key lessons for future policy making in order to improve the individual's capability to transfer knowledge. To achieve these 4 objectives, a proposed model of analysis was developed based on knowledge transfer dimensions and management information systems in the literature review. The model analysis proposed five critical factors that influenced the improvement of the individual's capability to transfer knowledge. Path analysis was employed to fulfill the research objectives and to test the proposed model. In addition, open-ended questions were conducted to support the statistical results and to provide insightful information about the existence or non-existence of relationships among the variables. The survey results indicated that all hypotheses were accepted. All five variables showed positive effects on the improvement of the individual's capability to transfer knowledge. Four of them, including mechanistic structure, organic structure, training, and incentives, had direct and indirect effects on the improvement of the individual's capability to transfer knowledge, whereas one variable, namely information technology, had only a direct effect on the improvement of the individual's capability to transfer knowledge. A summary of the causal relationships among the proposed variables is presented in table 6.2.

Because mechanistic structure, organic structure, training, and incentives were positively related to information technology, hypothesis 1 was supported. Moreover, hypothesis 2 was supported because all of the variables (mechanistic structure, organic structure, training, incentives, and information technology) demonstrated the power to predict the improvement of the individual's capability to transfer knowledge.

**Table 6.2** Summary of the Causal Effects of Mechanistic Structure, Organic Structure, Training, Incentives, and Information Technology Regarding the Improvement of Individual Capability in Knowledge Transfer

<b>Variable</b>	<b>Direct</b>	<b>Indirect</b>	<b>Total</b>
Mechanistic Structure	.050	.086	.136
Organic Structure	.183	.076	.259
Training	.187	.047	.234
Incentives	.156	.045	.201
Information Technology	.316	-	.316

To explain the degree of power of each factor to influence the improvement of the individual's capability to transfer knowledge, all of the variables were significant in this regard. Among those variables, mechanistic structure, organic structure, training, and incentives had both direct and indirect relationships with the improvement of the individual's capability to transfer knowledge. Information technology was only the variable that showed a direct effect on this improvement.

Concerning the total effect of the research, information technology produced the highest total effect, even though the effect was only from the direct effect. The possible reason for this highest effect is that when employees could access the computer facilities easily, they were able to gain knowledge sharing from any source and could participate more comfortably with others and this accelerated their work. Additionally, when employees used computer facilities to reduce their workload and searched for additional data, information technology such as computers, printers, the intranet or websites were beneficial to them for sharing knowledge or communicating with colleagues, managers, executives, or other partners. Specifically, the linkages of the Internet and websites were essential channels in sharing knowledge. For those reasons, information technology itself was the most significant factor in the improvement of the individual's capability to transfer knowledge among employees at AOT.

Organic structure was considered as the second highest in terms of producing total effects on the improvement of the individual's capability to transfer knowledge. Also, it showed both direct and indirect effects on this improvement. Regarding the total effects of organic structure, it can be stated that if the organization allowed employees to work as a group, led employees to participate more in sharing ideas, and provided sufficient computer infrastructure that enabled them to quickly and easily access the work, this would cause greater opportunities for sharing knowledge among the employees. In short, the greater the participation in the work projects or new organizational plans with the support of information technology facilities, the greater was the degree to which employees shared knowledge within the organization.

Training was another factor that showed both direct effect and indirect effects on the improvement of the individual's capability to transfer knowledge and the degree of the total effects was similar to the organic structure. With these results, it can be interpreted that when the organization provided more training for employees, the employees were likely to share what they had learned with their colleagues. Furthermore, when there was a higher degree of knowledge sharing among employees, adequate training along with sufficient computer facilities must be provided to them. As a result, employees would share the knowledge that they obtained with other employees, either through conversations or implementations on the job.

Regarding the impact of incentives on knowledge transfer, it also determined the direct and indirect effects on the improvement of the individual's capability to transfer knowledge. In terms of meaning, it can be confirmed that the greater was the improvement of knowledge transfer or sharing among employees, the more that techniques were provided in offering monetary rewards or recognition for employees in using information technology channels such as the intranet or websites for easy access to the information. When monetary rewards or recognition were offered to the employees by way of the intranet and websites, the employees improved their knowledge transfer or increased their sharing among employees.

Finally, mechanistic structure was considered as the variable that produced the lowest effect in terms of direct and total effect. On the other hand, mechanistic structure generated the highest effect if only indirect results are focused on. It can be explained that when employees have sufficient computer facilities to foster and

reduce their work routine, there is a higher probability that they will share their knowledge or experience with their colleagues.

### **6.3 Contributions of the Findings**

In this research, the findings contributed to theory and management, and it is believed that the results increased the growth of knowledge in this field of study.

#### **6.3.1 Contributions to AOT's Organization**

Policy makers should consider improving their existing organizational policies in order to achieve their goals and improve the capability of knowledge transfer among employees. Regarding the contributions to AOT, an organization's policy makers should prioritize enhancing information technology in order to improve the individual's capability to transfer knowledge at AOT. Nevertheless, organic structure, training, and incentives are still in demand for such improvement. Furthermore, mechanistic structure needs to be addressed and implemented even though it produced the lowest total effect on the improvement of the individual's capability to transfer knowledge. Last, policy makers should be concerned about both the tangible and intangible benefits that are offered in this research for the purpose of improving the individual's capability to transfer knowledge within the organization.

#### **6.3.2 Contributions to Academic Study**

The model of this study was derived by management factors in the area of knowledge transfer dimensions, which were comprised of mechanistic structure, organic structure, training, incentives, and information technology. The findings offer empirical evidence that reported both similarities and differences together with theories and previous studies by many researchers.

