

INDIVIDUAL HUMAN CAPITAL AND PERFORMANCE:  
AN EMPIRICAL STUDY IN THAILAND

by

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Presented to the Faculty of the Graduate School of  
The University of Texas at Arlington in Partial Fulfillment  
of the Requirements  
for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

MAY 2013

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## ACKNOWLEDGEMENTS

This dissertation, which represents the culmination of my doctoral studies, could not have been possible without the help and support of many individuals. I would like to thank many people for their support during this Ph.D. course. First of all, I would like to sincerely thank my chairperson, Dr. Gary McMahan, who has always believed in my project and provided me with great supervision. Moreover, I would also like to thank Dr. Abdul Rasheed, Dr. Mary Whiteside, and Dr. Jared Kenworthy for their helpful advice on my project.

In addition, I would like to express my gratitude to the Dean of Mahasarakham Business School in Thailand, Dr. Praprak Usahavanichkit, as well as friends and Ph.D. colleagues for supporting my studies. Dr. Narissara Kaewsurin; thank you so much for constantly being so supportive and providing me with advice in times of difficulty.

Furthermore, I would like to thank Dr. Weerasak Srichuanhuenskun and Dr. Sunthon Yontrakul from Mahasarakham Hospital and Dr. Husacha Neuytong from Kosumphisai Hospital for allowing me to have the data in their hospitals. Also, I would like to thank all registered nurses in both hospitals who completed the questionnaire in this study. Moreover, I would like to thank Dr. Panupong Lisawat from University of Vermont to provide me insightful information about the activities in the hospital.

Last but not least, to my mother and father, thank you so much for being everything for me. I can never imagine life without both of you. The love and support from you has helped me to get through every problem throughout my studies. I love you with all my heart.

April 22, 2013

## ABSTRACT

### INDIVIDUAL HUMAN CAPITAL AND PERFORMANCE: AN EMPIRICAL STUDY IN THAILAND

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According to the resource-based view of the firm, human capital is a source of sustained competitive advantage of the firm (McMahan, Virick, & Wright, 1999; Wright & McMahan, 1992; Wright, McMahan, & McWilliams, 1994; Wright & McMahan, 2011). Based on micro-foundations, it is essential that one must begin with and understand the individuals that make up the organization before exploring it at the organizational level (Felin & Foss, 2005; Wright & McMahan, 2011). Hence, this study focuses on the individual level of human capital. The first research question of this study is "How does human capital affect the performance of employees?" The second research question of this study is "How does experience affect the performance of employees?" The third research question of this study is "How does social capital affect the performance of employees?"

The purpose of this study is to theoretically develop and empirically test the relationships among multiple dimensions of human capital, social capital, employee behaviors, and performance by emphasizing the mechanisms (i.e., the mediators) between them. This study revisited the Wright and McMahan (1992) model by employing it at the individual level, adding a social capital variable, and categorizing human capital into context-generic human capital and context-specific human capital. Based on the existing literature, I hypothesize the

relationships among context-generic human capital, context-specific human capital, job tenure, social capital (specifically, strong ties), in-role behavior, target-specific organizational citizenship behaviors (OCBs), and individual performance as follows: (1) context-generic human capital is positively related to performance, (2) context-generic human capital is positively related to context-specific human capital, (3) context-specific human capital mediates the relationship between context-generic human capital and performance, (4) job tenure has a positive relationship with context-specific human capital, but this association diminishes as job tenure increases, (5) access to information resources mediates the relationship between social capital (specifically, strong ties) and context-specific human capital, (6) employee behaviors (i.e., in-role behavior and target-specific OCBs) mediate the relationship between context-specific human capital and performance, (7) employee behaviors (i.e., in-role behavior and target-specific OCBs) mediate the relationship between context-generic human capital and performance, and (8) context-specific human capital mediates the relationship between context-generic human capital and employee behaviors (i.e., in-role behavior and target-specific OCBs). All hypotheses were tested using a sample of nurses in Thailand.

All data were tested using multiple regression analysis and structural equation modeling (SEM) analysis. Both methods yielded the same results, except the relationship between context-generic human capital and OCB-S. The results of this study showed that (1) context-generic human capital was positively related to performance, (2) context-generic human capital was positively related to context-specific human capital, (3) in-role behavior and two target-specific OCBs (i.e., OCB-I, OCB-O) partially mediated the positive relationship between context-generic human capital and performance, and (4) context-specific human capital mediated the positive relationships between context-generic human capital and these four types of behaviors (i.e., in-role behavior, OCB-I, OCB-S, and OCB-O). For the different result between two methods, context-specific human capital partially mediated the relationship between context-generic human capital and OCB-S in the multiple regression method, while context-specific

human capital fully mediated these relationship in the SEM method. Moreover, job tenure and social capital were not significantly related to context-specific human capital.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

Strategic human resource management is "the pattern of planned human resource deployments and activities intended to enable an organization to achieve its goals" (Wright & McMahan, 1992, p. 298). Several authors (e.g., Arthur, 1992, 1994; Combs, Liu, Hall, & Ketchen, 2006; Delery & Doty, 1996; Huselid, 1995; Ichniowski, Shaw, & Prenzushi, 1997; MacDuffie, 1995) have found the relationship between human resource practices and firm performance. However, human resource practices are only tools to enable human capital to fulfill organizational goals (Wright & McMahan, 2011), while human capital is a source of sustained competitive advantage (McMahan et al., 1999; Wright & McMahan, 1992; Wright et al., 1994; Wright & McMahan, 2011). Since human capital tends to directly affect the performance of employees in an organization, this study will therefore emphasize human capital instead of human resource practices.

In the field of strategic human resource management, the human capital resource can be defined as "the pool of human capital under the firm's control in a direct employment relationship" (Wright et al., 1994, p. 304). Moreover, Ployhart and Moliterno (2011) defined human capital as "a unit-level resource that is created from the emergence of individuals' knowledge, skills, abilities, and other characteristics (KSAOs)" (p. 128). However, people often dislike the phrase "human capital" because they fear that a human will be treated as a material (Becker, 1964). According to Coleman (1988), human capital is similar to other types of capital because skills and capabilities of people make them more productive in just the same way as physical capital facilitates production in the organization. Moreover, Pfeffer (1994) argues that human capital is an essential resource in most firms. Grant (1996), for example, argues that

knowledge, which is one of several components of human capital, is critical to firm performance. Several companies like Apple, Google, IBM, Intel, and Microsoft are known to hire only the best and brightest people to work for them. These companies need innovation from their employees to be successful. Steve Jobs, the co-founder of Apple, for example, said in his biography that "A players like to work with A players, they just didn't like working with C players" (Isaacson, 2011, p. 363).

Coleman (1988) argues that people can gain more human capital from social capital. According to Burt (1997), "social capital is a quality created between people, whereas human capital is a quality of individuals" (p. 339). Coleman (1988) gave an example that a person can save the time of reading a newspaper by asking his or her friends who pay attention to the news. In addition, Coleman (1988) shows that high school students were more successful when they had support from their parents and community. Moreover, Chisholm and Nielsen (2009) argue that social capital allows individuals to access resources within an organization. Thus, employees could expand their human capital by acquiring information from their social capital.

Furthermore, when employees work as a group, the combination of human capital and social capital is called "human capability" (Wright & McMahan, 2011). Wright and McMahan (2011) suggest that when the level of task interdependence is high, social capital will impact the performance of employees because it will increase coordination and cooperation among employees. This shows that social capital could indirectly affect performance by increasing human capital. The next section will introduce the conceptual underpinnings for this study. First, human capital theories will be discussed at both the organizational level and the individual level. Then, social capital theories that are related human capital will be discussed.

## 1.2 Conceptual Underpinnings

### *1.2.1 Human Capital*

According to Ployhart and Moliterno (2011), human capital has been studied in both micro (i.e., individual) and macro (i.e., organizational) levels. Macro-level scholars generally studied the relationship between firm-level phenomena and aggregated organizational-level experience, education, and skills of employees, while micro-level scholars generally studied the relationship between individual-level phenomena and knowledge, skills, abilities, and other characteristics (KSAOs) of an individual employee (Ployhart & Moliterno, 2011; Wright & McMahan, 2011).

From the macro-level, there is an assumption that an organization drives the actions of individuals (Coleman, 1990). Moreover, the behaviors of individuals are dependent on prior routines, structure, and roles in the organization (Felin & Hesterly, 2007). Therefore, individuals tend to be homogenous (Felin & Hesterly, 2007). On the other hand, from the micro-level, there is an assumption that the organization is the result of individuals' actions (Felin & Hesterly, 2007). Hence, individuals tend to be heterogeneous (Felin & Hesterly, 2007). However, Molley, Ployhart, and Wright (2011) argue that there is no clear dividing line between the macro level and the micro level. According to Ployhart and Moliterno (2011), the ideal method to study human capital is to use the multilevel model which could fill the void between the macro and micro approaches. In the next sub-sections, the human capital literature at the organizational level and the individual level will be discussed.

#### 1.2.1.1 Human Capital at the Organizational Level

The most popular theoretical framework for strategic human resource management is the resource-based view (RBV) of the firm (McMahan et al., 1999; Priem & Butler, 2001). The resource-based view (RBV) of the firm was mentioned in the work of Penrose (1959). According to Barney (1991), a firm's resource should have four attributes to gain sustained competitive advantage as follows: (1) it must be valuable, (2) it must be rare among a firm's

current and potential competition, (3) it must be imperfectly imitable, and (4) there cannot be strategically equivalent substitutes for this resource that are valuable but neither rare or imperfectly imitable. The resource-based view (RBV) of the firm explains the reason why firms have sustained competitive advantage over their competitors (Chisholm & Nielsen, 2009). However, McMahan et al. (1999) argue that although resource-based theory has been used in several studies, there was often a disconnect transition between the theory and the hypothesis development. Therefore, there is a challenge for researchers to use resource-based theory in their research (McMahan et al., 1999).

Based on the resource-based view (RBV) of the firm, Wright and McMahan (1992) and Wright et al. (1994) show that human capital is valuable, rare, inimitable, and non-substitutable. Thus, human capital could be a source of sustained competitive advantage (McMahan et al., 1999; Wright & McMahan, 1992; Wright et al., 1994; Wright & McMahan, 2011). From the study by Takeuchi, Lepak, Wang, and Takeuchi (2007), collective human capital was the mediator between high performance work systems (HPWSs) and firm performance. Moreover, Harris and McMahan (2008) and Harris, McMahan, and Wright (2012) also found that National Collegiate Athletic Association (NCAA) men's basketball teams consisting of players with better knowledge, skills, and abilities (KSAs) were positively related to better team performance. According to three meta-analysis studies (Crook, Ketchen, Comb, & Todd, 2008; Crook, Todd, Combs, Woehr, & Ketchen, 2011; Unger, Rauch, Frese, & Rosenbusch, 2011) that included 261 empirical studies, human capital was positively related to firm performance. Furthermore, Jiang, Lepak, Hu, and Baer (2012) employed a meta-analysis of 120 independent samples that included a total of 31,463 organizations and found that human capital was positively related to operational outcomes (i.e., productivity, quality, service, innovation, and overall operational performance), and these operational outcomes were positively related to financial outcomes (i.e., return on assets, return on equity, market return, sale growth, and overall financial performance).

Moreover, using data from a large U.S.-based restaurant chain, one study by Ployhart, Iddekinge, and MacKenzie (2011) found that unit-specific human capital (i.e., completed advanced levels of optional training) increased the unit effectiveness (i.e., sales per labor hour and receipts versus flow-through) through unit service performance behavior (i.e., customer satisfaction). Additionally, Ployhart et al. (2011) found that selecting better personality and better cognitive ability candidates improved the percentage of employees who successfully completed advanced levels of optional training (i.e., specific human capital), which in turn improved customer satisfaction, sales per labor hour, and receipt versus flow-through (controllable profits \* 100 / projected profits). Likewise, according to a meta-analysis of 70 empirical studies by Unger et al. (2011), specific human capital (related to entrepreneurial tasks) had a stronger relationship with success than general human capital (low task-relatedness). Furthermore, Unger et al. (2011) found that outcomes of human capital investments (i.e., knowledge and skills) had stronger relationships with success (i.e., profitability, growth, and firm size) than human capital investments (i.e., education and work experience). These empirical studies show that human capital that is job-specific or firm-specific is more likely to improve firm performance.

#### 1.2.1.2 Human Capital at the Individual Level

Felin and Foss (2005) argue that "Organizations are made up of individuals, and there is no organization without individuals" (p. 1). According to micro-foundations, it is essential that one must begin with and understand individuals that make up the organization before exploring it at the organizational level (Felin & Foss, 2005; Wright & McMahan, 2011). Similarly, Ployhart and Moliterno (2011) state that organizational human capital is the aggregated value of individual human capital. Based on human capital theory (Becker, 1962, 1964), people who have more human capital (e.g., formal education, on-the-job training) have more productivity. Likewise, Judge, Cable, Boudreau, and Bretz (1995) found that each dimension of human capital at the individual level (i.e., educational level, quality, prestige, and degree type) was

positively related to financial success of executives. Also, Ng and Feldman (2010) argue that organizational tenure enhances job knowledge which is important to effectively perform the job. According to the meta-analysis by Ng and Feldman (2010) which included 350 empirical studies, organizational tenure was positively related to in-role performance and organizational citizenship behaviors.

Moreover, Jensen (1998) argues that people are different in their mental ability. Sir Francis Galton, who is generally regarded as the father of differential psychology (i.e., the study of individual and group differences in human traits, which includes behavioral genetics), was the first to conduct an empirical study of individual differences of people's mental ability (Jensen, 1998). Based on Galton's conclusions, Jensen (1998) argues that human mental ability contains both general and specific components. The general component, which is the most important source of individual differences, is the result of an evolution mechanism based on Darwin's theory of natural selection (Jensen, 1998). On the other hand, the specific component is more likely to be influenced by one's environment and less likely to come from a product of biological evolution (Jensen, 1998). According to the monozygotic twins' study (i.e., identical twins who reared apart from an early age) by Arvey, Bouchard, Segal, and Abraham (1989), 30% of the observed variance in general job satisfaction was due to genetic factors. Due to the highly correlated between job satisfaction and job performance (Judge, Thoresen, Bono, & Patton, 2001), this result of the monozygotic twins' study implies that job performance could be predicted by genetic factors. However, job performance is not only affected by genetic factors but also affected by environmental factors (Jensen, 1998). Thus, job experience could affect the performance of employees.

According to the meta-analysis by Ng, Eby, Sorensen, and Feldman (2005) that included 140 empirical studies, the number of hours worked was positively related to career success (i.e., salary, promotion, and career satisfaction). This result shows that employees with more experience tend to have higher salary, obtain promotions, and display satisfaction with

their careers. Based on the contest mobility perspective (Turner, 1960) that people with better performance and adding value to the organization will be likely to get promotion or elite status, it can be inferred that employees with high experience tend to have better performance.

Jensen (1998) notes that "A person cannot perform a job successfully without the specific knowledge required by the job" (p. 282). That is, specific knowledge is a good predictor of performance because employees with high specific knowledge will be likely to have more productivity than employees with low specific knowledge. Several studies (e.g., Pil & Leana, 2009; Gathmann & Schönberg, 2010) have shown that specific knowledge was positively related to individual performance.

According to the model by Schmidt, Hunter, and Outerbridge (1986), job experience and ability affect performance through the acquisition of job knowledge and skills. Schmidt et al. (1986) used the same data set as Hunter (1983), which included the data from 4 previous military studies and 10 previous civilian studies, in order to examine their model using path analysis. Schmidt et al. (1986) found that the acquisition of job knowledge and skills was the mediator of the relationship between performance and two independent factors (i.e., job experience and ability).

However, Ployhart (2012) argues that "only human capital resources [at the organizational level], and not [individual] KSAOs [(Knowledge, Skills, Abilities, and Other Characteristics)], offer the potential for sustained competitive advantage" (p. 71). Ployhart and Moliterno (2011) argues that individual generic KSAOs may not be sources of sustained competitive advantage, but they help create unique and inimitable human capital resources at the organizational level. Nevertheless, "The greater the task complexity, the less similarity between human capital resources and individual KSAOs" (Ployhart, 2012, p. 71). That is, if the task is very complex, individual KSAOs might be the sources of sustained competitive advantage. Moreover, in order to fully utilize human capital of employees in an organization,

employees need social capital (Burt, 1997). In the next-subsection, social capital theories that are related to human capital will be discussed.

### *1.2.2 Social Capital*

Burt (1997) argues that "social capital is a quality created between people, whereas human capital is a quality of individuals" (p. 339). Social capital "exists in the relations among persons" (Coleman, 1988, pp. S100-S101). Social capital has several advantages. For example, social capital (1) increases attitude similarity, (2) increases job satisfaction, (3) increases power, (4) increases chance to get a job, (5) increases performance, (6) increases chance to get promotion, (7) decreases turnover, and (8) increases leadership effectiveness (Brass, Galaskiewicz, Greve, & Tsai, 2004). In this present study, benefits of social capital which are related to human capital will be emphasized.

Coleman (1988) argues that social capital can be a source of information. According to structural hole theory, social capital connects people on opposite sides of a hole in a network (Burt, 1997). This structure hole allows information to flow between people in a network where otherwise these people may be disconnected (Burt, 1997). Therefore, people can access more information than they can process alone (Burt, 1997). This allows employees to gain more knowledge from their social capital. Empirically, Katungi, Edmeades, and Smale (2008) found that men tend to have better access to social capital than women, thus leading to better information exchange on technologies. Similarly, Wei, Zheng, and Zhang (2011) found that team density (i.e., number of actual links divided by the maximum possible links existing in a social network) was positively related to knowledge transfer. These two studies supported the relationship between social capital and access to information resources.

Furthermore, Brass et al. (2004) argue that social capital increases attitude similarity. Hence, individuals will have more willingness to work together and share their knowledge. Moreover, "Social capital lowers the overall costs of coordination" (Chisholm & Nielsen, 2009, p.