In early decades, the factors that could improve the capability of knowledge transfer were studied by several scholars. Because knowledge transfer appeared to be a tool for increasing proportion in many organizations and total assets, the area of it was considered as an important issue for every organization. Particularly, the individual capability to transfer knowledge was realized to be the ability that could

manage resources effectively. Then, capability had to be the key and was relevant to the organization's goal in managing knowledge with the right quality and on time. Several scholars mentioned that the capability of knowledge transfer could be measured, observed, and scaled (Bresman et al., 1999; Davenport and Prusak, 2000; Argote and Ingram, 2000; Goh, 2002; Szulanski, 2000; and Epple et al., 1991).

Along with the management dimensions in studying the improvement of the capability to transfer knowledge, the factors that encouraged employees to share knowledge with others or to work together in order to enhance skills consisted of mechanistic structure, organization structure, training, incentives, and information technology. Mechanistic structure was confirmed to be significant because this factor generated direct and indirect effects on the improvement of the individual's capability to transfer knowledge (Lee and Grover, 1999; Burns and Stalker, 1961; and Pugh et al., 1968). Concerning organizational structure, organic structure was another factor that showed both positive impacts with both direct and indirect effects on the improvement of the individual's capability to transfer knowledge (Burns and Stalker, 1961; Walczak, 2005; and Hosnavi and Ramezan, 2011).

From the theoretical notion mentioned in the literature, it can be seen that both training and incentives, which were considered as people factors, were demonstrated to be crucial factors in the improvement of the individual's capability to transfer knowledge. Both factors produced direct and indirect effects. The knowledge gained by employees through learning or training would enable them to translate their knowledge to others (Harrison, 2004; Ziharias et al., 2001; Levine, 1995; Van Noy et al., 2008; and Smith, 2001). Concerning incentives, organization or managers should consider giving incentive pay or recognition to groups or individuals that generate new ideas (Davenport and Prusak, 2000; Churchill, 2013; Frey and Osterloh, 2005; Levine and Gilbert, 1998; Drake, 2006; Marshak and Radner, 1972; and Holmstrom, 1979).

The last factor was information technology, and it was shown to be the most critical factor in the improvement of the capability to transfer knowledge, even though information technology indicated only a direct effect (Davenport and Prusak, 2000; Bloodgood and Salisbury, 2001; Blurton, 1999; Daniels, 2004 and Alavi and Radner, 2001). Therefore, employees were able to gain knowledge sharing

more when the organization provided lots of information technology tools to them. In another meaning, when employees could access computer facilities easily, it created a high probability of sharing knowledge with others.

Regarding the findings, the empirical results of the study disclosed that all five variables showed positive effects on the improvement of the individual's capability to transfer knowledge. Four of the variables (mechanistic structure, organic structure, training, and incentives) indicated both direct and indirect effects, while information technology produced only a direct effect on the improvement of the individual's capability to transfer knowledge. Nevertheless, the degrees of the effect of all five variables were different. Information technology revealed the highest total effect on the improvement of the individual's capability to transfer knowledge, whereas mechanistic structure was shown to have the lowest total effect. Only one factor, which was information technology, indicated only a direct effect, while the other four variables, namely mechanistic structure, organic structure, training, and incentives, produced both direct and indirect effects on the improvement of the individual's capability to transfer knowledge. However, it can be summarized that the empirical results of this study supported the integration of the concepts on the improvement of the individual's capability to transfer knowledge.

Additionally, the scales can serve as measures for future studies because the measurements employed in the study were adjusted from what has been explored in several different scholars' tests. Construct validity and reliability were tested for the scale in this study. Factor analysis was a tool that confirmed that improvement of the individual's capability to transfer knowledge (7 items), mechanistic structure (5 items), organic structure (8 items), training (7 items), incentives (8 items), and information technology (7 items) generated one component. In terms of reliability, the results of the reliability test indicated that there was no alpha value less than 0.6, which showed that all scales were considered reliable. All scales ranged from 0.834 – 0.868.

Regarding the questionnaire, a professional translator offered helpful assistance in translating it from English into Thai. Consequently, it was guaranteed on the literal equivalence of the meanings from the English version into the Thai version, which made the Thai version scales useful for further studies.

### **6.3.3 Contributions to Management**

This study aimed at investigating the factors influencing the improvement of the individual's capability to transfer knowledge. In general, it was accepted that there was no one single model that could suit all situations. Different models that applied to different locations showed different characteristics and outcomes. As a result, various strategies were required to improve the individual's capability in this regard. Some strategies might suit well some environments, and this is important for management in terms of adapting strategies to fit the context.

The empirical results in this study revealed that information technology was the most critical factor that influenced the improvement of the individual's capability to transfer knowledge. Information technology can serve as an indication for management to create policies, work procedures, and administration systems for the individual's capability to transfer knowledge. Specifically, information technology such as computers, useful software, the Internet and websites present a powerful effect on employees in the organizations and make it easier for people to share information. Therefore, it is essential for organizations to be concerned about the dynamic changing environments today and they must follow the rapid world changes in order to compete with others. For those reasons, information technology is a vital factor that organizations need to think about carefully. Advances in information technology have brought about rapid globalization and this dictates a need for the formulization of new world economic and social orders for re-evaluation. In the organization, when employees can easily access information technology provided by the organization, they are likely to use it to share knowledge and communicate with others easily. Given these facts, information technology could lead to the success of organizational achievement in the field of knowledge sharing improvement among employees.

The effects on mechanistic structure and organic structure can help to enhance the improvement of the individual's capability to transfer knowledge as well. Both mechanistic structure and organic structure were found to have direct and indirect effects on the individual's capability to transfer knowledge. For the mechanistic structure, even though it produced the lowest degree on total effect, the positive effect showed that mechanistic structure together with computer facilities could lead to the

individual's capability in knowledge transfer. It can be said that employees had more time and were able to communicate or share ideas with others more than before when they used the computer or other information technology instruments in order to reduce the work routine. As a result, mechanistic structure was found to be important in terms of improving the individual's capability to transfer knowledge. Regarding organic structure, the cooperative work and participative management among employees together with the sufficient support of information technology equipment also generated significant effects on the individual's capability to transfer knowledge.

In terms of people factors, training was seen to have a significant effect on the improvement of the individual's capability to transfer knowledge as well as incentives; however, incentives demonstrated a less significant effect than training. This was in line with the fact found in the open-ended questions. In addition, the research found that both training and incentives along with the support of information technology motivated employees to comply with the enhancement of the improvement of the individual's capability to transfer knowledge. Employees gained knowledge from training with information technology supplements, such as computers, printers or new software. After training, employees would share the knowledge that they obtained with other employees either through conversations or implementations on the job. Regarding incentives, it can be stated that when monetary rewards or recognition were offered to the employees by way of the intranet and websites, the employees would improve their knowledge transfer or increase knowledge sharing among others.

#### **6.4 Recommendations for the Organization and Management**

Because the recommendations regarding the improvement of the individual's capability to transfer knowledge was the final objective of this study, all recommendations given below are a combination of the empirical results analysis and the open-ended questions from the survey. In the research, it was confirmed that all of the factors (mechanistic structure, organic structure, training, incentives and information technology) demonstrated powerful influences on the improvement of the individual's capability to transfer knowledge. Other recommendations were beneficial and applicable to the management in the organization as well. Therefore, the researcher

recommends that the organization should consider its management through executives and policy makers' implementation, which will lead to the improvement of knowledge transfer.

#### **6.4.1 Organizational Structure**

According to the empirical results analysis and open-ended questions, it was indicated that organizational structure showed positive effects on the improvement of the individual's capability to transfer knowledge. Nonaka (1994: 18) stated that reducing hierarchies in organizations would increase knowledge transfer between employees. Also, Teece (2000: 36) indicated that flexible and responsive organizations should have a minimum of hierarchies in order to enable quick decision making. Other than that, organizations with a dynamic structure should support the empowerment of people, focus on the importance of competencies, and realize intellect and knowledge as essential assets (Nonaka and Takeuchi, 1995: 67). As one female operative at level 5-6 at AOT said, "If AOT allows more cooperation in any kind of work, I will have more chances to work with other people." So, these statements are in line with the relationship between organic structure and the improvement of the individual's capability to transfer knowledge. In this sense, organizations should allow employees to work together in order to reduce their hierarchies and lead employees to participate more in the work process within the organization. Moreover, fluid job descriptions and job rotation must be defined in order to exchange or substitute jobs between employees easily and productively. As a result, this would cause greater opportunities for the sharing of knowledge among employees. Regarding mechanistic structure, although only the empirical analysis showed a positive relationship with the improvement of the individual's capability to transfer knowledge, the researcher would like to recommend that executives and policy makers pay attention to it. The reason is because employees are likely to share their experiences with their colleagues when they feel confident that they know the work task well. The more responses there are to the job and that become experience with the work task, the greater is the degree of the opportunity to share knowledge with other colleagues.

#### **6.4.2 Information Technology**

Regarding the open-ended question results, some respondents mentioned that information technology is a crucial factor that enabled users to implement knowledge sharing within the organization. In addition, information technology is concerned as an essential element to mobilize social capital for the creation of new knowledge. With the linkage of information and the communication system, this could eliminate barriers to communication that naturally exist between different parts of the organization (Gold et al., 2001: 198). In addition, Bloodgood and Salisbury (2001: 59) have asserted that employees easily share knowledge through the computer facilities that they had access to. Several information technology tools are beneficial to users in terms of sharing knowledge, such as the intranet, websites or modern software. To support this point, Marwick (2001: 816) confirmed that there are several forms of communication technologies, such as e-mail, online-chat, audio/video conference systems, intranet, the Internet, and discussion databases. These types of technology assist in increasing the range and depth of information access, overcome space and time constraints in communication, and enable knowledge to be shared more conveniently. In the open-ended questions, one woman, whose educational qualifications were higher than a bachelor degree, mentioned that “technology is the best channel for sharing knowledge among employees. AOT must pay attention to it.” This is in line with the research results, which indicated that when employees could access the computer facilities easily, they were able to gain knowledge sharing from any sources, could participate more comfortably with others, and their work was accelerated. As a result, knowledge transfer improvement is likely to increase in the organization with the assistance of a knowledge information system.

Moreover, regular updates and maintaining information technology are an important concern. Unless the organization updates its knowledge through an information technology system, it will create a barrier or give a bad impression to the employees that use the system. Finally, the employees did not want to use the system anymore because they believed that it was old-fashioned or that information technology did not exhibit any progress. Consequently, the researcher recommended that organizations should pay attention in the regular updating of information technology in order to motivate employees' attention and to increase knowledge sharing within the organization.

### 6.4.3 Incentives

The empirical analysis revealed that there was a significant relationship between incentives and the improvement of the individual's capability to transfer knowledge. In addition, some of the employees recommended that effective motivators could induce them to share knowledge with others. On the other hand, Kohn (1993: 58) stated that employees' satisfaction could be reduced through unattractive incentive programs.