18). As a result, employees with more social capital tend to initiate coordination within their network, thus improving their knowledge sharing among employees. Therefore, employees with more social capital will likely have better performance because they can obtain necessary knowledge, skills, and abilities. Empirically, Ambrosini, Bowman, and Burton-Taylor (2007) found that inter-team coordination among employees in the financial service sector increased customer satisfaction. Additionally, Weick and Roberts (1993) argue that a "collective mind" or a pattern of heedful interrelations reduces organizational errors. Weick and Roberts (1993) show an example that flight operators need intensive coordination in during a takeoff operation, during a flight operation, and during a landing operation. It can be inferred that social capital could improve performance of the workgroup by improving shared knowledge within the workgroup.

In this section, human capital theories have been discussed from both micro and macro perspectives. Human capital at the organizational level can be a source of sustained competitive advantage of the organization. Similarly, human capital at the individual level can improve the performance of employees. This section also summarizes social capital theories relating to human capital. Social capital tends to increase the number of information sources and the willingness to share knowledge within the social networks, thus improving knowledge, skills, and abilities that are necessary for the job. The following section will introduce the problem statements and research questions of this study. These problem statements and research questions are based on the literature review in Chapter 2.

### 1.3 Problem Statements and Research Questions

#### *1.3.1 General Ability, Education, and Past Experience*

Several studies have found that cognitive ability is positively related to individual performance (Becker, 1964; Jensen, 1998). Moreover, the meta-analysis by Ng et al. (2005) found that cognitive ability was positively related to salary. These results, thus, signify the

importance of cognitive ability on the success of employees. According to Becker (1964), Jensen (1998), and Hitt, Bierman, Shimizu, and Kochhar (2001), cognitive ability is highly related to education level. In recruitment process, most companies require applicants to include their education and past experience in their job application (Pendlebury, 1970). This shows that companies need employees with high levels of human capital. However, some studies (e.g., Pil & Leana, 2009) found that the relationship between education and individual performance was not significant. Thus, there is a need for a further study to investigate an underlying mechanism of the relationship between human capital and performance.

Over the years, most research has been conducted on the direct relationship between human capital and performance (e.g., Becker, 1964; Jensen, 1988; Harris & McMahan, 2008; Hawkins & Dulewicz, 2007; Ng et al., 2005; Pil & Leana, 2009; Wright, Smart, McMahan, 1995b), while there is little research on the mediated variables between them. Therefore, this study will shed some light on the mediators between human capital and the performance of employees. The first research question is "How does human capital affect the performance of employees?"

### *1.3.2 Experience*

Although several studies found that organizational tenure was positively related to in-role performance and organizational citizenship behaviors (OCBs), these relationships were not linear (Ng & Feldman, 2010). According to a meta-analysis by Ng and Feldman (2010), the strength of these relationships decreased when average organizational tenure of the sample increased, average age increased, percentage of women decreased, percentage of racial minority decreased, and percentage of college education decreased. That is, employees who can benefit more from experience are those with low experience, young employees, women, minorities, and college educated employees. Likewise, several studies (e.g., McDaniel, Schmidt, & Hunter, 1988; Sturman, 2003) also found a nonlinear relationship between

experience and performance. However, most research has been conducted on the direct relationship between experience and performance (e.g., McDaniel et al., 1988; Ng et al., 2005; Ng & Feldman, 2010; Quinones, Ford, & Teachout, 1995; Sturman, 2003), while there is little research on the mediators between them. This study will, therefore, search for the reasons behind the effect of experience on the performance of employees. The second research question is "How does experience affect the performance of employees?"

### *1.3.3 Social Capital*

Social capital "exists in the relations among persons" (Coleman, 1988, pp. S100-S101). Several studies (e.g., Burt, 1997; Coleman, 1988; Pil & Leana, 2009; Sagas & Cunningham, 2005) have found the relationship between social capital and performance. For example, Coleman (1988) found that high school students with high social capital (i.e., family support) were less likely to drop out from high school. Moreover, Pil and Leana (2009) found that a teacher's social capital was related to performance of his or her students. Furthermore, Sagas and Cunningham (2005) found that assistant football coaches who worked with same race networks (i.e., black or white) were more likely to get promotions and obtain better positions. It can be inferred that assistant football coaches were likely to perform better if they had better social networks. Similarly, Burt (1997) found that managers with more social capital tended to have early promotions and better bonuses. In addition, this effect is also supported at the organizational level. Bruderl and Preisendorfer (1998) found that network support increased sales growth for new businesses. Although several studies found a direct relationship between social capital and performance, little research exists on the reasons why social capital leads to performance. Therefore, this present study will examine how social capital affects the performance of employees. Thus, the third research question is "How does social capital affect the performance of employees?" Table 1.1 shows the summary of the three research questions.

Table 1.1 Research Questions

1. How does human capital affect the performance of employees?
2. How does experience affect the performance of employees?
3. How does social capital affect the performance of employees?

#### 1.4 Expected Contributions

This study is expected to have several significant contributions. First, this study will be the first study at the individual level to test the relationship between context-generic human capital and context-specific human capital. Since the introduction of the context-generic human capital and context-specific human capital by Ployhart and Moliterno (2011), there has been little research on the relationship between context-generic and context-specific human capital. Ployhart et al. (2011) studied this relationship in a restaurant chain. However, the study by Ployhart et al. (2011) was operated at the organizational level. Thus, this study will extend the existing knowledge by empirically testing this relationship at the individual level.

Second, this study will illustrate that context-specific human capital is a mediator between context-generic human capital and performance. Most research has been conducted on the direct relationship between each component of human capital and performance (e.g., Gathmann & Schönberg, 2010; Harris & McMahan, 2008; Hawkins & Dulewicz, 2007; Ng et al., 2005; Pil & Leana, 2009; Wright et al., 1995b). For example, Harris and McMahan (2008) found that NCAA basketball teams consisting of players with better knowledge and skills were positively related to better team performance. Therefore, this study will extend the existing literature by examining the mediator between the relationship between context-generic human capital and performance (i.e., context-specific human capital).

Third, this study will show the nonlinear effect of job tenure on context-specific human capital. Most research has been conducted on job experience and performance (e.g., McDaniel et al., 1988; Ng et al., 2005; Ng & Feldman, 2010; Quinones et al., 1995; Sturman, 2003). For example, a meta-analysis by McDaniel et al. (1988) found a nonlinear relationship between experience and performance. However, there is little research on the underlying mechanism of

the relationship between job experience and performance. This study will, thus, extend the past studies by introducing the context-specific human capital as the mediator between job experience and performance. That is, it is theorized that job experience will affect the performance of employees through their context-specific human capital. Hence, job experience will have a positive relationship with context-specific human capital, but this association will diminish as job experience increases.

Fourth, this study will provide the first attempt to investigate the benefits of social capital to human capital. That is, this study will show that social capital is positively related to context-specific human capital. Most research has been conducted on the relationship between social capital and performance (e.g., Bruderl & Preisendorfer, 1998; Burt, 1997; Coleman, 1988; Pil & Leana, 2009; Sagas & Cunningham, 2005). For example, Burt (1997) found that managers with more social capital tended to have early promotions and better bonuses. Little research has been conducted on the underlying mechanisms between social capital and performance. Thus, this study will extend the existing literature by introducing the benefits of social capital as the source of information. On one hand, social capital can improve context-specific human capital by increasing the number of information sources (Burt, 1997; Coleman, 1988). On the other hand, social capital can improve employee behaviors by increasing the willingness to share knowledge among employees (Chisholm & Nielsen, 2009).

Fifth, since the culture is different between Thailand and the US (Hofstede, 1983; House, Hanges, Javidan, Dorfman, & Gupta, 2004), this study will test the generalizability of human capital and social capital theories in Thailand. Also, this study will enhance knowledge about human capital and social capital in Thailand because most research has been developed and tested in the US (e.g., Wright et al., 1995b; Pil & Leana, 2009).

### 1.5 Summary

This chapter begins by emphasizing the importance of human capital in strategic human resource management. Then, this chapter presents the two main conceptual underpinnings of this study: human capital and social capital. After that, this chapter introduces problem statements and three research questions based on the human capital and social capital literature. Finally, five expected contributions are explained.

In summary, the purpose of this study is to theoretically develop and empirically test the relationships among multiple dimensions of human capital, social capital, employee behaviors, and performance by emphasizing the mechanisms (i.e., the mediators) between them. This study will revisit the Wright and McMahan (1992) model by employing it at the individual level, adding a social capital variable, and categorizing human capital into context-generic human capital and context-specific human capital (See Figure 3.2 for details).

The next chapter will review the theoretical and empirical literature related to the research questions. Then, seventeen hypotheses will be introduced and explained in Chapter 3. Next, the methodology of this study will be explained in Chapter 4. After that, the results of this study will be analyzed in Chapter 5. Then, the discussion will be presented in Chapter 6. Finally, the theoretical contributions, practical implications, limitations, and future research will be presented in Chapter 7.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

Human capital has been used in several disciplines. From the economics literature, Becker (2002) defined human capital as "the knowledge, information, ideas, skills, and health of individuals" (p. 3). Investing in human capital will improve the employee's productivity and earnings (Becker, 1962, 1964). Although economists have long known the importance of human capital, many people feel offended by the term human capital (Schultz, 1961). This is because many people believe that human beings are not capital goods (Schultz, 1961). However, the research about human capital has been increasing since the publication of Becker's book on human capital in 1964.

Moreover, human resources have emerged in the strategic management literature (Wright, Dunford, & Snell, 2001). The strategic management literature has shifted its emphasis from external factors (e.g., industry position) to internal firm resources, especially human resources, as sources of competitive advantage since the introduction of the resource-based view (RBV) of the firm (Hoskisson, Hitt, Wan, & Yiu, 1999; Wright et al., 2001). From the strategic management literature, Coff (2002) defined human capital as "knowledge that is embodied in people" (p. 108). In addition, Hitt, Bierman, Uhlenbruck, and Shimizu (2006) defined human capital as "employees' accrued expertise and experience" (p. 1138). Besides, human capital includes education, experience, skills and characteristics of employees (Hitt et al., 2001). Hitt et al. (2001) found that there was a curvilinear (U-shaped) relationship between human capital of partners (i.e., quality of the law school attended by partners and total experience as partners in the focal firm) and firm performance. That is, the relationship between human capital of partners and firm performance was initially negative but turned positive with higher levels of human capital. Hitt et al. (2001) argue that early investments of

partners' human capital are costly and surpass their benefits. However, after continuing investments, the cost of these investments reduces, thus allowing firms to reap greater benefits (Hitt et al., 2001).

Furthermore, from the strategic human resource management literature, human capital can be defined as "a unit-level resource that is created from the emergence of individuals' knowledge, skills, abilities, and other characteristics (KSAOs)" (Ployhart & Moliterno, 2011, p. 128). Moreover, Ployhart and Moliterno (2011) separated human capital into two categories: cognitive human capital (what people can do) and non-cognitive human capital (what people will do). Four major types of cognitive human capital have been used in the research: knowledge, skills, ability, and experience (Ployhart & Moliterno, 2011). Besides cognitive human capital, there are three major types of non-cognitive human capital: personality, values, and interests (Ployhart & Moliterno, 2011). According to central and surface competencies model by Spencer and Spencer (1993), cognitive human capital (e.g., knowledge and skills) tends to be visible and developable, while non-cognitive human capital (e.g., motive, trait, and self-concept) tends to be hidden and hard to develop. Hence, this study will focus on cognitive human capital.

This chapter will review the literature about the resource-based view (RBV) of the firm, general and specific human capital, context-generic and context-specific human capital, cognitive human capital, measurement of human capital, social capital, employee behaviors, and gaps in the literature. The next section will review the resource-based view (RBV) of the firm that is related to human capital.

## 2.2 Resource-Based View of the Firm

The most popular theoretical framework for strategic human resource management is the resource-based view (RBV) of the firm (McMahan et al., 1999; Priem & Butler, 2001). However, McMahan et al. (1999) argue that although resource-based theory has been used in several studies, there was often a disconnect transition between the theory and the hypothesis

development. Therefore, there is a challenge for researchers to use resource-based theory in their research (McMahan et al., 1999). The resource-based view (RBV) of the firm was mentioned in the work of Penrose (1959). The resource-based view (RBV) of the firm explains why firms have sustained competitive advantage over their competitors (Chisholm & Nielsen, 2009). Firms need resources, including all assets, capabilities, organizational process, firm attributes, information, and knowledge, in order to improve their efficiency and effectiveness based on their strategies (Draft, 1983; Barney, 1991). According to Barney (1991), firm resources can normally be classified into three categories: physical capital resources (Williamson, 1975), human capital resources (Becker, 1964), and organizational capital resources (Tomer, 1987). Physical capital resources include "the physical technology used in a firm, a firm's plant and equipment, its geographic location, and its access to raw materials" (Barney, 1991, p. 101). Human capital resources include "the training, experience, judgment, intelligence, relationships, and insight of individual managers and workers in a firm" (Barney, 1991, p. 101). Organizational capital resources include "a firm's formal reporting structure, its formal and informal planning, controlling, and coordinating systems, as well as informal relations among groups within a firm and between a firm and those in its environment" (Barney, 1991, p. 101).

According to Barney (1991), a firm's resource should have four attributes to gain sustained competitive advantage as follows: (1) it must be valuable, (2) it must be rare among a firm's current and potential competition, (3) it must be imperfectly imitable, and (4) there cannot be strategically equivalent substitutes for this resource that are valuable but neither rare or imperfectly imitable. First, valuable resources will improve efficiency and effectiveness of a firm by exploiting opportunities and/or neutralizing threats in a firm's environment (Barney, 1991). Second, a resource is rare when the number of firms that possess a particular valuable resource is less than the number of firms needed to generate perfect competition dynamics in an industry (Barney, 1991). Third, firm resources can be imperfectly imitable for one or a

combination of three reasons: (1) the ability of a firm to obtain a resource is dependent upon unique historical conditions, (2) the link between the resources possessed by a firm and a firm's sustained competitive advantage is causally ambiguous, or (3) the resource generating a firm's advantage is socially complex (Dierickx & Cool, 1989; Barney, 1991). Lastly, a resource is non-substitutable when no other resources that can enable the firm to implement the same strategies (Barney, 1991).

A firm will have competitive advantage when it implements "a value creating strategy not simultaneously being implemented by any current or potential competitors" (Barney, 1991, p. 102). Moreover, a firm will have sustained competitive advantage when it implements "a value creating strategy not simultaneously being implemented by any current or potential competitors and when these other firms are also unable to duplicate the benefits of this strategy" (Barney, 1991, p. 102). That is, competitive advantage can be achieved when resources are valuable and rare (Ployhart, 2012). On the other hand, sustained competitive advantage can be achieved when resources are not only valuable and rare, but also inimitable and non-substitutable (Ployhart, 2012). Using the resource-based view (RBV) of the firm, Wright & McMahan (1992) and Wright et al. (1994) argue that human resources can be sources of sustained competitive advantage because they are valuable, rare, inimitable, and non-substitutable. Similarly, using the principles of the resource-based view (RBV) of the firm, McMahan, Bell, and Virick (1998) argue that the diversity of human resources can be a source of sustained competitive advantage because it is valuable, rare, inimitable, and non-substitutable.

This section reviews the resource-based view (RBV) of the firm. Resources require four properties (i.e., valuable, rare, inimitable, and non-substitutable) in order to be the sources of sustained competitive advantage. In following section, two types of human capital will be discussed.

### 2.3 General Human Capital and Specific Human Capital

As previously mentioned, McMahan et al. (1999), Wright and McMahan (1992), Wright et al. (1994), and Wright and McMahan (2011) argue that human capital is a source of sustained competitive advantage of the firm because it is valuable, rare, inimitable, and non-substitutable. However, the issue of the separation between general human capital and firm-specific human capital has been raised by Wright and McMahan (2011) and McMahan and Harris (in press). Becker (1962, 1964) defines general human capital and firm-specific human capital based on the training process. According to Becker (1962, 1964), there are two types of on-the-job training: general training and specific training. This on-the-job training can range continuously from completely general training to completely specific training (Becker, 1962, 1964). The benefits of increasing productivity from completely general training will be shared between the firm providing the training and other firms if the employees leave the firm (Becker, 1962, 1964). On the other hand, the benefits of increasing productivity from completely specific training will only be useful for the firm providing the training but not be useful in other firms (Becker, 1962, 1964). However, most of the on-the-job training programs fall between these two extremes (Becker, 1962, 1964). According to Becker (1962, 1964), education from school can be referred as the general training because it benefits all firms.

Furthermore, many organizations might encounter a high turnover rate after general training. That is, employees with better general human capital will have more opportunities to find a new job. Becker (1962, 1964) notes that general training or development will increase the rate of turnover because trained employees can find a job somewhere else that can use the same knowledge and skills. Besides, Benson, Finegold, and Mohrman (2004) found that employees who earned graduate degrees through tuition reimbursement were more likely to leave the organization voluntarily than employees who participated in tuition reimbursement without earning a degree. One explanation is that training without completing a degree cannot be easily recognized by other employers (Strober, 1990). Therefore, employees who do not

earn a degree will not increase their alternative choices because other employers do not know their human capital. On the other hand, employees who earn a degree will have more opportunities to find alternative employers because they have the degree that shows new employers their human capital. In addition, Trevor (2001) found that employees with higher education were more likely to quit. According to organizational commitment theory, an alternative choice of employment will reduce the continuance commitment (Meyer & Allen, 1991). For this reason, employees with better general ability tend to quit the job.

To reduce the turnover rate, training must be specific and related to a certain job. In addition, specific training can enhance the skills that are related to the job and also reduce the turnover rate because employees tend to have difficulty in finding an outside job that uses the same set of knowledge and skills. Moreover, Wright and McMahan (2011) argue that specific human capital has been the focus of attention in strategic human resource management literature. Based on the resource-based view (RBV) of the firm, Barney and Wright (1998) argue that firm-specific human capital can be the source of competitive advantage of the firm. On the other hand, Wright et al. (1994) argue that general human capital, especially general ability, also provides competitive advantage to the firm because it is valuable, rare, inimitable, and non-substitutable. Wright and McMahan (2011) conclude that both general human capital and specific human capital could be the source of competitive advantage of the firm.