When several types of incentives were provided to the employees, the results from the study showed that it had a positive impact on the improvement on knowledge transfer. It can be explained that when the organization offers more monetary rewards or recognition, employees are willing to share knowledge with others. Expectancy theory states that the expectation of rewards against costs is weighed by individuals; thus effective incentives could motivate individuals to increase their effort (Taylor, 2006: 105). This remark is in line with the open-ended survey, in which a male employee at Suvarnabhumi Airport indicated that "when AOT grants employees some kind of reward, it will encourage them to take further action rather than simply do nothing." Additionally, another man that works in the main office of Don Mueang Airport said that "AOT current rewards offered to employees were not attractive and sufficient enough to motivate employees to create new work." Therefore, it is necessary for implementers as human resources management and policy makers to design attractive incentive programs for motivating employees to share knowledge within the organization. The incentive program can include both monetary and non-monetary rewards. Frey and Osterloh (2005: 101-102) have stated that monetary rewards are induced from external needs through monetary compensation, such as salary or bonuses, while non-monetary rewards are induced by internal needs such as pride, honor, or satisfaction. Moreover, rewards must be transparent so that employees do not have any suspicions and accept the designed incentive program. With the aforementioned, the researcher recommends that using appropriate incentive programs is beneficial for the organization to boost cooperative behavior and to motivate employees to share knowledge with others.

#### **6.4.4 Training**

The research results showed a significant relationship between training and the improvement of the individual's capability to transfer knowledge. It can be interpreted that when the organization provided more training to employees, the employees were likely to teach what they have learned to their colleagues. To confirm the positive relationship between training and the improvement of knowledge transfer, Zaharias et al. (2001: 468) indicated that knowledge is gained through training and learning and this enables employees to translate their knowledge in the form of organizations' plans, competencies, business processes, and strategies. Moreover, constant training should be given to employees in order to increase their knowledge and capabilities. On the other hand, Smith (2001: 311) mentioned that employees fail to keep up their work if they do not have adequate training. From the survey, one female employee that had worked for AOT for more than 5 years made the following remark in this respect: "I need to take more courses in order to be multi-skilled in my work, so that I can teach my friends what I have learned." As a result, the organization should provide proper training to employees so that they can gain knowledge and contribute to the creation of knowledge transfer in the organization. Furthermore, policy makers should pay attention to launching new training courses for employees, which will lead to effective knowledge sharing action and enhance the knowledge-creation progress in the organization. Presently, AOT makes an attempt to arrange appropriate training for all employees. For example, operation employees are trained with operation courses, and administrative employees are trained with administrative and management courses.

#### **6.4.5 Creation of a Knowledge-Sharing Environment**

When there was a problem about the mindset among the employees within the organization, it was so difficult to share knowledge among employees across units or the organization. There are several examples of hindrances to knowledge sharing. One obvious example is the lack of trust, which creates personal value loss and destroys career opportunities in the future (Szulanski et al., 2004: .600; Empson, 2001: 842). Another syndrome of knowledge sharing is "not invented here." Katz and Allen (1982: 7) pinpointed that this syndrome has become an obstacle at work

because it reflects the employees' beliefs, which make them reject knowledge from the outside. Employees refuse to share knowledge because they do not want to lose power and would like to be a hero in the organization—a person that knows the job well. This is in line with the recommendation from a male employee that works at level 7-8. He said that “I am the only one who was assigned to design program for human resource, no one know more than me in this field.”

With the aforementioned, including employee's attitudes, policy makers should handle the mental mode changes among employees in order to create a knowledge sharing culture. For the above reasons, trust plays a vital role in how individuals transfer and share knowledge with others. Employees would choose to share knowledge with their friends or someone they know well. Besides, organizations should define the criteria for knowledge sharing as a requirement for the job, which employees need to comply with. These actions can enhance knowledge sharing naturally and effectively in the organization.

#### **6.4.6 Communication**

More than one-third of the open-ended answers stated that the organization should have a high level of communication. Most employees mentioned that “the best way on transfer knowledge is to share message between employees and executives.”

Gold et al. (2001: 202) stated that the creation of new ideas comes from a dialogue between individuals or groups and therefore can be viewed as a power for creating knowledge. Thus, employee communication should be supported with both formal and informal dialogue. Regarding the action of improving communication, the respondents suggested applying both one-way and two-way communication. One-way communication could be in the form of executives meeting employees in order to inform employees of new organization policy. Two-way communication would heighten more efficient communication because it creates more dialogues between the senders and receivers of information. Moreover, top management should launch informal meetings for employees to make every level of employees feel free to communicate and share knowledge together. In short, the researcher suggests that creating a knowledge-sharing environment is also an indispensable factor that indicates the power of the willingness of participation in knowledge activities.

#### **6.4.7 Leadership**

Nonaka and Toyama (2002: 1001) revealed that leaders have to show the willingness to share information and to seek it from others within the organization. A good leader must be an ideal in terms of reducing barriers, promoting trust or solving problems in transferring knowledge. One man that works at Suvarnabhumi Airport recommended that “executives must communicate with lower level employees as much as possible in order to share information and enable them to know what they really need.” This can be done through regular meetings between leaders and employees on a weekly basis. The success of knowledge sharing can exist at any level in the organization and not particularly at the upper levels of the hierarchy. Moreover, one female employee, whose educational qualification was lower than a bachelor degree, stated that “AOT must have good leadership that acts as a role model for other employees within the organization.” When employees notice that sharing knowledge was something that should be done, they will follow the leaders and attempt to share knowledge as well.

#### **6.4.8 Senior Management Support**

In terms of the improvement of the individual’s capability to transfer knowledge, senior management support is also recommended. King and Marks (2008: 134) have stated that the manager’s control is a predictor of individual effort and is relevant to knowledge sharing. Consequently, besides leader support, which enhances knowledge sharing, senior managers could provide additional support for employees to share knowledge in the organization. In the survey, a lady that has worked at AOT for less than a year indicated the following: “I am comfortable to talk with my senior manager rather than management executives because I feel secure to share all of work problems and other information.” The support can be defined as participating in training or attending social activities. When senior managers share their time with employees, discussions are open and free. The more that communication takes place between senior managers and employees, the more the sharing of knowledge that occurs in the organization.

#### **6.4.9 External Participation/Training**

Apart from the factors that were defined in the proposed model, a few respondents recommended that external participation and training could affect the improvement of the individual's capability to transfer knowledge. Organizations should strengthen their boundary-spanning knowledge exchange across organizations and increase their relationships for better knowledge sharing. The reason is because when employees spend time with other organizations, the participation/training can generate more views or ideas from other sources and open new attitudes in other fields of work. A male employee at Suvarnabhumi Airport mentioned that "I love to attend courses with other friends in other organizations because I can receive different opinions and views when we share knowledge together." This can be done through social gatherings in order to increase the value added from discussing with others across organizations.

#### **6.5 Implications for Future Research**

In this study, the researcher expected to collect data from AOT's employees that had been working at Don Mueang (main office) and Suvarnabhumi Airports because these two locations contained the majority of employees at AOT. The questionnaires were distributed to 500 employees with the assistance of the representatives of each department in both locations. However, 460 questionnaires were returned and were calculated to be 92.0 percent of the target. Some of the questionnaires had a few missing values but still could be used in terms of statistical analysis. From the research, the researcher studied during the first stage of the investigation the factors that influenced the individual's capability to transfer knowledge. Therefore, this was a limitation in this study.

For future research, there are other factors apart from the determinants that were proposed in the model which may play significant roles in leading to the improvement of the individual's capability to transfer knowledge. Variables such as leadership, communication, and a knowledge-sharing environment should be created in research to investigate the potential effects of the improvement of the individual's capability to transfer knowledge. Therefore, it is necessary to identify and provide

more practical implications for knowledge sharing or to study more deeply in the private sector, which may produce different results. Additionally, because information technology was found to be the most critical factor in the improvement of the individual's capability to transfer knowledge, it is necessary to explore further what the major determinants are in implementing information technology for the improvement of the individual's capability to transfer knowledge. Lastly, although the improvement of the individual's capability to transfer knowledge was an interesting variable in the study, different dimensions in the areas of knowledge transfer are attractive in terms of further study as well.

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**APPENDIX A**  
**Questionnaire in Thai**

## แบบสอบถาม

ปัจจัยที่มีอิทธิพลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของแต่ละบุคคล  
(กรณีศึกษาของบริษัท ทำอากาศยานไทย จำกัด (มหาชน))

### คำชี้แจง

แบบสอบถามชุดนี้เป็นแบบสอบถามเกี่ยวกับการศึกษาทัศนคติของพนักงาน ทอท. เกี่ยวกับปัจจัยที่มีอิทธิพลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของแต่ละบุคคล ดังนั้น ขอให้ท่านอ่านและตอบคำถามทุกข้อตามความเป็นจริง สำหรับแบบสอบถามนี้จะใช้เพื่อประโยชน์ในการศึกษาวิจัย คำตอบของท่านจะถูกเก็บเป็นความลับ และจะนำไปประมวลผลเพื่อใช้ในภาพรวมเท่านั้น ผู้วิจัยขอขอบคุณทุกท่านที่ให้ความร่วมมือในการตอบแบบสอบถามครั้งนี้

### ส่วนที่ 1: ข้อมูลส่วนบุคคล

โปรดทำเครื่องหมาย  ลงใน  หน้าข้อความซึ่งเป็นข้อเท็จจริงเกี่ยวกับข้อมูลส่วนบุคคลของท่าน

#### 1. เพศ

ชาย

หญิง

#### 2. ระดับการศึกษา

ต่ำกว่าปริญญาตรี

ปริญญาตรี

สูงกว่าปริญญาตรี

#### 3. สถานที่ทำงาน

สำนักงานใหญ่และทำอากาศยานคอนเมือง

ทำอากาศยานสุวรรณภูมิ

#### 4. ระยะเวลาทำงานในองค์กร

น้อยกว่า 1 ปี

1 - 5 ปี

5 - 10 ปี

มากกว่า 10 ปี

## 5. ระดับตำแหน่งงานในองค์กร

ระดับ 3 - 4

ระดับ 5 - 6

ระดับ 7 - 8

ระดับ 9 - 12

ส่วนที่ 2: ทักษะของพนักงาน ทอท.ที่มีต่อปัจจัยที่มีอิทธิพลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของแต่ละบุคคล

โปรดทำเครื่องหมาย  $\surd$  ลงในช่องที่เห็นว่าตรงกับความคิดเห็นของท่านมากที่สุด

5 = เห็นด้วยอย่างยิ่ง

4 = เห็นด้วย

3 = เฉยๆ

2 = ไม่เห็นด้วย

1 = ไม่เห็นด้วยอย่างยิ่ง

	ทัศนคติของพนักงาน ทอท.ที่มีต่อปัจจัยที่มีอิทธิพลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของแต่ละบุคคล	ระดับความคิดเห็น				
		เห็นด้วยอย่างยิ่ง	เห็นด้วย	เฉยๆ	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
<b>Mechanistic Structure</b> (โครงสร้างแบบเครื่องจักร)						
1.	โครงสร้างองค์กรของข้าพเจ้าสนับสนุนให้พนักงานมีปฏิสัมพันธ์ในการทำงาน					
2.	การกำหนดโครงสร้างองค์กรของข้าพเจ้าทำให้เกิดความสะดวกในการถ่ายทอดความรู้จากส่วนงานหนึ่งไปยังอีกส่วนงานหนึ่ง					
3.	องค์กรของข้าพเจ้ามีกระบวนการที่ทำให้เกิดความสะดวกในการแลกเปลี่ยนความรู้ของผู้ร่วมงานที่มีขอบเขตหน้าที่แตกต่างกัน					
4.	องค์กรของข้าพเจ้าใช้อุปกรณ์เทคโนโลยีที่ทันสมัยเพื่อให้พนักงานได้ทำงานร่วมกับผู้อื่นภายในองค์กร					
5.	องค์กรของข้าพเจ้าได้ใช้อุปกรณ์เทคโนโลยีที่ทันสมัยเพื่อให้สืบค้นข้อมูลใหม่ๆ เพิ่มเติมได้					
<b>Organic Structure</b> (โครงสร้างแบบมีชีวิต)						
6.	ข้าพเจ้าได้รับการส่งเสริมเป็นผู้ถ่ายทอดความรู้ให้กับผู้ทำงานที่อยู่ในทีมงานเดียวกัน					