This section reviews the differences between general human capital and specific human capital. The next section will discuss another two types of human capital: context-generic human capital and context-specific human capital.

#### 2.4 Context-Generic Human Capital and Context-Specific Human Capital

According to Ployhart and Moliterno (2011), context-generic human capital can be used in many different tasks and firms, while context-specific human capital can be used in only particular tasks and firms. Ployhart and Moliterno (2011) argue that this type of distinction is

different from general and firm-specific human capital which is used in macro-level research. Although general human capital has a similar concept to context-generic human capital, specific human capital is a different concept from context-specific human capital. Specific human capital offers benefits in a specific firm, while context-specific human capital benefits only a specific task and firm. Moreover, context-generic human capital is more stable across time and situations, while context-specific human capital tends to change over time and situations (Jensen, 1998; Kanfer, 1990; Ployhart & Moliterno, 2011). Empirically, Gathmann and Schönberg (2010) found that context-specific human capital (i.e., specific skills ) accounted for up to 52% of individual wage growth. Moreover, Pil and Leana (2009) found mathematics teachers with high ability to teach mathematics were likely to improve performance of students in a mathematics class. These show the importance of context-specific human capital.

Cognitive ability is context-generic human capital because it is relatively stable (Jensen, 1998; Kanfer, 1990; Ployhart & Moliterno, 2011). Knowledge, skills, and experience can be either context-generic or context-specific (Ployhart & Moliterno, 2011). For example, computer knowledge and skills can be context-generic human capital for managers. These might include how to perform basic computer knowledge and skills such as how to compose an e-mail, how to create an electronic document, and how to create a presentation from the computer. Such computer knowledge and skills are required by most of the jobs. However, they do not directly increase the performance of managers but managers with better computer knowledge and skills can learn and use other knowledge and skills better because they have better tools. On the other hand, computer knowledge and skills can be context-specific human capital for computer programmers. These might include specific knowledge and skills such as programming language, database management, and network management. These kinds of knowledge and skills are essential to complete their programming tasks. Moreover, this specific knowledge requirements depend on an environment or a context of the job.

This section reviews the differences between context-generic human capital and context-specific human capital. These two types of human capital concepts will be used in this study. In the next section, the literature on each dimension of cognitive human capital, which is the focus of this study, will be reviewed and discussed in details.

## 2.5 Cognitive Human Capital

As stated earlier, human capital can be studied at both micro (i.e., individual) and macro (i.e., organizational) level (Ployhart & Moliterno, 2011; Wright & McMahan, 2011). Ployhart and Moliterno (2011) argue that human capital should be measured at the individual level and aggregated up to the organizational level. Since "the roots of human capital lie at the individual level" (Ployhart & Moliterno, 2011, p. 132), this study will focus on human capital at the individual level.

Moreover, as previous discussed, human capital can be divided into two categories: cognitive human capital and non-cognitive human capital (Ployhart & Moliterno, 2011). Since there is little literature in strategic human resource management explaining the relationships among these four types of cognitive human capital, this study will emphasize the relationships among the four types of cognitive human capital which are knowledge, skills, ability, and experience. In this study, the black box of cognitive human capital will be separated into four components: experience, ability, knowledge, and skills.

### *2.5.1 Experience*

The first component of cognitive human capital is experience. Experience is the human capital investment accumulated via learning-by-doing (Unger et al., 2011; Rosen, 1972). Ployhart and Moliterno (2011) argue that "Experience is a multifaceted construct that reflects an opportunity to learn and transfer knowledge from generic to job and firm specific" (p. 134). In the organization, employees tend to improve their productivity through learning new skills or

knowledge while they are on the job (Becker, 1962, 1964). According to a meta-analysis of 182 samples by Sturman (2003), a meta-analysis of 44 samples by Quinones et al. (1995), and a meta-analysis of 947 samples by McDaniel et al. (1988), experience was positively related to performance. Specifically, the effect of experience on performance was highest at task level, followed by job level and organizational level, respectively (Quinones et al., 1995). Similarly, the meta-analysis by Sturman (2003) found that job experience was a better predictor of performance than organizational tenure. These results show that the best predictor for performance is the time that people spend at their current task or job rather than their organization.

According to a meta-analysis by Ng et al. (2005) that included 140 empirical studies, the number of hours worked was positively related to career success (i.e., salary, promotion, and career satisfaction). In addition, within the same meta-analysis by Ng et al. (2005), job tenure, organizational tenure, work experience, and international experience were positively related to salary. Ng and Feldman (2010) note that organizational tenure has been used as a proxy for work experience. According to a meta-analysis by Ng and Feldman (2010), organizational tenure was positively related to in-role performance and organizational citizenship behaviors. Interestingly, organizational tenure was positively related to some counterproductive behaviors (e.g., aggressive behavior and nonsickness absence).

Several meta-analysis studies (e.g., McDaniel et al., 1988; Ng & Feldman, 2010; Sturman, 2003) have found that the relationship between experience and performance was nonlinear. First, the meta-analysis by Ng and Feldman (2010) found that the strength of these relationships decreased when average organizational tenure of the sample increased, average age increased, percentage of women decreased, percentage of racial minority decreased, and percentage of college education decreased. That is, employees who can benefit more from experience are those with low experience, young employees, women, minorities, and college educated employees. Second, the meta-analysis by McDaniel et al. (1988) found that the mean

length of job experience of the sample reduced the strength of the relationship between job experience and performance. Third, the meta-analysis by Sturman (2003) found that the mean length of organizational tenure of the sample reduced the strength of the relationship between organizational tenure and performance. Nevertheless, the meta-analysis by Sturman (2003) found that the mean length of job experience of the sample reduced the strength of the relationship between job experience and performance only in low-complexity jobs but not in high-complexity jobs.

Sturman (2003) found that although the relationships between experience and performance in low-complexity jobs were initially higher than those in high-complexity jobs, the relationships between experience and performance in high-complexity jobs increase over time. Sturman (2003) argues that employees in low-complexity jobs need less time to acquire new knowledge and skills than those in high-complexity jobs. On average, the relationships between experience and performance in high-complexity jobs were higher than those in low-complexity jobs (Sturman, 2003). In contrast to Sturman's (2003) study, McDaniel et al. (1988) found that the relationships between job experience and performance were higher in low-complexity jobs than in high-complexity jobs. McDaniel et al. (1988) argue that employees who work in low-complexity jobs are unlikely to have formal education; therefore, experience is their only source of knowledge. On the other hand, employees who work in high-complexity jobs tend to have better education; therefore, they may not require as much knowledge from experience (McDaniel et al., 1988). This result from McDaniel et al. (1988) seems to contradict the results from Sturman (2003).

However, most of the samples in McDaniel et al.'s (1988) study (514 or 54.3%) had an average length of experience of less than 6 years. Therefore, the result from McDaniel et al. (1988) might represent only the relationships between experience and performance in the low experience range. Furthermore, McDaniel et al. (1988) found that the relationships between experience and performance were higher in low-complexity jobs than in high-complexity jobs

only in the samples with the average length of experience lower than 12 years. When the average length of experience of the samples was more than 12 years, the relationships between experience and performance were higher in high-complexity jobs than in low-complexity jobs (McDaniel et al., 1988). These two meta-analysis studies (i.e., McDaniel et al., 1988; Sturman, 2003) show that employees in low-complexity jobs tend to gain more benefits from their experience in the early stage than in the later stage, while those in high-complexity jobs tend to gain more benefits from their experience in the later stage than in the early stage. In addition, Hitt et al. (2001) found that the relationship between human capital of partners (i.e., quality of the law school attended by partners and total experience as partners in the focal firm) and firm performance was initially negative but turned positive with higher levels of human capital. This seems to indicate that jobs in a law firm are highly complex.

There are several reasons for this nonlinear relationship between organizational tenure and performance. First, Peter and Hull (1969) argue that organizational tenure and performance are not linear because long-tenured employees tend to be promoted to higher positions in which they cannot perform well because of the lack of advanced skills. For example, a technical employee might be promoted to be a manager which requires a lot of management skills that he or she may not have. Thus, experience from a technical job might not help him or her improve performance in a management job.

Second, Murphy (1989) introduced a two-stage model for job performance. The first stage is the transition stage which occurs "when an employee is new to a job, or when the major duties or responsibilities of a job change" (Murphy, 1989, p. 190). In this transition stage, performance depends on cognitive ability because cognitive ability helps an employee acquire new knowledge and skills (Murphy, 1989). The second stage is the maintenance stage which occurs "between periods of transition" (Murphy, 1989, p. 190). In this maintenance stage, cognitive ability is not important because all knowledge and skills have been learned; therefore, performance will only depend on personality and motivational factors (Murphy, 1989). This

model indicates that experience will be useful only in the transition stage but not useful in the maintenance stage. Therefore, the effect of experience on performance may decrease when experience increases because highly-experienced employees may move from a transition stage to a maintenance stage.

Third, more experience can be either an advantage or a disadvantage to individuals (Reuber & Fischer, 1999). According to Starr and Bygrave (1992), by comparing an individual's experience to a balance sheet, experience can be an asset, or a liability, or both at the same time. That is, experience can have both positive and negative impacts on an individual's performance. For example, employees with more experience tend to have more knowledge and skills in order to improve their performance (Reuber & Fischer, 1999). On the other hand, employees with more experience might also hesitate to seek and learn new knowledge and skills, thus inhibiting them from new opportunities and alternatives (Reuber & Fischer, 1999).

Fourth, Schmidt et al. (1986) argue that the nonlinear relationship of experience and performance occurs because relative inequality in experience decreases. For example, in the low experience group, employees with 1 year of experience have knowledge only 25% (1/4) of those with 4 years of experience. On the other hand, in the high experience group, employees with 17 years of experience have knowledge 85% (17/20) of those with 20 years of experience. These two groups of employees have the same range of experience (4 years), but the ratio of knowledge of employees with lowest experience to knowledge of those with highest experience is different. Thus, this reduction of relative inequality in experience will decrease the relationship between experience and performance as the average length of experience of the sample increases. Nevertheless, this explanation is true only in the group data where the experience is codified into several categories. For example, the experience of 1 year in one study may be codified into "low experience" equivalent to the experience of 17 years in another study. This logical reason cannot explain the nonlinear relationship in the studies using real data.

### 2.5.2 Ability

The second component of cognitive human capital is ability. According to Becker (1962, 1964), ability as an economics term is the average rate of return of the total investment costs in human capital. Becker (1964) called the person with high ability as the "economic talent" (p. 62) or "abler" person (p. 63). Moreover, Becker (1962, 1964) argues that abler persons tend to invest in themselves more than those with low ability because abler persons have a higher return of investment in their human capital. Historically, mental abilities were first used in an empirical study by Sir Francis Galton, the father of differential psychology (i.e., the study of individual and group differences in human traits, which includes behavioral genetics), in the latter half of the nineteenth century (Jensen, 1998).

According to Jensen (1998), ability or "the g factor" represents the individual differences in speed, efficiency, or capacity of the mental operations such as inductive or deductive reasoning, spatial visualization, quantitative reasoning, and verbal knowledge and reasoning. Jensen (1998) suggests that the best g measurement items (e.g., Intelligence Quotient: IQ) should require minimal specific knowledge. According to Jensen (1998), people are different in their mental abilities. Using the resource-based view (RBV) of the firm, Wright et al. (1994) show that General Cognitive Ability (GMA) can lead to the competitive advantage of the firm because it is valuable, rare, inimitable, and non-substitutable. Becker (1964) found that people with high IQ had higher average earnings than those with low IQ. Similarly, the meta-analysis by Ng et al. (2005) found that cognitive ability was positively related to salary. Moreover, Hawkins and Dulewicz (2007) studied leadership performance in the police service in Scotland. Using 360-degree report performance, it was found that the leaders' IQ was positively related to their performance (Hawkins & Dulewicz, 2007). In addition, Jensen (1998) argues that the IQ differences are genetic and environmental. That is, people may inherit IQ from their parent and develop it later based on their environment. According to Motowidlo, Borman, and Schmit (1997), cognitive ability affects task performance through task habits, task skill, and task

knowledge because people with better cognitive ability tend to learn and master relevant facts, principles, and procedures faster if they are provided with an opportunity. Additionally, Jensen (1998) argues that people with high cognitive ability or "the g factor" learn faster, and benefit more from experience. Similarly, Becker (1962, 1964) argues that abler persons provide a higher rate of return on investment in their human capital. Likewise, Ployhart et al. (2011) state that "Cognitive ability is expected to influence how quickly and how much is learned in those situations, as well as how well that learning can be applied to new situations" (p. 356). That is, cognitive ability helps people quickly and thoroughly learn new things in one situation and also easily apply them to new situations.

Wright, Kacmar, McMahan, and Deleeuw (1995a) found that cognitive ability moderates the relationship between need for achievement and performance such that a positive relationship will be observed for those with high cognitive ability, while a negative relationship will be observed for those with low cognitive ability. Wright et al. (1995a) argue that need for achievement stimulates motivation. This motivation will allow people with high cognitive ability to work at full potential performance, but motivation may diminish the performance of people with low cognitive ability because they might make an excessive number of mistakes compared to those with low motivation (Wright et al., 1995a).

Empirically, Hunter (1983) examined the data from 4 previous military studies and 10 previous civilian studies by using path analysis and found that general mental ability led to supervisory ratings of job performance though job knowledge (i.e., facts and principles of the job) and work sample performance (i.e., important tasks from the job) for both military and civilian data. Additionally, Hunter (1983) found that the effect of job knowledge on supervisory ratings of job performance was greater than the effect of work sample performance on supervisory ratings of job performance. Hunter (1983) further explained that supervisors might be more familiar with the employee's level of job knowledge through interpersonal interaction than the actual performance on the job. Moreover, Ree and Earles (1991) found that general

cognitive ability was the best predictor of training success across 82 jobs of Air Force enlistees. Similarly, McHenry, Hough, Toquam, Hanson, and Ashworth (1990) found that cognitive ability was the best predictor of core technical proficiency and general soldiering proficiency across nine Army jobs of enlisted soldiers. Using longitudinal data provided by a national oil company, Dreher and Bretz (1991) found that employees with high cognitive ability were likely to get later career advancement, especially compared to employees with low early career success. Likewise, using a sample of master of business administration (MBA) graduates, O'Reilly and Chatman (1994) found that the combination of high general cognitive ability and motivation was significantly related to early career success. That is, MBAs who were smarter and worked harder tended to get a job upon graduation, earn higher salaries, have more rapid pay increases, and receive more promotions in their early careers (O'Reilly & Chatman, 1994).

Even though education is not ability, education has been used as a proxy or an indirect measurement of ability (Wright & McMahan, 2011; Coff, 2002; Hitt et al., 2001; Hitt et al., 2006). According to Becker (1964), Jensen (1998), and Hitt et al. (2001), there is a high correlation between ability and education. That is, the rate of return on investment in human capital increases with the additional years of schooling (Becker, 1964, p. 127). However, Becker (1962, 1964) argues that people with high ability may have more incentive to go to college than people with low ability. Therefore, colleges would only have people with high ability. Hence, Becker (1964) argues that "college graduates tend to be more 'able' than high-school graduates, apart from the effect of college education" (p. 154). According to the meta-analysis of twin and adoption studies by McGue and Bouchard (1998), the variance of cognitive ability and intelligence is explained by genetics between 50 and 85 percent, while the environment only accounts, at best, one-fourth of the genetic explanation. Moreover, from the meta-analysis by Ng et al. (2005) the education level was positively related to career success (i.e., salary, promotion, and career satisfaction). Furthermore, Becker (1964) found that IQ is highly correlated with class rank. Therefore, class rank can be another representative of ability.

Moreover, according to changing-abilities-requirements model by Fleishman and Mumford (1989), skill acquisition for the perceptual-motor task requires cognitive abilities (e.g., verbal comprehension and spatial visualization) in the earlier stage. After that, only the motor abilities (e.g., reaction time and multilimb coordination) will be required in the later stage (Fleishman & Mumford, 1989). Although cognitive abilities are important for acquiring new information in the earlier stage, it does not perfect the job in the later stage. To bring the job to the perfection, employees also need motor abilities in the later stage. However, Barrett, Caldwell, and Alexander (1989) argue that the result in the Fleishman and Mumford (1989) may not be generalized to other job settings because a job in the experimental simulation study does not represent a job in the real world. According to Ackerman (1987), tasks can be either "resource dependent" which show little variability in the ability-performance correlation or "resource insensitive" which tend to show changes in the ability-performance correlation. Barrett et al. (1989) argue that the studies by Fleishman and his colleagues were "resource-insensitive" tasks which required automatic processing but not cognitive processing. Therefore, Barrett et al. (1989) imply that the results from Fleishman and his colleagues may be only the special case in the ability-performance relationship.

### *2.5.3 Knowledge*

The third component of cognitive human capital is knowledge. Knowledge can be defined as "information whose validity has been established through tests of proof" (Liebeskind, 1996, p. 94). Additionally, knowledge can be defined as "an understanding of principles, facts, and process" (Ployhart & Moliterno, 2011, p. 134). Ployhart and Moliterno (2011) argue that knowledge can be either context-generic or context-specific. Knowledge can be divided into two categories: articulated and tacit (Liebeskind, 1996; Hitt et al., 2001). Articulated knowledge can be codified into written documents and easily transferred, while tacit knowledge cannot be codified and not easily transferred (Liebeskind, 1996; Hitt et al., 2001). Hitt et al. (2001) and

Gherardi and Nicolini (2000) argue that articulated knowledge is learned through formal education and training, while tacit knowledge is learned through experience on the job. Hitt et al. (2001) found that partners in law firms were less likely to contribute productivity to their firm performance in the early stage of their career, but they contributed more productivity to their firm's performance as they gained more experience and tacit knowledge.