	ทัศนคติของพนักงาน ทอท.ที่มีต่อปัจจัยที่มีอิทธิพลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของแต่ละบุคคล	ระดับความคิดเห็น				
		เห็นด้วยอย่างยิ่ง	เห็นด้วย	เฉยๆ	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
7.	โครงสร้างองค์กรของข้าพเจ้ามุ่งเน้นให้ทำงานแบบร่วมมือกันมากกว่าการทำงานเดี่ยว					
8.	โครงสร้างองค์กรของข้าพเจ้าส่งเสริมให้พนักงานสามารถศึกษาหาความรู้เพิ่มจากที่ใดก็ได้ที่พวกเขาต้องการ					
9.	องค์กรของข้าพเจ้ามีการตั้งหลายทีมงานในลักษณะข้ามสายงาน (หมายถึง ทีมงานที่ประกอบด้วยสมาชิกจากหลายๆ ส่วนงาน ซึ่งสละเวลาบางส่วนเพื่อทำงานให้กับทีมนี้และใช้เวลาอีกส่วนหนึ่งรับผิดชอบงานในหน้าที่อื่นๆ)					
10.	โครงสร้างองค์กรของข้าพเจ้ามีลักษณะโครงสร้างแบบแบนราบ ดังนั้น พนักงานในองค์กรสามารถติดต่อประสานงานข้ามส่วนงานหรือสายงานได้โดยง่าย					
11.	องค์กรของข้าพเจ้าใช้เทคโนโลยีเพื่อให้พนักงานที่อยู่ในหลายๆ สถานที่สามารถเรียนรู้ร่วมกันเป็นกลุ่มจากแหล่งข้อมูลแหล่งหนึ่งในเวลาเดียวกัน					
12.	องค์กรของข้าพเจ้าใช้เทคโนโลยีเพื่อให้พนักงานที่อยู่ในหลายๆ สถานที่สามารถเรียนรู้ร่วมกันเป็นกลุ่มจากหลายๆ แหล่งข้อมูลในเวลาเดียวกัน					
13.	องค์กรของข้าพเจ้าใช้เทคโนโลยีเพื่อทำให้พนักงานสามารถสร้างโอกาสใหม่ๆ ในการทำงานร่วมกับผู้อื่นได้ดี					
<b>Training</b> (การฝึกฝน)						
14.	การฝึกฝนจะทำให้ข้าพเจ้าได้ผลิตงานเพิ่มมากขึ้น					
15.	การใช้เทคโนโลยี จะทำให้การฝึกฝนเกิดผลดียิ่งขึ้น					
16.	เทคโนโลยีจะช่วยเพิ่มประสิทธิภาพในการหาข้อมูลเพิ่มเติมและช่วยทำให้ผู้ที่ได้รับการฝึกฝนมีความรู้มากขึ้น					
17.	ข้าพเจ้าจะเข้าใจน้อยลงหากการฝึกฝนไม่มีการนำอุปกรณ์เทคโนโลยีมาใช้ร่วมด้วย (เช่น อุปกรณ์คอมพิวเตอร์ หรือ การฉายภาพประกอบ)					

	ทัศนคติของพนักงาน ทอท.ที่มีต่อปัจจัยที่มีอิทธิพลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของแต่ละบุคคล	ระดับความคิดเห็น				
		เห็นด้วยอย่างยิ่ง	เห็นด้วย	เฉยๆ	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
18.	หลังจากการฝึกฝนแล้ว ข้าพเจ้าได้ถ่ายทอดความรู้ในสิ่งที่ข้าพเจ้าได้เรียนมาให้กับเพื่อนร่วมงานอย่างสม่ำเสมอ					
19.	เพื่อนร่วมงานของข้าพเจ้าส่งเสริมให้ข้าพเจ้าใช้ความรู้ใหม่ๆที่ได้รับจากการฝึกฝนมาใช้ในการทำงาน					
20.	วิธีการต่างๆ ที่ข้าพเจ้าได้เรียนรู้จากการฝึกฝน จะคล้ายกับสิ่งที่ข้าพเจ้าได้ปฏิบัติในงานของข้าพเจ้า					
<b>Incentives</b> (สิ่งกระตุ้น)						
21.	องค์กรของข้าพเจ้ามีการกำหนดรางวัลอย่างเหมาะสมให้กับพนักงานที่ให้ความช่วยเหลือในการสร้างความเปลี่ยนแปลงที่ดีขึ้นให้กับองค์กร					
22.	มีการจัดสิ่งจูงใจ/สิ่งกระตุ้นที่เหมาะสมเพื่อส่งเสริมให้เกิดพฤติกรรมถ่ายทอดความรู้ในองค์กร					
23.	สิ่งจูงใจ/สิ่งกระตุ้น เป็นรางวัลที่เห็นได้ชัดเจนเพื่อให้แก่บุคคลหรือกลุ่มงานผู้ซึ่งได้	ถ่ายทอด	ความรู้ ให้กับองค์กร			
24.		ใช้				
25.	พนักงานได้รับสิ่งจูงใจ/สิ่งกระตุ้นนั้น โดยเน้นจากผลของการทำงานเป็นกลุ่ม					
26.	สิ่งจูงใจ/สิ่งกระตุ้นสำหรับ	เป็นการส่วนตัว				
27.	พนักงานจะถูกแจ้งให้ทราบ	ภายในกลุ่มงานที่มีการทำงานเกี่ยวข้องกัน				
28.	เทคโนโลยี (เช่น คอมพิวเตอร์, ระบบเครือข่ายขององค์กร) มีบทบาทสำคัญในการให้ข้อมูลแก่พนักงานเกี่ยวกับสิ่งจูงใจ/สิ่งกระตุ้นภายในองค์กร					
<b>Information Technology</b> (เทคโนโลยีสารสนเทศ)						
29.	ข้าพเจ้าได้เข้าถึงเทคโนโลยีที่ทำให้ข้าพเจ้าได้เก็บความรู้เฉพาะด้านซึ่งช่วยในงานของข้าพเจ้าได้					

	ทัศนคติของพนักงาน ทอท.ที่มีต่อปัจจัยที่มีอิทธิพลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของแต่ละบุคคล	ระดับความคิดเห็น				
		เห็นด้วยอย่างยิ่ง	เห็นด้วย	เฉยๆ	ไม่เห็นด้วย	ไม่เห็นด้วยอย่างยิ่ง
30.	ข้าพเจ้าได้เข้าถึงเทคโนโลยีที่ช่วยทำให้ข้าพเจ้าค้นคว้าหาคำความรู้ได้					
31.	ข้าพเจ้าได้เข้าถึงเทคโนโลยีที่ทำให้ข้าพเจ้าใช้ความรู้เกี่ยวกับผลิตภัณฑ์ (สินค้า) และการบริการขององค์กรข้าพเจ้าได้					
32.	ข้าพเจ้าได้เข้าถึงเทคโนโลยีที่ทำให้ข้าพเจ้าเข้าถึงความรู้เกี่ยวกับองค์กรได้					
33.	ข้าพเจ้าได้เข้าถึงเทคโนโลยีที่ทำให้ข้าพเจ้าสามารถรวบรวมความรู้ได้อย่างเป็นระบบ					
34.	ข้าพเจ้าได้เข้าถึงเทคโนโลยีที่ทำให้ข้าพเจ้าร่วมมือทำงานกับบุคคลอื่นภายในองค์กรได้					
35.	ข้าพเจ้าได้เข้าถึงเทคโนโลยีที่ทำให้ข้าพเจ้าทำงานร่วมกับผู้ทำงานด้วยกันได้โดยไม่คำนึงว่าจะอยู่ ณ ที่ใดก็ตาม					
<b>Improvement of individual Capability on Knowledge Transfer</b> (การพัฒนาความสามารถในการถ่ายทอดความรู้ของแต่ละบุคคล)						
36.	เมื่อข้าพเจ้าได้เรียนรู้สิ่งใหม่ๆ ข้าพเจ้าจะถ่ายทอดให้เพื่อนร่วมงานทราบเกี่ยวกับสิ่งที่ได้เรียนมา					
37.	ข้าพเจ้าถ่ายทอดให้เพื่อนร่วมงานทราบเป็นประจำในสิ่งที่ข้าพเจ้ากำลังทำอยู่					
38.	เพื่อนร่วมงานของข้าพเจ้าเต็มใจที่จะแลกเปลี่ยนหรือถ่ายทอดวิธีการต่างๆ ที่พวกเขาทำ					
39.	เมื่อใดก็ตามที่เพื่อนร่วมงานของข้าพเจ้าเก่งในเรื่องอะไร พวกเขาจะสอนข้าพเจ้าว่าต้องทำอะไรในสิ่งที่จำเป็นและเหมาะสม					
40.	ถ้าผลงานของข้าพเจ้าไม่ได้เป็นในสิ่งที่ควรจะเป็น เพื่อนร่วมงานของข้าพเจ้าจะแก้ไขให้ดีขึ้น					
41.	ข้าพเจ้าจะพูดคุยกับเพื่อนร่วมงานเสมอเกี่ยวกับวิธีการพัฒนาความรู้ของข้าพเจ้า					
42.	ข้าพเจ้าได้รับความรู้ในการแลกเปลี่ยนและถ่ายทอดความรู้ซึ่งกันและกันระหว่างบุคคลในองค์กรของข้าพเจ้า					

**ส่วนที่ 3: ข้อคิดเห็นและข้อเสนอแนะเพิ่มเติม**

โปรดแสดงความคิดเห็นต่อคำถามต่อไปนี้

1. ปัจจัยภายในองค์กรอะไรบ้างที่มีอิทธิพลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของพนักงานบริษัท ทำอากาศยานไทย จำกัด (มหาชน)

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2. ท่านเห็นว่าปัจจัยจากภายนอกหรือสิ่งแวดล้อมจากภายนอกอะไรบ้าง ที่มีผลต่อการพัฒนาความสามารถในการถ่ายทอดความรู้ของพนักงานบริษัท ทำอากาศยานไทย จำกัด (มหาชน)

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**\*\*\*ขอขอบคุณในความร่วมมือในการตอบแบบสอบถาม\*\*\***

## **APPENDIX B**

### **Questionnaire in English**

## Questionnaire

### **The Factors Influencing the Improvement of Individual Capability in Knowledge Transfer: the Case of the Airports of Thailand Public Company Limited (AOT)**

Dear participant:

I would like to invite you and make a big request for you to fill out this research survey which has been done on the “Factors Influencing the Improvement of Individual Capability Regarding Knowledge Transfer.” This survey is a part of my study as a part-time doctoral student at the National Institute of Development Administration (NIDA).

All of the answers provided in this survey will be kept confidential and viewed by the researcher for academic purposes only. You probably will spend 15 to 20 minutes to get through these 42 items, and I wholeheartedly highly appreciate what you have done.