Moreover, some researchers (e.g., Campbell, 1990; McCloy, Campbell, & Cudeck, 1994) separate knowledge into two types: declarative and procedural (Ng & Feldman, 2010). "Declarative knowledge refers to expertise concerning facts, rules, and principles, whereas procedural knowledge refers to the application of declarative knowledge in practice" (Ng & Feldman, 2010, p. 1224). Declarative knowledge indicates what to do in the job, while procedural knowledge indicates how to do it (Ng & Feldman, 2010). Employees gain both declarative knowledge and procedural knowledge while they are working on the job (Ng & Feldman, 2010).

#### *2.5.4 Skills*

The fourth component of cognitive human capital is skills. Skills can be defined as "the ability to perform a certain physical or mental task" (Spencer & Spencer, 1993, p. 11). There are several skills that can be used in the organization such as social skill, political skill, and problem solving skill. Additionally, Wright et al. (1995b) and Harris and McMahan (2008) used basketball skill as the specific human capital to predict team performance in a National Collegiate Athletic Association (NCAA) basketball tournament. Wright et al. (1995b) found that NCAA basketball teams whose players had their basketball skills matched with a team strategy performed better.

The difference between knowledge/skills and education/experience is that education/experience is the investment while knowledge/skills is the outcome of the investment (Unger et al., 2011). For example, mathematics teaching skill is the result of the teaching

experience (Pil & Leana, 2009). In addition, Harris and McMahan (2008) found that NCAA basketball teams which consisted of players with better knowledge and skills were positively related to better team performance.

Furthermore, several studies (e.g., Pil & Leana, 2009; Gathmann & Schönberg, 2010) have shown that context-specific human capital is positively related to individual performance. Moreover, using data from a large U.S.-based restaurant chain, Ployhart et al. (2011) found that unit-specific human capital (i.e., completed advanced levels of optional training) increased the unit effectiveness (i.e., sales per labor hour and receipts versus flow-through) through unit service performance behavior (i.e., customer satisfaction). Moreover, according to the model by Schmidt et al. (1986), job experience and ability affect performance through the acquisition of job knowledge and skills.

This section reviews four main components of cognitive human capital: experience, ability, knowledge, and skills. The next section will discuss measurement of human capital in the strategic human management literature.

## 2.6 Measurement of Human Capital

Even though human capital has been used in research for nearly fifty years since Becker (1964), there is little consistency of how to measure human capital (Wright & McMahan, 2011). According to Wright and McMahan (2011), there are three main methods to measure human capital in the strategic human resource management literature: subjective measures, proxies, and direct assessments .

### *2.6.1 Subjective Measures*

Using subjective measures, researchers usually ask one or more respondents about the quality of the employees in the organization. For example, in Wright et al.'s (1995b) study of basketball human capital, they asked a coach in each National Collegiate Athletic Association

(NCAA) basketball team to rate his or her team as a group on the level of three dimensions of team skills (i.e., team orientation, athleticism, and shooting). Moreover, Takeuchi et al. (2007) asked managers in Japanese companies about their employees working in the unit whether they 'are highly skilled,' 'are widely considered to be the best in our industry,' 'are creative and bright,' 'are experts in their particular jobs and functions,' and 'develop new ideas and knowledge.' This human capital scale was adopted from Subramaniam and Youndt (2005) and Youndt, Subramaniam, and Snell (2004). Furthermore, Lepak and Snell (2002) asked managers to evaluate their employees based on value (12 items) and uniqueness (10 items). The human capital value scale had questionnaire items including "Individuals have skills that are instrumental for creating innovation" and "Individuals have skills that create customer value" (Lepak & Snell, 2002). The human capital uniqueness scale had questionnaire items like "Individuals have skills that are not widely available in the labor market" and "Individuals have skills that would be very difficult to replace" (Lepak & Snell, 2002).

The problem of subjective measures is that they rely only on the perception of one respondent (Wright & McMahan, 2011), thus creating the problem of measurement error such as common rater effects (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). These common rater effects include consistency motif, implicit theories, social desirability, leniency biases, acquiescence biases, mood state, and transient mood state (Podsakoff et al., 2003).

### *2.6.2 Proxies*

Proxies are "stand-in [measures] for other quantities that cannot be directly measured" (Wright & McMahan, 2011, p. 96). Researchers have used proxies in economics and macro organizational literature (Wright & McMahan, 2011). For example, Hitt et al. (2001) used quality of the law school attended by partners as a proxy for articulated knowledge and prestige and used total experience as partners in the focal firm as a proxy for firm-specific tacit knowledge. In addition, Hitt et al. (2006) used total partner experience in the legal field averaged across the

partners in the focal firm as a proxy for tacit legal and managerial knowledge that may be fungible. Moreover, Judge et al. (1995) measured human capital at the individual level using educational level, quality, prestige, and degree type.

The problem of proxies is the inaccuracy assessments (Wright & McMahan, 2011). For example, people who graduated from the same school may not have the same level of knowledge. Moreover, people with the same number of years in the firm may not learn the same knowledge. Therefore, a researcher should interpret the proxy measurement with caution in that it may have considerable error variance (Wright & McMahan, 2011).

### *2.6.3 Direct Assessments*

Researchers can use direct assessments to capture the human capital. For example, Pil and Leana (2009) used a mathematics teaching skills test called Learning Mathematics for Teaching (LMT) which was a project developed by Hill et al. (2004) to measure teachers' ability to teach mathematics. Moreover, Pil and Leana (2009) used formal education and experience at grade-level for measuring human capital of a mathematics teacher. Furthermore, Ployhart, Weekley, and Ramsey (2009) operationalized human capital as service orientation which was measured by three personality traits (i.e., conscientiousness, agreeableness, and emotional stability), a situational judgment test, and a biodata-based measure of educational success. Moreover, an Intelligence Quotient (IQ) test has been used in several human capital studies (Becker, 1964; Jensen, 1998).

The problem of direct assessments is that they may not capture the whole picture of human capital (Wright & McMahan, 2011). For example, the personality traits may not represent the whole human capital of the respondent. In addition, people with high IQ do not always have better human capital.

This section reviews advantages and disadvantages of three main measures of human capital (i.e., subjective measures, proxies, and direct assessments). Researchers should select

an appropriated measure or a combination of these three measures based on their situation and environment. According to Wright and McMahan (2011), when employees work as a group, the combination of human capital and social capital is called "human capability.". The next section will review and discuss the social capital literature that is related to human capital.

## 2.7 Social Capital

Besides the concept of human capital, the concept of social capital has become popular in social science disciplines (Adler & Kwon, 2002). According to Burt (1997), "while human capital is surely necessary to success, it is useless without the social capital of opportunities in which to apply it" (p. 339). That is, social capital creates more opportunities to use human capital in the workplace (Burt, 1997). Moreover, social capital "exists in the relations among persons" (Coleman, 1988, pp. S100-S101). Burt (1997) argues that "social capital is a quality created between people, whereas human capital is a quality of individuals" (p. 339). Furthermore, social capital can be influenced by hierarchy in the organization because many ties come with formal positions (Podolny & Baron, 1997; Coleman, 1988). According to Adler and Kwon (2002), "Social capital is the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor" (p. 23).

Social capital was found to be related to performance (e.g., Bruderl & Preisendorfer, 1998; Burt, 1997; Coleman, 1988; Pil & Leana, 2009; Sagas & Cunningham, 2005). For example, Pil and Leana (2009) found that a teacher's social capital was significantly related to performance of his or her students. This empirical study shows that a teacher can benefit from his or her social networks, consequently improving the performance of his or her students. Moreover, Bloom (1999) found that the baseball teams with less pay dispersion tended to have better performance than baseball teams with more pay dispersion. Bloom (1999) argues that players in a team with high pay dispersion might feel it is unfair, thus reducing cooperation or

sabotaging their coworkers. It can be inferred that employees with less social capital would be likely to gain less cooperation from their coworkers. Social capital has advantages and disadvantages. According to Brass et al. (2004), there are nine main consequences of interpersonal networks: (1) increased attitude similarity, (2) increased job satisfaction, (3) increased power, (4) increased chance to get a job, (5) increased performance, (6) increased chance to get promotion, (7) decreased turnover, (8) increased leadership effectiveness, and unfortunately (9) increased unethical behavior. In this study, only benefits of social capital that are related to human capital will be reviewed and discussed .

Knowledge transfer refers to "dyadic exchanges of organizational knowledge between a source and a recipient unit" (Szulanski, 1996, p. 28). According to Coleman (1988), social capital can be a source of information. Moreover, social capital allows individuals to access resources within an organization (Chisholm & Nielsen, 2009). Coleman (1988) gave an example that a person can save the time of reading a newspaper by asking his or her friends who pay attention to the news. Moreover, Coleman (1988) argues that human capital can be created by social capital. He shows that high school students were more successful when they had support from parents and community. Using the dropout rate of high school students, Coleman (1988) found that students with two parents, one sibling, and their mother's expectation of college were less likely to drop out of school compared to those with one parent, four siblings, and no mother's expectation of college. Coleman (1988) shows the example that a number of Asian immigrant families purchased two copies of each textbook needed by the child because the mother used another copy to study in order to teach her child at home. Moreover, Coleman (1988) also found that students in Catholic schools surrounded by a community based on religious organization were less likely to dropout from school compared to public and other private schools. Furthermore, structural hole theory argues that social capital connects people on opposite sides of a hole in a network (Burt, 1997). This structure hole allows information to flow between people in a network where otherwise these people may be

disconnected (Burt, 1997). Therefore, people can access more information than they can process alone (Burt, 1997). For example, managers in a top management team require strong links in order to exchange their knowledge and expertise (Ployhart & Moliterno, 2011).

However, "A given form of social capital that is valuable in facilitating certain actions may be useless or even harmful for others" (Coleman, 1988, p. S98). This means social capital can be either useful or harmful depending on the situation. There are three types of tie strength in a social network: strong, weak, and absent (Granovetter, 1973). According to Granovetter (1973), "the strength of a tie is a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie" (p. 1361). According to the weak-tie theory (Granovetter, 1973), weak ties lead to nonredundant knowledge, while strong ties lead to more redundant knowledge. Weak ties are good for searching for new information, while strong ties are good for transferring complex and tacit information (Hansen, 1999; Adler & Kwon, 2002). Weak ties require less maintenance (Hansen, 1999), therefore, people can have several weak ties at the same time. On the other hand, strong ties require time and energy to maintain the relationships (Boorman, 1975; Hansen, 1999). Therefore, the strong ties network is much smaller but stronger. Empirically, Seibert, Kraimer, and Liden (2001) found that the number of weak ties was positively related to contacts in other functions and higher organizational levels but negatively related to information access. Moreover, Sagas and Cunningham (2005) found that assistant football coaches who worked with same race networks (i.e., black or white) were more likely to get promotions and better positions. Furthermore, using samples in a large, multidivisional and multinational electronics and computer company, Hansen (1999) found that strong ties between subunits reduced the completion time of the project when the knowledge was highly complex, while weak ties between subunits reduced the completion time of the project when the knowledge was not complex. Therefore, individuals with more strong ties are more likely to have better performance than those with less strong ties in the high-complexity jobs.

Moreover, Katungi et al. (2008) found that men tend to have better access to social capital than women, thus leading to better information exchange on agricultural technologies. Their sample of study comprised 400 banana-growing households in 20 villages in rural Uganda. They argue that women in this study are older, less educated and poorer than men, thus discouraging them from accumulating social capital. Furthermore, Wei et al. (2011) studied the relationships between social capital characteristics and knowledge transfer of knowledge and skills after the bank's training programs. They found that team density (i.e., number of actual links divided by the maximum possible links existing in a social network) was positively related to knowledge transfer.

According to Scott (2002), the distance between two subjects in a social network is the length of the shortest path between the two subjects. Hansen (2002) argues that information might be distorted if a path between a knowledge recipient and a knowledge source is too long. Moreover, Cummings and Teng (2003) argue that the communication is costly and requires more time if there is a long distance between a knowledge recipient and a knowledge source. Wei et al. (2011) found that the distance between a knowledge recipient and a knowledge source was negatively related to knowledge transfer. Therefore, the direct relationship between two subjects tends to facilitate knowledge transfer more than the indirect relationship which requires other people to connect between a knowledge source and a knowledge recipient.

Nevertheless, there are two problems of knowledge transfer: willingness and ability (Hansen, 1999). First, the source unit might be unwilling to transfer the knowledge or the receiver unit might be unwilling to learn the new knowledge (Hansen, 1999). However, Chisholm and Nielsen (2009) argue that social capital increases the willingness to exchange information within an organization. Second, the source unit might be unable to transfer the knowledge or the receiver unit might be unable to learn the new knowledge because of the task complexity (Hansen, 1999). This shows that human capital is an important factor to transfer knowledge, particularly in a complex task.

This section reviews benefits of social capital that are related to human capital. Social capital could improve human capital by creating better opportunities for employees to access more information. The following section will discuss employee behaviors in the organization. This includes in-role behavior and organizational citizenship behaviors.

## 2.8 Employee Behaviors

### *2.8.1 In-Role Behavior*

In-role behavior consists of the behaviors employed by employees to meet their job responsibilities (Anderson & Oliver, 1987; Behrman & Perreault, 1984; Piercy, Cravens, Lane, & Vorhies, 2006). According to Thompson's (1967) input-throughput-output model, behavior is a mediator between inputs (i.e., human capital) and outputs (i.e., performance). Similarly, Wright and Snell (1991) argue that employees need both competency management and behavior management in order to act in a way to support the organizational strategy. According to Wright and Snell (1991), competency management is the way to ensure that employees have the required skills to support the organizational strategy (i.e., input control), while behavior management is the way to ensure that employees utilize their skills to act in the way to support the organizational strategy (i.e., throughput control). Moreover, Theodosiou and Katsikea (2007) found that controlling behavior with job requirements had a positive influence on firm performance. Furthermore, Wright and McMahan (1992) and Wright et al. (1994) argue that human capital will be a source of sustained competitive advantage if employees exhibit an appropriate behavior. Thus, if employees exhibit an appropriate behavior, their performance will increase. Empirically, Piercy et al. (2006) found a significant relationship between in-role behavior of salespeople and their performance.

### *2.8.2 Organizational Citizenship Behaviors*

Organizational citizenship behavior (OCB) is employee behavior that goes beyond and above the job description and increases the effectiveness of the organization (Organ, 1988, 1990; Lavelle, McMahan, & Harris, 2009). According to Organ (1988), "OCB represents individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (p. 4). Smith, Organ, and Near (1983) argue that OCB can be specified into two categories: Altruism and Generalized Compliance. Altruism captures the behavior that directly affects a specific person in face-to-face situations such as helping others who have been absent, while generalized compliance captures the behavior that indirectly helps others involved in the system such as punctuality (Smith et al., 1983). Williams and Anderson (1991) call the first category as "OCBI [Organizational Citizenship Behaviors - Individuals]-behaviors that immediately benefit specific individuals" (p. 602), while they call the second category as "OCBO [Organizational Citizenship Behaviors - Organizations]-behaviors that benefit the organization in general" (p. 601). Likewise, Lee and Allen (2002) argue that OCBO-behaviors directly benefit the organization, while OCBI-behaviors directly help individuals at work and indirectly benefit the organization. For example, helping others who have been absent is referred to as OCBI, while expressing loyalty toward the organization is referred to as OCBO (Lee & Allen, 2002). Additionally, Rupp and Cropanzano (2002) introduce another category which is OCB that directly benefits the supervisor (OCBS: Organizational Citizenship Behaviors - Supervisors). For instance, helping a supervisor when he or she has a heavy work load is referred to as OCBS (Rupp & Cropanzano, 2002).

In the case of teamwork, individuals with better social skills will be likely to exert good teamwork behaviors. These teamwork behaviors such as helping others can be referred as OCB (Smith et al., 1983). With good teamwork behaviors, the firm will have high performance. In the interdependence task, OCB will indirectly improve the performance through enhancing

coordination within the team. Barrick, Bradley, and Colbert (2007) found that communication behaviors can lead to team and firm performance in teams with highly interdependent tasks. Furthermore, Pandey and McMahan (2011) found that not only in-role behavior mediates the relationship between human capital and individual performance, but also extra-role behavior or OCB mediates the relationship between human capital and individual performance.

According to social exchange theory, the norm of the relationships between parties is based on the reciprocity rules (Cropanzano & Mitchell, 2005). That is, one party will normally get the benefits back from other parties if they initially provide the benefits to other parties. Based on the multifoci social exchange logic of the target similarity model, Lavelle et al. (2009) conducted the study of target-specific organizational citizenship behaviors (OCBs) of nurses in a hospital. First, they found that OCB toward the supervisor was positively related to perceived supervisor support. Second, they found that OCB toward the workgroup was positively related to perceived workgroup support. Finally, they found that OCB toward the organization was positively related to perceived organizational support. This study shows the reciprocity of social exchange relationships between the employee and other partners (i.e., the supervisor, the workgroup, and the organization).

This section reviews theories that explain employee behaviors in the organization. These include in-role behavior and organizational citizenship behaviors. Based on the reviewed literature in this chapter, the next section will discuss gaps in the literature regarding human capital and social capital theories.

### 2.9 Gaps in the Literature

In the previous sections, the concepts of human capital and its measurement, the resource-based view (RBV) of the firm, general and specific human capital, context-generic and context-specific human capital, four components of cognitive human capital, benefits of social capital that are related to human capital, and employee behaviors are reviewed. This literature

review reveals several directions for further research. The gaps in the literature regarding human capital and social capital theories are described below.

First, there is little research that includes all four components of human capital (i.e., experience, knowledge, skills, and ability) in the same study. Although many studies (e.g., Gathmann & Schönberg, 2010; Harris & McMahan, 2008; Hawkins & Dulewicz, 2007; Ng et al., 2005; Pil & Leana, 2009; Wright et al., 1995b) focus on the direct relationship between each component and performance, there is little research on the mechanisms (i.e., the mediators) between these multiple dimensions of human capital and individual performance. Moreover, according to the resource-based view (RBV) of the firm, it is important to understand what kinds of resources are important to the firm (Chisholm & Nielsen, 2009). As a result, there is also a need for research examining effects of these multiple dimensions of human capital on individual performance and the mediators between these multiple dimensions of human capital and individual performance.

Second, after the introduction of the relationship between context-generic human capital and context-specific human capital by Ployhart and Moliterno (2011), there is little empirical research on this relationship. Ployhart et al. (2011) studied this relationship in a restaurant chain. However, the study by Ployhart et al. (2011) was operated at the organizational level. Therefore, there is a need for research examining this relationship at the individual level.

Third, most literature explores the direct relationship between experience and performance (e.g., McDaniel et al., 1988; Ng et al., 2005; Ng & Feldman, 2010; Quinones et al., 1995; Sturman, 2003). For example, a meta-analysis by Ng and Feldman (2010) found a nonlinear relationship between experience and performance. However, there is little research on the mechanisms (i.e., mediators) between experience and performance. Therefore, there is a need to examine the mediators between experience and individual performance.

Fourth, the existing literature mainly explores the direct relationship between social capital and performance (e.g., Bruderl & Preisendorfer, 1998; Burt, 1997; Coleman, 1988; Pil & Leana, 2009; Sagas & Cunningham, 2005). For instance, Coleman (1988) found that students with more social capital (i.e., family support) were less likely to drop out from high school. This result shows that social capital improves performance of a high school student. However, little research has been conducted on the underlying mechanisms (i.e., the mediators) between social capital and performance. Therefore, there is a need to investigate the mediators between social capital and individual performance.

Based on the research gaps presented above, this study is conducted in order to answer the following research questions: (1) how does human capital affect the performance of employees?, (2) how does experience affect the performance of employees?, and (3) how does social capital affect the performance of employees?

#### 2.10 Summary

In conclusion, this chapter reviews the literature about the resource-based view (RBV) of the firm, general and specific human capital, context-generic and context-specific human capital, four components of cognitive human capital, measurement of human capital, social capital that is related to human capital, and employee behaviors. After that, gaps in the literature regarding human capital and social capital theories have been discussed. In the next chapter, the seventeen hypotheses relating to human capital and social capital will be developed and discussed.

## CHAPTER 3

### HYPOTHESIS DEVELOPMENT

#### 3.1 Introduction

The previous chapter reviewed the literature on human capital, social capital, and employee behaviors. The findings from the literature review suggest an opportunity for further research. This chapter will develop hypotheses based on the human capital and social capital literature reviewed in the previous chapter. There will be three main sections which explain the reasons underlying the hypothesis development. First, the relationships between multiple dimensions of human capital and individual performance will be hypothesized. Second, social capital will be hypothesized as an antecedent of context-specific human capital. Third, mediator roles of employee behaviors and context-specific human capital will be hypothesized.

#### 3.2 Human Capital and Performance

In this section, the hypotheses about context-generic human capital as an antecedent of individual performance and context-specific human capital will be discussed. Also, the hypothesis about context-specific human capital as a mediator of the relationship between context-generic human capital and individual performance will be discussed. Then, the hypothesis regarding job tenure as an antecedent of context-specific human capital will be discussed.

General human capital, especially general ability, provides competitive advantage to the firm because it is valuable, rare, inimitable, and non-substitutable (McMahan et al., 1999; Wright & McMahan 1992; Wright et al., 1994). Based on human capital theory, people who have more human capital (e.g., formal education, on-the-job training) tend to have more productivity and earn more than people who have lower human capital (Becker, 1962, 1964). Based on the

assumption that people who have better performance tend to earn more, employees who have high context-generic human capital are more likely to have better performance than employees who have low context-generic human capital. For example, Wright et al. (1995b) found that team orientation skills (i.e., playmaking ability, defensive skills, work ethic, intelligence, competitive orientation, and team concept) were positively related to team performance in NCAA basketball teams. That is, when players on basketball teams have better team orientation skills, they tend to perform better, thus improving team performance.

As previously discussed in the literature review, Ployhart and Moliterno (2011) divide human capital into two categories: context-generic and context-specific. Context-generic human capital tends to be more stable across time and situations, while context-specific human capital tends to change over time and situations (Jensen, 1998; Kanfer, 1990; Ployhart & Moliterno, 2011). Ployhart and Moliterno (2011) argue that context-generic human capital tends to facilitate the development of context-specific human capital. According to Jensen (1998), people with high general ability or 'the g factor' tend to learn faster, and benefit more from experience. Similarly, Becker (1962, 1964) argues that abler persons tend to have a higher rate of return on their investment in human capital. Likewise, Ployhart et al. (2011) argue that cognitive ability tends to help people thoroughly and quickly learn new things in one situation and also helps people easily apply them to new situations. Several studies (e.g., Dreher & Bretz, 1991; McHenry et al., 1990; O'Reilly & Chatman, 1994; Ree & Earles, 1991) found that people with high general cognitive ability tended to be successful in their careers.

Since abler persons will be likely to have more context-specific human capital from experience, employees with higher ability will have more context-specific human capital than those with lower ability. According to the study by Ployhart et al. (2011) which used data from 238 franchises of a large U.S.-based restaurant chain, context-generic human capital (i.e., personality and cognitive ability) was positively related to unit-specific human capital (i.e., completed advanced levels of optional training). Moreover, Hunter (1983) examined the data

from 4 previous military studies and 10 previous civilian studies by using path analysis and found that general mental ability was positively related to job knowledge (i.e., facts and principles of the job) and work sample performance (i.e., important tasks from the job) for both military and civilian data. This result supports the relationship between context-generic human capital and context-specific human capital. Furthermore, Ployhart et al. (2011) found that employees with high context-generic human capital (i.e., personality and cognitive ability) successfully passed the end-of-training tests more often than those with low context-generic human capital. This result shows that employees with high ability tend to get more knowledge and skills from the training than those with low ability. Thus, employees with better context-generic human capital are more likely to have better context-specific human capital.

Additionally, context-specific human capital is a good predictor of performance because employees with high context-specific human capital will be likely to have more productivity than those with low context-specific human capital. For example, Jensen (1998) notes that "A person cannot perform a job successfully without the specific knowledge required by the job" (p. 282). Several studies (e.g., Pil & Leana, 2009; Gathmann & Schönberg, 2010) have shown that context-specific human capital was positively related to individual performance. Moreover, using data from a large U.S.-based restaurant chain, Ployhart et al. (2011) found that unit-specific human capital (i.e., completed advanced levels of optional training) increased the unit effectiveness (i.e., sales per labor hour and receipts versus flow-through) through unit service performance behavior (i.e., customer satisfaction). In addition, Harris and McMahan (2008) found that NCAA basketball teams consisting of players with better knowledge and skills were positively related to better team performance.

Furthermore, Becker (1962, 1964) argues that the additional productivity results from the product of ability and investment in human capital (i.e., experience). According to the model by Schmidt et al. (1986), job experience and ability affect performance through the acquisition of job knowledge and skills. Schmidt et al. (1986) used the same data set as Hunter (1983), which

included the data from 4 previous military studies and 10 previous civilian studies, in order to examine their model using path analysis. Schmidt et al. (1986) found that the acquisition of job knowledge and skills was the mediator of the relationship between performance and two independent factors (i.e., job experience and ability). According to meta-analysis of 70 empirical studies by Unger et al. (2011), outcomes of human capital investments (i.e., knowledge and skills) had stronger relationships with success (i.e., profitability, growth, and firm size) than human capital investments (i.e., education and work experience). Furthermore, Unger et al. (2011) found that context-specific human capital (related to entrepreneurial tasks) had a stronger relationship with success than context-generic human capital (low task-relatedness). Moreover, Ployhart et al. (2011) found that selecting candidates with better personalities and better cognitive abilities candidates improved the percentage of employees who successfully completed advanced levels of optional training (i.e., context-specific human capital), which in turn improved customer satisfaction, sales per labor hour, and receipt versus flow-through ( $\text{controllable profits} * 100 / \text{projected profits}$ ). These findings have shown that context-specific human capital can be the mediator of the relationship between context-generic human capital and performance. Therefore, employees with high context-generic human capital tend to have better performance through the context-specific human capital. In other words, employees with high general ability tend to perform better because they have high context-specific human capital.

Moreover, based on the resource-based view (RBV) of the firm, a resource that is a source of sustained competitive advantage should be valuable, rare, inimitable, and non-substitutable (Barney, 1991). Although context-generic human capital could increase performance, context-specific human capital will more likely predict performance than context-generic human capital because context-specific human capital is more specific to the task and the firm; thus, it is more likely to be more valuable, rare, inimitable, and non-substitutable than context-generic human capital (Wright et al., 1994). For example, registered nurses, in general,

should possess basic biology knowledge. However, this basic biology knowledge might not directly affect the performance of nurses because there is advanced biology knowledge that can be only acquired on the job. Nevertheless, their basic biology knowledge will help them acquire new advanced biology knowledge. As previously discussed, people with high context-generic human capital tend to learn faster and gain more knowledge and skills from experience (Jensen, 1998). That is, people with high context generic human capital tend to better prepare and effectively utilize their time to learn new knowledge and skills related to the job. For this reason, context-specific human capital will mediate the relationship between context-generic human capital and performance.

Hypothesis 1: Context-generic human capital is positively related to performance.

Hypothesis 2: Context-generic human capital is positively related to context-specific human capital.

Hypothesis 3: Context-specific human capital mediates the relationship between context-generic human capital and performance.

As previously stated, experience is the human capital investment accumulated via learning-by-doing (Unger et al., 2011; Rosen, 1972). Moreover, Gibbons and Waldman (2004) argue that context-specific human capital can be accumulated on the job through learning by doing. According to Hitt et al. (2001), new employees with no experience tend to have less productivity even though they graduated from the highest ranked programs in their fields. In the organization, employees tend to improve their productivity through learning new skills or knowledge while they are on the job (Becker, 1962, 1964). That is, on-the-job training improves the productivity of employees. Similarly, Jensen (1998) argues that "knowledge and skill acquisition depend on learning" (p. 282). Therefore, it can be implied that on-the-job training and job experience can increase the context-specific human capital. According to Hitt et al.

(2001), training improves articulated knowledge (i.e., knowledge that can be codified into written documents) and job experience improves tacit knowledge (i.e., knowledge that cannot be codified into written documents). In addition, Ng and Feldman (2010) argue that while employees are working on the job, they can learn both declarative knowledge (i.e., facts, rules, and principles) and procedural knowledge (i.e., the application of declarative knowledge in practice). Therefore, employees with higher job experience will have more context-specific human capital than those with lower job experience.

However, several meta-analysis studies (e.g., McDaniel et al., 1988; Ng & Feldman, 2010; Sturman, 2003) found that the relationship between experience and performance was nonlinear. First, the meta-analysis by Ng and Feldman (2010) found that the strength of these relationships decreased when average organizational tenure of the sample increased. That is, the employees who can benefit more from experience are those with low experience. Second, the meta-analysis by McDaniel et al. (1988) found that the mean length of job experience of the sample reduced the strength of the relationship between job experience and performance. Third, the meta-analysis by Sturman (2003) found that the mean length of organizational tenure of the sample reduced the strength of the relationship between organizational tenure and performance. However, the meta-analysis by Sturman (2003) found that the mean length of job experience of the sample reduced the strength of the relationship between job experience and performance only in low-complexity jobs but not in high-complexity jobs.

As previously discussed, Murphy (1989) introduced two stages of knowledge acquisition: transition and maintenance. The transition stage occurs when an employee is new to a job or gains new responsibilities, while the maintenance stage occurs after an employee learns all knowledge and skills of the job (Murphy, 1989). Sturman (2003) argues that experience will strongly increase the knowledge in the transition stage, but slowly increase the knowledge in the maintenance stage. Moreover, Reuber and Fischer (1999) argue that employees with more experience might hesitate to seek and acquire new knowledge and skills,

thus inhibiting them from new opportunities and alternatives. Therefore, there will be a nonlinear relationship between job tenure and context-specific human capital such that the positive relationship will reduce as job tenure increases (See Figure 3.1).

Hypothesis 4: Job tenure has a positive relationship with context-specific human capital, but this association diminishes as job tenure increases.

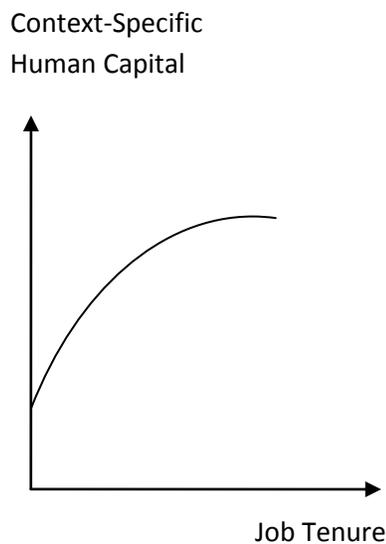


Figure 3.1 The Expected Result from Hypothesis 4

### 3.3 Social Capital

In this section, the hypothesis about social capital that improves knowledge transfer among employees will be discussed. As previously noted, Coleman (1988) argues that social capital can be a source of information. Moreover, social capital allows individuals to access resources and increases the willingness to exchange information within an organization (Chisholm & Nielsen, 2009). Coleman (1988) gave an example that a person can save the time of reading a newspaper by asking his or her friends who pay attention to the news. Moreover,

according to Coleman (1988), human capital can be created by social capital. He shows that high school students were more successful when they had support from parents and community. Using the dropout rate of high school students, Coleman (1988) found that students with two parents, one sibling, and their mother's expectation of college were less likely to drop out of school compared to those with one parent, four siblings, and no mother's expectation of college. Coleman (1988) shows the example that a number of Asian immigrant families purchased two copies of each textbook needed by the child because the mother used another copy to study in order to teach her child at home. Moreover, Coleman (1988) also found that students in Catholic schools surrounded by a community based on religious organization were less likely to dropout from school compared to public and other private schools.

Furthermore, structural hole theory argues that social capital connects people on opposite sides of a hole in a network (Burt, 1997). This structure hole allows information to flow between people in a network where otherwise these people may be disconnected (Burt, 1997). Therefore, people can access more information than they can process alone (Burt, 1997). For example, new nurses might learn new knowledge and skills from their colleagues or their supervisors while they are taking care of their patients. Asking others for information would be the better way to learn new knowledge and skills than a trial and error method which requires more resources and time. Also, workers would have more opportunities to find the right information if they have more people in their social network. Empirically, from the study of 400 banana-growing households in 20 villages in rural Uganda, Katungi et al. (2008) found that men tend to have better access to social capital than women, thus leading to better information exchange on agricultural technologies. That is, people with more social capital tend to exchange more information with others than people with low social capital. Furthermore, Wei et al. (2011) studied the relationships between social capital characteristics and the transfer of knowledge and skills after bank's training programs. They found that team density (i.e., number

of actual links divided by the maximum possible links existing in a social network) was positively related to knowledge transfer. Therefore, employees with high social capital will be likely to access more information, thus leading to possession of more context-specific human capital.

As previously discussed, there are three types of tie strength in a social network: strong, weak, and absent (Granovetter, 1973). According to Granovetter (1973), "the strength of a tie is a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie" (p. 1361). According to the weak-tie theory (Granovetter, 1973), weak ties lead to nonredundant knowledge, while strong ties lead to more redundant knowledge. Weak ties are good for searching new information, while strong ties are good for transferring complex and tacit information (Hansen, 1999; Adler & Kwon, 2002).

However, according to the weak-tie theory (Granovetter, 1973), a social network requires time and energy to maintain relationships especially strong ties (Boorman, 1975; Hansen, 1999). Therefore, too much social capital might create the negative effect. For example, employees may spend their time talking about their personal life rather than acquiring the new knowledge about their task. Hence, social capital might reduce time and energy of employees to acquire new knowledge and skills. Empirically, Seibert et al. (2001) found that the number of weak ties was positively related to contacts in other functions and higher organizational levels but negatively related to access of organizational information. Nevertheless, the advantages of social capital appear to outweigh the disadvantages of social capital (See Brass et al., 2004). Social capital will benefit employees by allowing them to access better information (Burt, 1997). Thus, social capital will increase context-specific human capital of employees because those with more strong ties are likely to access better information resources.

Hypothesis 5: Access to information resources mediates the relationship between social capital (specifically, strong ties) and context-specific human capital.

### 3.4 Mediator Roles of Employee Behaviors and Context-Specific Human Capital

In this section, mediator roles of employee behaviors and context-specific human capital will be discussed. First, employee behaviors can be the mediators of the relationship between context-specific human capital and individual performance and the relationship between context-generic human capital and individual performance. Moreover, context-specific human capital will mediate the relationship between context-generic human capital and employee behaviors. Employee behaviors in this study include in-role behavior and target-specific organizational citizenship behaviors. Based on Lavelle et al.'s (2009) study, there are three target-specific organizational citizenship behaviors: (1) organizational citizenship behavior toward individuals (OCB-I), (2) organizational citizenship behavior toward the supervisor (OCB-S), and (3) organizational citizenship behavior toward the organization (OCB-O).

According to Thompson's (1967) input-throughput-output model, behavior is a mediator between inputs (i.e., human capital) and outputs (i.e., performance). Similarly, Wright and Snell (1991) argue that employees need both competency management and behavior management in order to act in the way to support the organizational strategy. According to Wright and Snell (1991), competency management is the way to ensure that employees have the required skills to support the organizational strategy (i.e., input control), while behavior management is the way to ensure that employees utilize their skills to act in the way to support the organizational strategy (i.e., throughput control). Furthermore, Wright and McMahan (1992) and Wright et al. (1994) argue that human capital will be a source of sustained competitive advantage if employees exhibit an appropriate behavior. Hence, employees with high context-specific human capital will have a better performance by performing their appropriate behavior. For example, highly-skilled salespeople who meet their customers frequently will be likely to

increase sales for an organization. This appropriate behavior utilized by employees to meet their job responsibilities is called In-role behavior (Anderson & Oliver, 1987; Behrman & Perreault, 1984; Piercy, Cravens, Lane, & Vorhies, 2006). Empirically, Piercy et al. (2006) found a significant relationship between the in-role behavior of salespeople and their performance. As previously noted, Ployhart et al. (2011) found that unit-specific human capital (i.e., completed advanced levels of optional training) increased the unit effectiveness (i.e., sales per labor hour and receipts versus flow-through) through unit service performance behavior (i.e., customer satisfaction). Moreover, Theodosiou and Katsikea (2007) found that controlling behavior with job requirements had a positive influence on firm performance. For example, registered nurses who assist and care for others would help the performance of the hospital. For this reason, registered nurses who have the proper in-role behaviors such as assisting and caring for others should have better performance than others. As a result, if employees exhibit an appropriate behavior, their performance will increase. In line with the model by Wright and McMahan (1992), this study, therefore, hypothesizes that in-role behavior will mediate the relationship between context-specific human capital and performance and the relationship between context-generic human capital and performance.