#### **Part I: Personal Data**

Please select the item that fits you best.

1. Gender:    Male                       Female

2. Education Attainment:

Lower than bachelor                       Bachelor

Higher than bachelor

3. Working sites:

Main office and Don Mueang Airport     Suvarnabhumi Airport

4. Years:

- < 1 year
   
  1 – 5 years  
 5 – 10 years
   
  > 10 years

5. Rank:

- Level 3 - 4
   
  Level 5 - 6  
 Level 7 – 8
   
  Level 9 - 12

**Part I: Attitudes about the factors influencing the improvement of individual capability in knowledge transfer**

Please indicate your level of agreement with the following items related to the current situation in your organization. Using a scale of 5-1, where 5 represents Strongly Agree (SA), 4 = Agree (A), 3 = Neutral (N), 2 = Disagree (DA) and 1 represents Strongly Disagree (SDA).

	<b>Attitudes about the factors influencing the improvement of individual capability in knowledge transfer</b>	<b>SA</b>	<b>A</b>	<b>N</b>	<b>DA</b>	<b>SDA</b>
	<i>Mechanistic Structure</i>					
1.	My organizational structure encourages interaction among employees.					
2.	My organizational structure facilitates the transfer of knowledge across structural boundaries.					
3.	My organization has processes to facilitate co-workers' knowledge exchange across functional boundaries.					
4.	My organization uses technology that allows employees to collaborate with other persons inside the organization.					
5.	My organization uses technology that allows for the search of new knowledge.					
	<i>Organic Structure</i>					
6.	I am encouraged to share knowledge between project teams.					

	<b>Attitudes about the factors influencing the improvement of individual capability in knowledge transfer</b>	<b>SA</b>	<b>A</b>	<b>N</b>	<b>DA</b>	<b>SDA</b>
7.	My organizational structure promotes collective rather than individualistic behavior.					
8.	My organizational structure encourages employees to go where they need to for knowledge.					
9.	My organization has many cross-functional teams.					
10.	The structure in my organization is rather flat so employees can easily communicate ideas about their work across divisions or departments.					
11.	My organization uses technology that allows people in multiple locations to learn as a group from a single source or at single point in time.					
12.	My organization uses technology that allows people in multiple locations to learn as a group from multiple sources or at multiple points in time.					
13.	My organization uses technology that allows for the generation of new opportunities in conjunction with its partners.					
<b>Training</b>						
14.	Training will increase my personal productivity.					
15.	With technology involvement, training will be effective.					
16.	Technology provides additional data for learners to gain more knowledge in training.					
17.	I would understand less than I used if the training did not provide technology equipment (such as computers or projectors).					
18.	After training, I always share the knowledge I have learned with my colleagues.					
19.	My colleagues encourage me to use the new skills that I have learned in training.					
20.	The methods used in training are similar to how we do it on the job.					
<b>Incentives</b>						
21.	My organization provides appropriate monetary rewards for employees that help to implement changes.					

	<b>Attitudes about the factors influencing the improvement of individual capability in knowledge transfer</b>			<b>SA</b>	<b>A</b>	<b>N</b>	<b>DA</b>	<b>SDA</b>
22.	Appropriate incentives are provided to encourage knowledge sharing/transfer behavior.							
23.	Incentives are visibly rewarded to the person/work group that	shares	knowledge in the organization.					
24.		uses						
25.	Incentives are given to employees with emphasis on group performance.							
26.	Incentives for employees are communicated	personally.						
27.		within the group-related work.						
28.	Technology (such as computers, the organization's network system) plays an essential role in informing us about motivational information within the organization.							
<b><i>Information Technology</i></b>								
29.	I have access to technology that allows me to locate specific knowledge that helps me in my job.							
30.	I have access to technology that allows me to search for knowledge.							
31.	I have access to technology that allows me to use knowledge about my organization's products and services.							
32.	I have access to technology that allows me to access organizational knowledge.							
33.	I have access to technology that allows me to systematically store knowledge.							
34.	I have access to technology that allows me to collaborate with people inside the organization.							
35.	I have access to technology that allows me to collaborate with co-workers regardless of location.							
<b><i>Improvement of Individual Capability in</i></b>								

	<b>Attitudes about the factors influencing the improvement of individual capability in knowledge transfer</b>	<b>SA</b>	<b>A</b>	<b>N</b>	<b>DA</b>	<b>SDA</b>
<i>Knowledge Transfer</i>						
36.	When I learn something new, I like to share it with my colleagues.					
37.	I share regularly what I am doing with my colleagues.					
38.	My colleagues are willing to share or transfer the way they do things.					
39.	When my colleagues are good at something, they teach me how to do it where necessary and appropriate.					
40.	If my performance is not what it should be, my colleagues will help me to improve.					
41.	I regularly have conversations with my colleagues about how to improve my knowledge.					
42.	I engage in knowledge sharing or knowledge transfer among the individuals in my organization.					

**Part III: Comments and Recommendations**

Please kindly give your comments and recommendations about:

1. What are the internal factors that could affect the improvement of the individual's capability to transfer knowledge at AOT?

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2. What are the factors of external partners or external environments that could improve the individual's capability to transfer knowledge at AOT?

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**Please accept my sincere thanks for your kind cooperation  
and support.**

## **BIOGRAPHY**

<b>NAME</b>	Ms. Surisa Palawongse
<b>ACADEMIC BACKGROUND</b>	Master of Science (MIS) in Labor and Industrial Relations, 2001 University of North Texas Bachelor of Laws (LLB), 1996 Assumption University
<b>PRESENT POSITION AND OFFICE</b>	Senior Human Resources Officer, Welfare Services and Public Relations Division, Human Resources Management Department, Airports of Thailand Public Company Limited