As previously discussed, individuals with better social skills will be likely to exert good teamwork behaviors. These teamwork behaviors such as helping others can be referred as OCB (Smith et al., 1983). With good teamwork behaviors, the firm will have high performance. Organizational citizenship behavior (OCB) is employee behavior that goes above and beyond the job description and increases the effectiveness of the organization (Organ, 1988, 1990; Lavelle et al., 2009). Barrick et al. (2007) found that communication behaviors can lead to improved team and firm performance in teams with highly interdependent tasks. Furthermore, Pandey and McMahan (2011) found that not only in-role behavior mediates the relationship between human capital and individual performance, but also extra-role behaviors or OCBs mediate the relationship between human capital and individual performance. According to

Organ (1988), "OCB represents individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization" (p. 4). Smith et al. (1983) argue that organizational citizenship behavior can be specified into two categories: Altruism and Generalized Compliance. Altruism captures the behavior that directly affects a specific person in face-to-face situations such as helping others who have been absent, while generalized compliance captures the behavior that indirectly helps others involved in the system such as punctuality (Smith et al., 1983). Williams and Anderson (1991) call the first category "OCBI-behaviors that immediately benefit specific individuals" (p. 602), while they call the second category "OCBO-behaviors that benefit the organization in general" (p. 601). Additionally, Rupp and Cropanzano (2002) introduce another category which is OCB that directly benefits the supervisor.

According to social exchange theory, the norm of the relationships between parties is based on reciprocity rules (Cropanzano & Mitchell, 2005). That is, one party will normally get the benefits back from other parties if they initially provide the benefits to other parties. Based on the multifoci social exchange logic of the target similarity model, Lavelle et al. (2009) conducted the study of target-specific organizational citizenship behaviors (OCBs) of nurses in a hospital. First, they found that OCB toward the supervisor was positively related to perceived supervisor support. Second, they found that OCB toward the workgroup was positively related to perceived workgroup support. Finally, they found that OCB toward the organization was positively related to perceived organizational support. This study shows the reciprocity of social exchange relationships between the employee and other partners (i.e., the supervisor, the workgroup, and the organization). Therefore, it can be inferred that employees who have OCB toward their supervisor, their workgroup, and their organization tend to be supported by their supervisor, their workgroup, and their organization respectively, thus improving their performance. This present study, therefore, hypothesizes that target-specific OCBs will mediate

the relationship between context-specific human capital and performance and the relationship between context-generic human capital and performance.

As previously discussed, Wright and McMahan (1992) and Wright et al. (1994) argue that employee behaviors mediate the relationship between human capital and performance. Moreover, context-generic human capital tends to facilitate the development of context-specific human capital (Ployhart & Moliterno, 2011). It can be inferred that context-generic human capital can lead to employee behaviors through the development of context-specific human capital. In other words, this study hypothesizes that context-specific human capital will mediate the relationship between context-generic human capital and employee behaviors.

Hypothesis 6a: In-role behavior mediates the relationship between context-specific human capital and performance.

Hypothesis 6b: Organizational citizenship behavior toward individuals (OCB-I) mediates the relationship between context-specific human capital and performance.

Hypothesis 6c: Organizational citizenship behavior toward the supervisor (OCB-S) mediates the relationship between context-specific human capital and performance.

Hypothesis 6d: Organizational citizenship behavior toward the organization (OCB-O) mediates the relationship between context-specific human capital and performance.

Hypothesis 7a: In-role behavior mediates the relationship between context-generic human capital and performance.

Hypothesis 7b: Organizational citizenship behavior toward individuals (OCB-I) mediates the relationship between context-generic human capital and performance.

Hypothesis 7c: Organizational citizenship behavior toward the supervisor (OCB-S) mediates the relationship between context-generic human capital and performance.

Hypothesis 7d: Organizational citizenship behavior toward the organization (OCB-O) mediates the relationship between context-generic human capital and performance.

Hypothesis 8a: Context-specific human capital mediates the relationship between context-generic human capital and in-role behavior.

Hypothesis 8b: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward individuals (OCB-I).

Hypothesis 8c: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward the supervisor (OCB-S).

Hypothesis 8d: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward the organization (OCB-O).

### 3.5 Summary

In conclusion, this chapter has outlined seventeen research hypotheses (See Table 3.1 for details) concerning the impact of human capital and social capital on performance, as well as the mediators between them. Figure 3.2 depicts the conceptual model and hypotheses that will be tested in this study. The next chapter will present the methodology employed by this study.

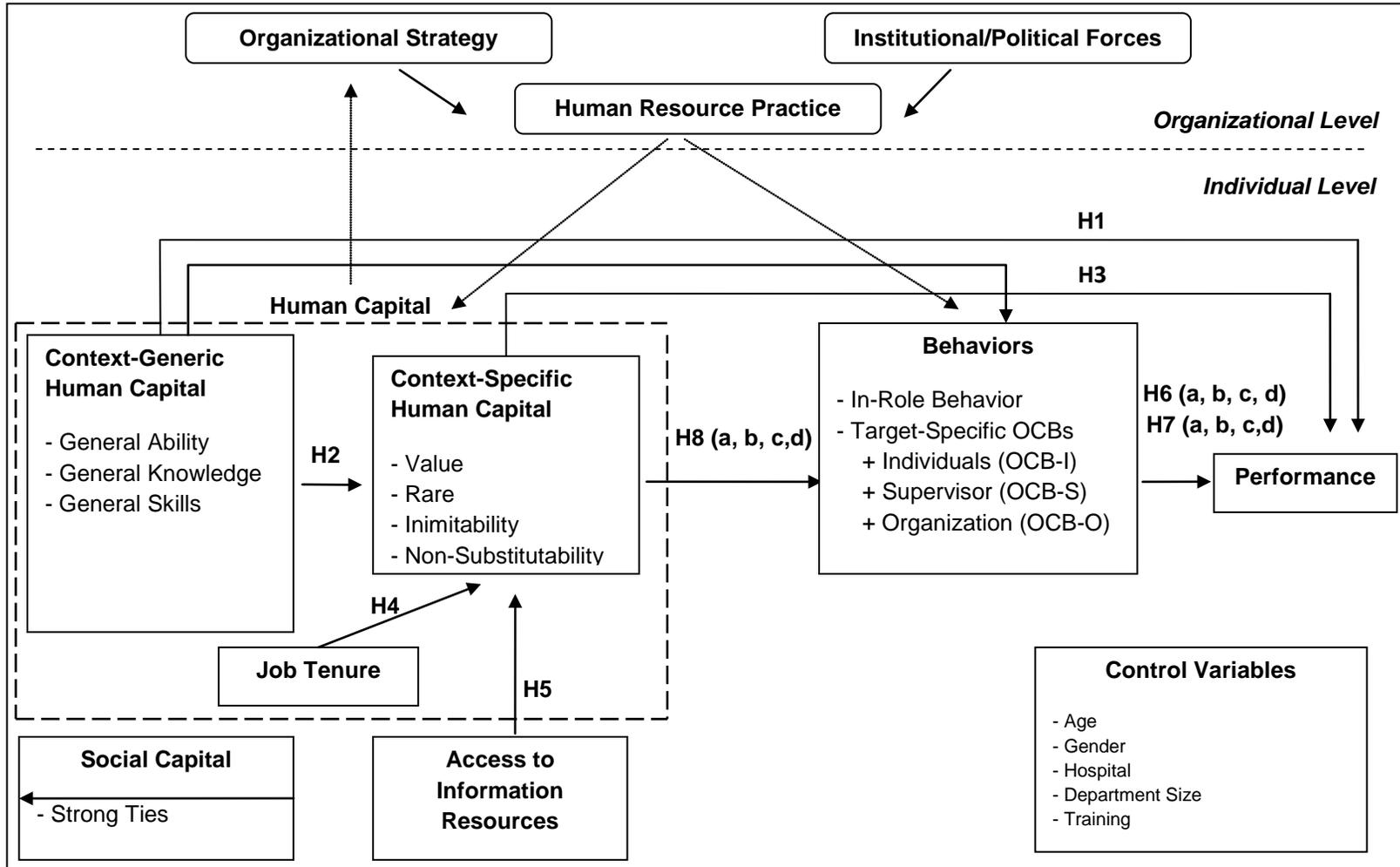


Figure 3.2 The Conceptual Model (Adapted from Wright & McMahan, 1992)

Table 3.1 Hypotheses (Theoretical and Empirical Support)

Hypotheses	Theoretical Support	Empirical Support
H1: Context-generic human capital is positively related to performance. H2: Context-generic human capital is positively related to context-specific human capital. H3: Context-specific human capital mediates the relationship between context-generic human capital and performance.	Becker (1962, 1964); Jensen (1998); McMahan et al. (1999); Ployhart & Moliterno, (2011); Ployhart et al. (2011); Wright & McMahan (1992); Wright et al. (1994)	Becker (1994); Dreher & Bretz (1991); Gathmann & Schönberg (2010); Harris & McMahan (2008); Hunter (1983); Jensen (1998); McHenry et al. (1990); O'Reilly & Chatman (1994); Pil & Leana (2009); Ployhart et al. (2011); Ree & Earles (1991); Wright et al. (1995b); Unger et al. (2011, Meta-Analysis)
H4: Job tenure has a positive relationship with context-specific human capital, but this association diminishes as job tenure increases.	Murphy (1989); Reuber & Fischer (1999); Sturman (2003)	McDaniel et al. (1988, Meta-Analysis); Ng & Feldman (2010, Meta-Analysis); Sturman (2003, Meta-Analysis)
H5: Access to information resources mediates the relationship between social capital (specifically, strong ties) and context-specific human capital.	Adler & Kwon (2002); Burt (1997); Coleman (1988); Chisholm & Nielsen (2009); Granovetter (1973); Hansen (1999)	Coleman (1988); Katungi et al. (2008); Wei et al. (2011)

Table 3.1 - *Continued*

Hypotheses	Theoretical Support	Empirical Support
<p>H6a: In-role behavior mediates the relationship between context-specific human capital and performance.</p> <p>H6b: Organizational citizenship behavior toward individuals (OCB-I) mediates the relationship between context-specific human capital and performance.</p> <p>H6c: Organizational citizenship behavior toward the supervisor (OCB-S) mediates the relationship between context-specific human capital and performance.</p> <p>H6d: Organizational citizenship behavior toward the organization (OCB-O) mediates the relationship between context-specific human capital and performance.</p> <p>H7a: In-role behavior mediates the relationship between context-generic human capital and performance.</p> <p>H7b: Organizational citizenship behavior toward individuals (OCB-I) mediates the relationship between context-generic human capital and performance.</p> <p>H7c: Organizational citizenship behavior toward the supervisor (OCB-S) mediates the relationship between context-generic human capital and performance.</p> <p>H7d: Organizational citizenship behavior toward the organization (OCB-O) mediates the relationship between context-generic human capital and performance.</p> <p>H8a: Context-specific human capital mediates the relationship between context-generic human capital and in-role behavior.</p> <p>H8b: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward individuals (OCB-I).</p> <p>H8c: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward the supervisor (OCB-S).</p> <p>H8d: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward the organization (OCB-O).</p>	<p>Cropanzano &amp; Mitchell (2005); Ployhart &amp; Moliterno (2011); Thompson (1967); Wright &amp; McMahan (1992); Wright &amp; Snell (1991); Wright et al. (1994)</p>	<p>Barrick et al. (2007); Lavelle et al. (2009); Pandey &amp; McMahan (2011); Piercy et al. (2006); Ployhart et al. (2011); Theodosiu &amp; Katsikea (2007)</p>

## CHAPTER 4

### METHODOLOGY

#### 4.1 Introduction

The previous chapter discussed the hypotheses about how human capital, social capital, and employee behaviors affect performance. This chapter will explain the methodology to test those hypotheses. First, the procedure to obtain the sample will be described. Also, the reasons to select Thai nurses as the sample will be explained. Then, the measures of all variables in this study will be explained.

#### 4.2 Sample

##### *4.2.1 Procedure*

The questionnaires will be distributed in two hospitals. The total number of the sample is 523. There are 436 registered nurses and 31 supervisors in Mahasarakham hospital. There are 87 registered nurses and 8 supervisors in Kosumphisai hospital. The questionnaire is in Thai language and contains two parts. The first part will be filled by registered nurses asking about their demographic data, social networks, and access to information resources. The second part will be completed by their supervisors asking about context-generic human capital, context-specific human capital, employee behaviors, and performance of their subordinates. Each supervisor will complete approximately 4 - 42 questionnaires of their subordinates. Two parts of the questionnaire will be matched by the assigned identification number. There are no names on any part of the questionnaire. Therefore, there is no link from the data to any specific nurses or supervisors. The following two sections will explain why this study uses Thai nurses as the sample.

#### *4.2.2 Why Does This Study Use a Sample of Nurses?*

Healthcare is very important industry in the 21st century (Vallano, 2000). In several tragic events such as the September 11, 2001 attack, the war in Iraq, the tsunami in Asia, and Hurricane Katrina, nurses were front and center of these events to save people's lives (Vallano, 2000). Improving the performance of nurses will likely save more peoples' lives. Nurses require proper education and experience to become successful in their career (Vallano, 2000). With a broad level of responsibilities such as acute care, long term care, adult day care, and home healthcare (Vallano, 2000), nurses are suitable for this study to test how human capital and social capital affect their performance. Moreover, nurses are suitable for testing this model because they need both general knowledge from Nursing education and specific knowledge from working in the hospital in order to succeed in their career. Several organizational management studies have used nurses as a sample (e.g., Lavelle et al., 2009; Pandey & McMahan, 2011). In the next section, the reasons for using the samples in Thailand will be explained.

#### *4.2.3 Why Does This Study Need to Be Conducted in Thailand?*

Although several studies have addressed the relationship between human capital and performance (e.g., Becker, 1964; Jensen, 1988; Harris & McMahan, 2008; Ng et al., 2005; Pil & Leana, 2009; Wright et al., 1995b), these studies were mainly conducted in the United States. There is little research on human capital in other cultures, especially Eastern culture. Culture is collective mental programming that people share with other members of their nation, region, or group (Hofstede, 1983). Culture affects the way that people think and interact with others (Hofstede, 1983). Therefore, human capital and social capital might operate differently in different cultures. Eastern countries (e.g., Thailand, South Korea, and Japan) tend to display large power distance, low individualism, and strong uncertainty avoidance, while Western

countries (e.g., USA, UK, and Canada) tend to display small power distance, high individualism, and weak uncertainty avoidance (Hofstede, 1980, 1983).

People in a individualist society are supposed to look after their self interest (Hofstede, 1983). This allows a large amount of freedom for people in the individualist society (Hofstede, 1983). On the other hand, people in a collectivist society are supposed to look after the interest of their ingroup (Hofstede, 1983). In exchange, they will be protected by their ingroup (Hofstede, 1983). Next, power distance refers to inequalities in power and wealth between people in the society (Hofstede, 1983). People in the large power distance society tend to accept inequalities in power and wealth, while people in the small power distance society tend to reduce inequalities in power and wealth (Hofstede, 1983). However, Hofstede and Hofstede (2005) argue that power distance in a large part of the world has been reduced over the past few generations because of an increase in education. In addition, people in a weak uncertainty avoidance society tend to take risk because they feel relatively secure, while people in a strong uncertainty avoidance society tend to create security and avoid risk because they feel anxiety about the future (Hofstede, 1983). Thus, people with a high score of uncertainty avoidance are likely to follow the instructions (House et al., 2004). These dimensions of culture differences show that human capital theory that was developed in the USA might need to be tested in different cultural settings. Moreover, social capital will also need to be studied in Eastern countries where people look after their ingroup interest more than their self interest because they live in the collectivist society (Hofstede, 1983). Therefore, this study will use nurses in Thailand, a country in South-East Asia, as the sample to explore the concepts of human capital and social capital where Eastern cultural values prevail.

In GLOBE project, Thailand (5.10) has higher societal institutional collectivism values (Should Be) score than the US [5.10 / 4.17], but in reality Thailand has lower societal institutional collectivism practices (As Is) score than the US [4.03 / 4.20] (House et al., 2004). Additionally, there is a little difference of societal in-group collectivism values (Should Be) score

between both countries [5.76 / 5.77], but Thailand has higher societal in-group collectivism practices (As Is) score than the US [5.70 / 4.25] (House et al., 2004). Moreover, Thailand has stronger uncertainty avoidance in society values (Should Be) than the US [5.61 / 4.00], but Thailand has ironically weaker uncertainty avoidance in society practices (As Is) than the US [3.93 / 4.15] (House et al., 2004). Furthermore, There is a little difference of power distance in society values (Should Be) between Thailand and the US [2.86 / 2.85], but Thailand has larger power distance in social practices (As Is) than the US [5.63 / 4.88] (House et al., 2004). These indicators show the differences between Thai people and Americans for both values and practices. Thus, it will be an opportunity for this research to test the generalizability of human capital and social capital theories in Thai society.

#### 4.3 Measures

The measures used in this study are constructed using established scales where possible. All measures are translated from English language to Thai language for a better understanding from Thai nurses. All items in the questionnaire have an approval for ethics research certificate from the institution review board and the directors of both the Mahasarakham hospital and the Kosumphisai hospital.

##### *4.3.1 Independent Variables*

There are three main independent variables in this study including context-generic human capital, job tenure, and strong ties (social capital).

###### 4.3.1.1 Context-Generic Human Capital

Context-generic human capital contains 3 components: knowledge, skills, and ability. The measures are obtained from O-Net (2012). Knowledge will be measured by a 10-item scale from O-Net (2012). An example of knowledge is "Therapy and Counseling." Skills will be measured by a 10-item scale from O-Net (2012). An example of skills is "Judgment and

Decision Making." Ability will be measured by a 10-item scale from O-Net (2012). An example of ability is "Problem Sensitivity." These measurement items will be answered by the supervisors.

#### 4.3.1.2 Job Tenure

Job tenure is the length of experience in the current job. The registered nurses will be asked to answer the question "How long have you been on your present job?" The result will be processed by a logarithm formula to fit the non-linear model.

#### 4.3.1.3 Strong Ties (Social Capital)

Social capital in this study is the number of strong ties in the social network of the registered nurse. According to Scott (2002), the distance between two subjects in a social network is the length of the shortest path between the two subjects. Hansen (2002) argues that information might be distorted if a path between a knowledge recipient and a knowledge source is too long. Moreover, Cummings and Teng (2003) argue that the communication is costly and requires more time if there is a long distance between a knowledge recipient and a knowledge source. Wei et al. (2011) found that the distance between a knowledge recipient and a knowledge source was negatively related to knowledge transfer. Thus, the knowledge sources that are close to a knowledge recipient will likely be sources of knowledge transfer. In order to capture social capital that is the source of information resources, this study will use the number of strong ties in employees' social networks to represent social capital.

The registered nurses will be asked to indicate a list of their social networks in their department. Then, they will indicate their relationship with each person on a 4-point scale (i.e., especially close, close, less close, and distant). This name generator method has been used by Ibarra (1995) James (2000), Seibert et al. (2001), and Sagas and Cunningham (2005). The responses of either "less close" or "distance" will be coded as 0 and represent the number of weak ties in the network. All ties that indicate as either "close" or "especially close" will be coded as 1 and represent the number of strong ties in the network.

#### 4.3.2 Mediated Variables

There are six main mediated variables in this study including access to information resources, context-specific human capital, in-role behavior, OCB-S, OCB-S, and OCB-O.

##### 4.3.2.1 Access to Information Resources

Access to information resources will be measured by a 3-item scale adapted from Spreitzer (1996). An example of item is "When you need additional information resources to do your job, you can usually get them." These measurement items will be answered by the registered nurses.

##### 4.3.2.2 Context-Specific Human Capital

Context-specific human capital will be measured based on the resource-view of the firm: value, rareness, inimitability, and non-substitutability. Value will be measured by a 12-item scale of human capital value adapted from Lepak and Snell (2002). An example of human capital value is "help minimize costs of service." Then, a 10-item scale of human capital uniqueness from Lepak and Snell (2002) will be divided into 3 categories based on the resource-based view (RBV) of the firm. Rareness will be measured by four items adapted from Lepak and Snell (2002). An example is "are not widely available in the labor market." Inimitability will be measured by three items adapted from Lepak and Snell (2002). An example is "are developed through on the job experiences." Non-substitutability will be measured by three items adapted from Lepak and Snell (2002). An example is "would be very difficult to replace." These measurement items will be answered by the supervisors.

##### 4.3.2.3 In-Role Behavior

In-role behavior will be measured by a 10-item scale from O-Net (2012). An example of in-role behavior is "Communicating with Supervisor, Peers, or Subordinates." These measurement items will be answered by the supervisors.

#### 4.3.2.4 Target-Specific Organizational Citizenship Behaviors

There are three categories of target-specific organizational citizenship behaviors. First, Organizational Citizenship Behaviors - Individuals (OCB-I) will be measured by 6 items adapted from Lee and Allen (2002) and 1 item adapted from Rupp and Cropanzano (2002). An example is "Helps coworkers who have been absent." Second, Organizational Citizenship Behaviors - Supervisor (OCB-S) will be measured by 5 items adapted from Rupp and Cropanzano (2002) and 1 item adapted from Lee and Allen (2002). Third, Organizational Citizenship Behaviors - Organization (OCB - O) will be measured by 6 items adapted from Smith et al. (1983) and 6 items adapted from Lee and Allen (2002). These measurement items will be answered by the supervisors.

#### 4.3.3 *Dependent Variable*

There is only one dependent variable in this study which is performance of the registered nurse.

##### 4.3.3.1 Performance

In-role performance will be measured by 5 items from Williams and Anderson (1991). An example of in-role performance items is "Adequately completes assigned duties." These measurement items will be answered by the supervisors.

#### 4.3.4 *Control Variables*

There are five control variables in this study including age, gender, hospital, department size, and training.

##### 4.3.4.1 Age

Thai people are high in power distance (Hofstede, 1980, 1983). In Thai culture, people usually respect older people. Therefore, supervisors might favor older nurses more than younger nurses because of the seniority system. This variable will control for the bias from age

differences on every variable answered by the supervisors. The registered nurses will be asked to answer the question "When were you born?" Age will be equal to 2012 minus by the birth year.

#### 4.3.4.2 Gender

Although people tend to use systematic processing to judge their decisions, people also use social cues to judge their decisions. One of the main social cues is the identity of the group (Mackie, Worth, & Asuncion, 1990). Earley (1993) defines an in-group as "an aggregate of people sharing similar trait and background characteristics" (p. 321), such as gender, ethnicity, and religion. Fiske (2004) argues that "the in-group is more rapidly associated with positive attributes and feeling than the out-group" (p. 412). Also, social identity theory (SIT) suggested that people have prejudice favoring the in-group (Brewer, 1999). Therefore, in-group members tend to have a better evaluation than out-group members. Since all supervisors are female, they tend to favor female nurses more than male nurses. To control gender bias, this study will control participants' gender on every variables answered by their supervisors. The registered nurses will be asked to answer the question "Gender: (Male / Female)." Male nurses will be coded as 0 and female nurses will be coded as 1.

#### 4.3.4.3 Hospital

This study will be conducted in two hospitals. Therefore, this variable will help to control the effect of the differences of two hospitals on variables answered by nurses and their supervisors. The questionnaires from Mahasarakham hospital will be coded as 0 and the questionnaires from Kosumphisai hospital will be coded as 1.

#### 4.3.4.4 Department Size

Since people might find it easy to connect to more people in larger departments than in a smaller one. This variable will control for the effect of different sizes of their departments on the relationship between strong ties and access to information resources. The number of employees in each department will be obtained from the records of the hospital.

#### 4.3.4.5 Training

Information from training tends to be formal, while information from social capital tends to be informal. People can access information resources from the formal sources and informal sources. Hence, the access to information resources variable will be controlled by the training variable in order to rule out the variance from formal information sources. Training will be measured using an item from James (2000). The registered nurses will be asked to answer the question "To what extent have you participated in work-related training programs since joining this hospital?" The responses of "not at all / rarely / once a year / 2 or 3 times per year / more than 3 times per year" will be coded as 0, 1, 2, 3, and 4, respectively.

#### 4.4 Summary

This chapter explained the procedure to obtain the sample and the reason why the sample was chosen. Then, the measures of independent variables (i.e., context-generic human capital, job tenure, and strong ties), mediated variables (i.e., access to information resources, context-specific human capital, in-role behavior, and three target-specific organizational citizenship behaviors), dependent variables (i.e., performance), and control variables (i.e., age, gender, hospital, department size, and training) in the study have been explained. The next chapter will present the analysis utilized by this study and the results.

## CHAPTER 5

### ANALYSIS AND RESULTS

#### 5.1 Introduction

The previous chapter explained the sample and measures of this study. This chapter will describe the data examinations, the procedures of two analysis methods, and the results of both methods of analysis. First, the description of the sampling will be explained. Second, the missing values will be replaced with appropriated methods. Third, the validity and reliability will be tested. Fourth, the analysis using regression will be tested. Finally, the analysis using structural equation modeling (SEM) will be tested.

#### 5.2 Sampling

The questionnaires were distributed through the administrators in two hospitals. The first location, Mahasarakham hospital, had 436 registered nurses and 31 supervisors. The second location, Kosumphisai hospital, had 87 registered nurses and 8 supervisors. The total number of questionnaires distributed in these two locations was 523. There were two parts of this questionnaire. Registered nurses were asked to complete part 1 of the questionnaire including their demographic data, social networks, and access to information resources. Then, their supervisors filled in part 2 of the questionnaire including context-generic human capital, context-specific human capital, employee behaviors, and performance of their subordinates. Each supervisor completed approximately 4 - 42 questionnaires. 414 questionnaires (Part 1) were returned from 414 registered nurses. The response rate was 82.47 percent. 425 questionnaires (Part 2) were returned from 38 supervisors. The response rate was 84.66 percent. Finally, a total of 406 questionnaires were used in this study. The details are in Table 5.1.

Table 5.1 The Sample of This Study

	Maharakham	Kosumphisai	Total
Total number of registered nurses	423	79	502
Total number of supervisors	31	8	39
Returned questionnaires from registered nurses (Part 1)	352 (83.22%)	62 (78.48%)	414 (82.47%)
Returned questionnaires from supervisors (Part 2)	363 (85.52%) from 30 supervisors	61 (77.22%) from 8 supervisors	425 (84.66%) from 38 supervisors
Total matched questionnaires	347 (82.03%)	59 (74.68%)	406 (80.88%)

From the final sample, the average age of registered nurses was 35 years. The youngest registered nurse was 22 years old and the oldest registered nurse was 60 years old. There was no registered nurse who was older than 60 years because all nurses retire at 60. The average job tenure was 9 years. The minimum job tenure was 0 years and the maximum job tenure was 35 years. The average salary per month was \$631. The average experience in the other jobs at the same hospital was 1 year. The minimum experience in the other jobs at the same hospital was 0 years and maximum experience in the other jobs at the same hospital was 31 years. The average experience at the other hospitals was 2 years. The minimum experience at the other hospitals was 0 years and the maximum experience at the other hospitals was 22 years.

Additionally, the minimum salary per month was \$252 and the maximum salary per month was \$1440. The average incentive per month was \$312. The minimum incentive per month was \$0 and the maximum incentive per month was \$1129. The average department size was 18. The minimum department size was 4 and the maximum department size was 42. The majority of the registered nurses were female (91.13%), had an undergraduate degree (94.33%), and had a professional position level (50.25%). The details are provided in Table 5.2.

Table 5.2 Respondents' Profile of The Final Sample

		Number of respondents
Age Mean =35 years Min = 22 years Max = 60 years	21 -30	136 (33.50%)
	31 - 40	155 (38.18%)
	41 - 50	66 (16.26%)
	51 - 60	22 (5.42%)
	No answer	27 (6.65%)
Gender	Male	32 (7.88%)
	Female	370 (91.13%)
	No answer	4 (0.99%)
Education	Diploma	2 (0.49%)
	Undergraduate	383 (94.33%)
	Graduate	17 (4.19%)
	No Answer	4 (0.99%)
Position Level	Practitioner	189 (46.55%)
	Professional	204 (50.25%)
	Senior Professional	1 (0.25%)
	Expert	0
	No Answer	12 (2.96%)
Job Tenure Mean = 9 years Min = 0 year Max = 35 years	0 - 10 years	237 (58.37%)
	11 - 20 years	117 (28.82%)
	21 - 30 years	41 (10.10%)
	31 - 40 years	11 (2.71%)
	No Answer	0
Experience in the other jobs at the same hospital Mean =1 year Min = 0 year Max = 31 years	0 - 10 years	389 (95.81%)
	11 - 20 years	15 (3.69%)
	21 - 30 years	1 (0.25%)
	31 - 40 years	1 (0.25%)
	No Answer	0
Experience at the other hospitals Mean = 2 years Min = 0 year Max = 22 years	0 - 10 years	380 (93.60%)
	11 - 20 years	23 (5.67%)
	21 - 30 years	3 (0.74%)
	31 - 40 years	0
	No Answer	0
Salary per month Mean =19555 Bahts (US\$631) Min = 7800 Bahts (US\$252) Max = 44650 Bahts (US\$1440) US Dollar : Thai Baht ≈ 1:31	0 - 10000 Bahts	2 (0.49%)
	10001 - 20000 Bahts	237 (58.37%)
	20001 - 30000 Bahts	93 (22.91%)
	30001 - 40000 Bahts	52 (12.81%)
	40001 - 50000 Bahts	1 (0.25%)
	No Answer	21 (5.17%)
Incentive per month Mean =9686 Bahts (US\$312) Min = 0 Bahts (US\$0) Max = 35000 Bahts (US\$1129) US Dollar : Thai Baht ≈ 1:31	0 - 10000 Bahts	232 (57.14%)
	10001 - 20000 Bahts	163 (40.15%)
	20001 - 30000 Bahts	9 (2.22%)
	30001 - 40000 Bahts	2 (0.49%)
	40001 - 50000 Bahts	0
	No Answer	0

Table 5.2 - *Continued*

Department Size	0 - 10 persons	101 (24.88%)
Mean =18 persons	11 - 20 persons	182 (44.83%)
Min = 4 persons	21 - 30 persons	84 (20.69%)
Max = 42 persons	31 - 40 persons	0
	41 - 50 persons	39 (9.61%)
Hospital	Maharakham	347(85.47%)
	Kosumphisai	59 (14.53%)

### 5.3 Data Examinations

#### *5.3.1 Missing Value Analysis*

There are 6 items of interest that have more than 5 % missing data (i.e., age, performance1, performance2, performance3, performance4, and performance5). According to Hair et al. (2006), there are two main approaches to check whether the missing data are missing at random (MAR) or missing completely at random (MCAR). First, the comparison of missing data and valid data can be analyzed based on other variables of interest (Hair et al., 2006). If the differences are significant, the data show the possibility of a nonrandom missing data process (Hair et al., 2006). Using an SPSS software, the tests of performance (1-5) items show no differences between cases with missing data and cases with valid data, except for department size ( $t = 4.2$ ,  $df = 74.7$ ,  $p < 0.05$ ). The cases with missing data of performance (1-5) items appear to be in the smaller department size (14 / 19) than those of the cases with valid data. However, the department size is not significantly related to any five items of performance ( $p > 0.05$ ).

Second, the pattern of missing data on all variables can be compared to the pattern expected for a random missing data process (Hair et al., 2006). If it is significant, the missing data are likely to be nonrandom (Hair et al., 2006). Using the little's MCAR test by an SPSS software, the test shows that the differences are significant ( $\chi^2 = 3584.216$ ,  $df = 2990$ ,  $p < 0.05$ ). This indicates that the missing data in this study might not be missing completely at random. The next section, the missing data will be replaced using several appropriated methods.

### 5.3.2 Missing Value Remedies

Two approaches were used to replace the missing values in this study. First, a regression imputation approach was used to replace seven variables (i.e., training, access to information resources, in-role behavior, OCB-I, OCB-S, OCB-S, and performance). Second, a hot deck imputation approach was used to replace other two variables (i.e., age and gender).

#### 5.3.2.1 A Regression Imputation Approach

According to Hair et al. (2006), there are two steps in this approach. First, "a predictive equation is formed for each variable with missing data and estimated from all cases with valid data" (Hair et al., 2006, p. 61). Then, "replacement values for each missing value are calculated from that observation's values on the variables in the predictive equation" (Hair et al., 2006, p. 61). Seven equations were formed in order to replace the missing values in seven variables (i.e., training, access to information resources, in-role behavior, OCB-I, OCB-S, OCB-S, and performance). The details are in Table 5.3.

#### 5.3.2.2 A Hot Deck Imputation Approach

According to Hair et al. (2006), a hot deck imputation approach is the method that replaces the missing value from another observation that is deemed similar. The missing values in age and gender were replaced using a hot deck imputation approach. Since the 27 registered nurses who did not indicate their age have at least bachelor's degree and the most common age of registered nurses in this study with bachelor's degree is 23 year old (144/354 or 40.68%), the missing data or incomplete data have been replaced using the number of total experience years plus 23. Moreover, 4 cases of missing data in gender were replaced with female because most of registered nurses in this study were female (370/402 = 92.04%).

Table 5.3 A Regression Imputation Approach

Dependents	Independents	R <sup>2</sup>	Missing Cases
Training	2.606 + 0.153(Access) - 0.032(Department Size)	0.132	10
Access to Information Resources	4.213 + 0.027(Strong Ties) + 0.162(Training) - 0.012(Department Size)	0.064	13
Behavior	0.055 + 0.724(Context-Generic Human Capital) + 0.279(Specific Human Capital)	0.839	3
OCB-I	0.634 + 0.497(Context-Generic Human Capital) + 0.418(Context-Specific Human Capital)	0.599	2
OCB-S	0.066 + 0.346(Context-Generic Human Capital) + 0.652(Context-Specific Human Capital)	0.628	2
OCB-O	0.729 + 0.432(Context-Generic Human Capital) + 0.464(Context-Specific Human Capital)	0.701	3
Performance	0.210 + 0.228(Context-Generic Human Capital) + 0.170(Behavior) + 0.187(OCB-I) - 0.067(OCB-S) + 0.495(OCB-O)	0.794	38

### 5.3.3 Common Method Bias

This study used Harman's single-factor test to test the common method variance in this study. According to Podsakoff et al (2003), this single-factor test can be either exploratory factor analysis (EFA) or confirmatory factor analysis (CFA). This study will use CFA to test the common method bias. This CFA method has been used in several studies (e.g., Iverson & Maguire, 2000). If a single factor can account for all of the variance in the data, there is a potential for common method bias (Podsakoff et al., 2003). That is, if there is no difference between the one-factor model and the model with proposed factors, it may have common method bias (Podsakoff et al., 2003). On the other hand, if the model with proposed factors is better than the one-factor model, it is less likely to have common method bias in the study (Podsakoff et al., 2003). Only items (i.e., context-generic human capital, context-specific human capital, in-role behavior, OCB-I, OCB-S, OCB-O, and performance) that were filled by supervisors were included in this test. The CFA in this study used the program LISREL 8 (Joreskog & Sorbom, 1996). The result from Table 5.4 shows that 7-factor CFA model ( $\chi^2 = 16279.57$ ,  $df = 4073$ ) was a better fit model than 1-factor CFA model ( $\chi^2 = 2305.04$ ,  $df = 4094$ ).

The chi-square difference test was significant ( $\Delta\chi^2 = 6825.47$ ,  $p < 0.001$ ). Hence, there was no evidence for common method bias in this study.

Table 5.4 Testing Common Method Variance using CFA

CFA	df	$\chi^2$	RMSEA	SRMR	TLI or NNFI	CFI	Compared to	$\Delta$ df	$\Delta\chi^2$
1 Factor	4094	23105.04 <sup>***</sup>	0.16	0.068	0.97	0.97			
7 Factors <sup>a</sup>	4073	16279.57 <sup>***</sup>	0.11	0.057	0.98	0.98	1 Factor	21	6825.47 <sup>***</sup>

<sup>a</sup>7 factors include context-generic human capital, context-specific human capital, in-role behavior, OCB-I, OCB-S, OCB-O, and performance

<sup>+</sup>  $p < 0.10$

<sup>\*</sup>  $p < 0.05$

<sup>\*\*</sup>  $p < 0.01$

<sup>\*\*\*</sup>  $p < 0.001$

### 5.3.4 Discriminant Validity

Discriminant validity is "the degree to which two conceptually similar concepts are distinct" (Hair et al., 2006). Two groups of main constructs have been tested using the discriminant validity method. The better fit model is the model with lower chi-square (Anderson & Gerbing, 1988). The first group consists of context-generic human capital and context-specific human capital. These two constructs were tested to determine whether they should be one construct or two constructs. The result from Table 5.5 shows that the chi-square different test between one-factor CFA and two-factor CFA was significant ( $\Delta\chi^2 = 1473.69$ ,  $p < 0.001$ ), thus showing that two-factor CFA model ( $\chi^2 = 8023.68$ ,  $df = 1273$ ) is a better fit model than one-factor CFA model ( $\chi^2 = 9497.37$ ,  $df = 1274$ ). Hence, the context-generic human capital construct is significantly different from the context-specific human capital construct. The second group consists of in-role behavior and three target-specific organizational citizenship behaviors (OCB-I, OCB-S, and OCB-O). These four constructs were tested to determine whether they should be one construct or four constructs. The result from Table 5.5 shows that the chi-square different test between one-factor CFA and four-factor CFA is significant ( $\Delta\chi^2 = 2220.98$ ,  $p < 0.001$ ), thus showing that four-factor CFA model ( $\chi^2 = 3486.70$ ,  $df = 554$ ) is a better fit than one-

factor CFA model ( $\chi^2 = 5707.68$ ,  $df = 560$ ). Therefore, four constructs (in-role behavior, OCB-I, OCB-S, OCB-O) are separate constructs.

Table 5.5 Testing Discriminant Validity

	df	$\chi^2$	RMSEA	SRMR	TLI or NNFI	CFI	Compared to	$\Delta df$	$\Delta\chi^2$
Human Capital 1 Factor	1274	9497.37***	0.18	0.082	0.96	0.96			
Human Capital 2 Factors <sup>a</sup>	1273	8023.68***	0.15	0.073	0.97	0.97	Human Capital 1 Factor	1	1473.69***
Behaviors 1 Factor	560	5707.68***	0.19	0.065	0.94	0.95			
Behaviors 4 Factors <sup>b</sup>	554	3486.70***	0.13	0.057	0.97	0.97	Behaviors 1 Factor	6	2220.98***

<sup>a</sup> 2 factors include context-generic human capital and context-specific human capital

<sup>b</sup> 4 factors include in-role behavior, OCB-I, OCB-S, and OCB-O

+  $p < 0.10$

-  $p < 0.05$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$

### 5.3.5 Internal Consistency Reliability

Internal consistency reliability assesses the consistency of results across a summated scale (Hair et al., 2006). In order to assess the internal consistency reliability of each variable, inter-to-total correlation and inter-item correlation were assessed (Hair et al., 2006). The rule of thumb is the item-to-total correlations should exceed 0.50 and the inter-item correlations should exceed 0.30 (Robinson, Shaver, & Wrightsman, 1991). The results show that all items have item-to-total correlation of more than 0.50 and inter-item correlations of more than 0.30 (See details in Appendix C). Second, coefficient alpha of each variable was assessed (Cronbach, 1951; Hair et al., 2006; Nunnally, 1978). In general, values of coefficient alpha equal to or above 0.70 indicate that the items are reliable (Hair et al., 2006; Nunnally, 1978; Robinson et al., 1991). All variables have alpha coefficient of more than 0.70 which is considered good measurement. The details are included in Table 5.6.

Table 5.6 Internal Consistency Reliability Tests

	Number of Items	Cronbach's Alpha
Context-Generic Human Capital	30	0.985
Access to Information Resources	3	0.924
Context-Specific Human Capital	22	0.974
In-Role Behavior	10	0.969
OCB-I	7	0.962
OCB-S	6	0.958
OCB-O	12	0.950
Performance	5	0.977

#### 5.4 Multiple Regression Analysis

There were eight variables (i.e., context-generic human capital, access to information resources, context-specific human capital, in-role behavior, OCB-I, OCB-S, OCB-O, and performance) that were calculated from the average of the items in its construct. Moreover, job tenure was calculated by a logarithm equation to use in the non-linear equation. Furthermore, four control variables (i.e., age, gender, hospital, department size, and training) were the one-item scale variable. Table 5.7 shows the means, standard deviations, and correlations of the data.

For control variables, age (beta = 0.060,  $p < 0.01$ ) and hospital (beta = 0.106,  $p < 0.001$ ) were significantly related to performance. These results show that the performance evaluation was age bias and was significantly different between two hospitals. That is, the performance of older registered nurses tended to be higher than the younger registered nurses' performance. Moreover, registered nurses in Kosumphisai hospital tended to be rated higher than registered nurses in Mahasarakham hospital. Results show that no control variable was related to context-specific human capital, in-role behavior, and OCB-O. Furthermore, hospital was significantly related to OCB-I (beta = -0.097,  $p < 0.01$ ) and age was significantly related to OCB-S (beta = 0.075,  $p < 0.05$ ). These results show that registered nurses in Kosumphisai hospital tended to have more OCB-I than registered nurses in Mahasarakham hospital and elder registered nurses tended to have more OCB-S than younger registered nurses. In addition, training was significantly related to access to information resources (beta = 0.167,  $p <$

0.01), but hospital and department size were not significantly related to access to information resources. That is, registered nurses with better training tended to have better access to information resources. The following paragraphs will explain the hypothesis testing based on the multiple regression analysis method.

To test hypothesis 1, model R1.8 has been created. The relationship between context-generic human capital was significantly related to performance ( $\beta = 0.181, p < 0.001$ ). Hence, hypothesis 1 was supported. To test hypothesis 2, model R2.3 has been conducted. The relationship between context-generic human capital was significantly related to context-specific human capital ( $\beta = 0.823, p < 0.001$ ). Thus, hypothesis 2 was supported. To test hypothesis 4, model R2.2a and model R2.2b have been conducted. The result shows that job tenure (logarithm) ( $\beta = 0.210, p < 0.01$ ) has been a better prediction for context-specific human capital than the original job tenure ( $\beta = 0.122, p > 0.05$ ). This suggests that the relationship between job tenure and context-specific human capital was nonlinear. However, when context-generic human capital and access to information resources were added to the model (model R2.3), the relationship between job tenure (logarithm) and context-specific human capital became the non-significant relationship ( $\beta = 0.04, p > 0.05$ ). Hence, hypothesis 4 was not supported.

To test hypothesis 3, 5, 6(a, b, c, d), 7(a, b, c, d) and 8(a, b, c, d), the study follows the 3-step procedure from Baron and Kenny (1986). The first step tests the relationship between the independent variable and the mediator. The second step tests the relationship between the independent variable and the dependent variable. The third step tests the relationship between the mediator and the dependent variable when the relationship between the independent variable and the dependent variable is controlled. If the mediator is significantly related to the dependent variable and the independent variable is not significantly related to the dependent variable, the relationship is fully mediated by the mediator. Moreover, if the mediator is significantly related to the dependent variable and the independent variable is still significantly

related to the dependent variable but its coefficient is reduced, the relationship is partially mediated by the mediator. This partial mediation means the mediator is not the sole cause of the relationship (Baron & Kenny, 1986).

Hypothesis 6a, 6b, 6c, and 6d were tested using three steps from Baron and Kenny (1986). First, four relationships between context-specific human capital and four types of behaviors have been conducted. From model R4.3, the relationship between context-specific human capital and in-role behavior was significant ( $\beta = 0.287, p < 0.001$ ). From model R4.6, the relationship between context-specific human capital and OCB-I was significant ( $\beta = 0.387, p < 0.001$ ). From model R4.9, the relationship between context-specific human capital and OCB-S was significant ( $\beta = 0.544, p < 0.001$ ). From model R4.12, the relationship between context-specific human capital and OCB-O was significant ( $\beta = 0.465, p < 0.001$ ). Second, the relationship between context-specific human capital and performance has been examined. From model R1.7, the relationship between context-specific human capital and performance was significant ( $\beta = 0.278, p < 0.001$ ). Third, performance was regressing on all independent variables and the four mediators in model R1.8. As a result, in-role behavior ( $\beta = 0.188, p < 0.01$ ), OCB-I ( $\beta = 0.267, p < 0.001$ ), OCB-S ( $\beta = -0.136, p < 0.01$ ), and OCB-O ( $\beta = 0.439, p < 0.001$ ) were significantly related to performance. Furthermore, the relationship between context-specific human capital and performance was not significant ( $\beta = -0.010, p > 0.05$ ), thus signifying the full mediation. Moreover, the indirect effects of context-specific human capital on performance were tested by a two-tailed Sobel test (Sobel, 1982). The results show that in-role behavior ( $z = 3.036, p < 0.01$ ), OCB-I ( $z = 4.533, p < 0.001$ ), OCB-S ( $z = -2.677, p < 0.01$ ), and OCB-O ( $z = 6.074, p < 0.001$ ) fully mediated the relationship between context-specific human capital and performance. The details of Sobel test are in Table 5.12. However, the relationship between OCB-S and performance was negative, thus contradicting the hypothesized direction. Therefore, hypothesis 6a, 6b, and 6d were supported (fully mediated). The relationship between context-specific human capital and performance was

fully mediated by in-role behavior, OCB-I, and OCB-O. On the other hand, hypothesis 6c was not supported because the direction of the relationship was opposite of the hypothesized direction.

Furthermore, hypothesis 3 was also tested using the three-step procedure from Baron and Kenny (1986). First, the result from model R2.3 shows that context-generic human capital was significantly related to context-specific human capital ( $\beta = 0.823$ ,  $p < 0.001$ ). Second, the result from model R1.4 shows that context-generic human capital was significantly related to performance ( $\beta = 0.796$ ,  $p < 0.001$ ). Third, performance was regressing on all independent variables and mediators in model R1.8. Although the direct relationship between context-specific human capital and performance was not significant ( $\beta = -0.010$ ,  $p > 0.05$ ), the prior paragraph that tested hypothesis 6a, 6b, 6c, and 6d shows that context-specific human capital significantly affected performance through in-role behavior, OCB-I, OCB-S, and OCB-O. Moreover, the relationship between context generic human capital and performance in model R1.8 ( $\beta = 0.181$ ,  $p < 0.001$ ) was substantially smaller than that in model R1.4 ( $\beta = 0.796$ ,  $p < 0.001$ ), but was still significant. Therefore, context-specific human capital partially mediated the relationship between context-generic human capital and performance. In sum, hypothesis 3 was supported (partially mediated).

Moreover, hypothesis 5 was also tested using the three-step procedure from Baron and Kenny (1986). First, model R3.2 has been conducted to test the relationship between strong ties (social capital) and access to formation resources. The relationship between strong ties (social capital) was significantly related to access to information resources ( $\beta = 0.124$ ,  $p < 0.05$ ). Second, model R2.4 has been conducted to test the direct relationship between strong ties (social capital) and context-specific human capital. The result shows that the direct relationship between strong ties (social capital) and context-specific human capital was not significant ( $\beta = -0.007$ ,  $p > 0.05$ ). Third, the result from model R2.5 shows that the

relationship between access to information resources and context-specific human capital was not significant ( $\beta = 0.036$ ,  $p > 0.05$ ). Therefore, hypothesis 5 was not supported.

In addition, hypothesis 7a, 7b, 7c, and 7d were also tested using the three-step procedure from Baron and Kenny (1986). First, four relationships between context-generic human capital and four types of behaviors have been conducted. From model R4.3, the relationship between context-generic human capital and in-role behavior was significant ( $\beta = 0.669$ ,  $p < 0.001$ ). From model R4.6, the relationship between context-generic human capital and OCB-I was significant ( $\beta = 0.435$ ,  $p < 0.001$ ). From model R4.9, the relationship between context-generic human capital and OCB-S was significant ( $\beta = 0.268$ ,  $p < 0.001$ ). From model R4.12, the relationship between context-generic human capital and OCB-O was significant ( $\beta = 0.409$ ,  $p < 0.001$ ). Second, the relationship between context-generic human capital and performance has been examined. From model R1.7, the relationship between context-generic human capital and performance was significant ( $\beta = 0.566$ ,  $p < 0.001$ ). Third, performance was regressing on all independent variables and the four mediators in model R1.8. As a result, in-role behavior ( $\beta = 0.188$ ,  $p < 0.01$ ), OCB-I ( $\beta = 0.267$ ,  $p < 0.001$ ), OCB-S ( $\beta = -0.136$ ,  $p < 0.01$ ), and OCB-O ( $\beta = 0.439$ ,  $p < 0.001$ ) were significantly related to performance. Furthermore, the relationship between context-generic human capital and performance was still significant ( $\beta = 0.181$ ,  $p < 0.001$ ). Moreover, the indirect effects of context-specific human capital on performance were tested by a two-tailed Sobel test (Sobel, 1982). The results show that in-role behavior ( $z = 3.036$ ,  $p < 0.01$ ), OCB-I ( $z = 4.533$ ,  $p < 0.001$ ), OCB-S ( $z = -2.677$ ,  $p < 0.01$ ), and OCB-O ( $z = 6.074$ ,  $p < 0.001$ ) partially mediated the relationship between context-generic human capital and performance. The details of Sobel test are in Table 5.13. However, the relationship between OCB-S and performance was negative, thus contradicting the hypothesized direction. Therefore, hypothesis 7a, 7b, and 7d were supported (partially mediated). The relationship between context-generic human capital and performance was partially mediated by in-role behavior, OCB-I, and OCB-O. On the

other hand, hypothesis 7c was not supported because the direction of the relationship was opposite of the hypothesized direction.

Finally, hypothesis 8a, 8b, 8c, and 8d were also tested using the three-step procedure from Baron and Kenny (1986). First, the relationship between context-generic human capital and context-specific human capital has been examined. From model R2.3, the relationship between context-generic human capital and context-specific human capital was significant (beta = 0.823,  $p < 0.001$ ). Second, four relationships between context-generic human capital and four types of behaviors have been conducted. From model R4.2, the relationship between context-generic human capital and in-role behavior was significant (beta = 0.906,  $p < 0.001$ ). From model R4.5, the relationship between context-generic human capital and OCB-I was significant (beta = 0.755,  $p < 0.001$ ). From model R4.8, the relationship between context-generic human capital and OCB-S was significant (beta = 0.718,  $p < 0.001$ ). From model R4.11, the relationship between context-generic human capital and OCB-O was significant (beta = 0.793,  $p < 0.001$ ). Third, four relationships were regressing on all independent variables in model R4.3, model R4.6, model R4.9, and model R4.12. As a result, the relationships between context-specific human capital were significantly related to in-role behavior (beta = 0.287,  $p < 0.001$ ), OCB-I (beta = 0.387,  $p < 0.001$ ), OCB-S (beta = -0.544,  $p < 0.001$ ), and OCB-O (beta = 0.465,  $p < 0.001$ ). Furthermore, the relationships between context-generic human capital and in-role behavior (beta = 0.669,  $p < 0.001$ ), OCB-I (beta = 0.435,  $p < 0.001$ ), OCB-S (beta = -0.268,  $p < 0.001$ ), and OCB-O (beta = 0.409,  $p < 0.001$ ) were still significant. Moreover, the indirect effects of context-generic human capital on four types of behaviors were tested by a two-tailed Sobel test (Sobel, 1982). The results show that context specific human capital partially mediated the relationships between context-generic human capital and in-role behavior ( $z = 7.679$ ,  $p < 0.001$ ), OCB-I ( $z = 6.709$ ,  $p < 0.001$ ), OCB-S ( $z = 9.465$ ,  $p < 0.001$ ), and OCB-O ( $z = 9.086$ ,  $p < 0.001$ ). The details of Sobel test are in Table 5.14. Therefore, hypothesis 8a, 8b, 8c, and 8d were supported (partially mediated). That is, the relationship between context-generic

human capital and four types of behaviors were partially mediated by context-specific human capital.

Table 5.7 Means, Standard Deviations, and Correlations <sup>a</sup>

	Variables	Mean	Std. Deviation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Context-Generic Human Capital	4.70	0.90	1															
2	Job Tenure	113.28	103.50	.152**	1														
3	Job Tenure (Logarithm)	1.79	0.57	.201***	.859***	1													
4	Strong Ties	5.77	5.31	.117*	.070	.069	1												
5	Access to Information Resources	4.59	1.09	.082*	.018	.023	.116*	1											
6	Context-Specific Human Capital	4.43	0.96	.830***	.114*	.169***	.089	.105*	1										
7	In-Role Behavior	4.70	0.97	.903***	.141**	.189***	.117*	.103*	.836***	1									
8	OCB Individuals	4.82	1.05	.744***	.098*	.112*	.130**	.051	.736***	.811***	1								
9	OCB Supervisor	4.45	1.14	.731***	.182***	.212***	.141**	.057	.778***	.785***	.798***	1							
10	OCB Organization	4.81	0.95	.796***	.089*	.094*	.147**	.094*	.806***	.822***	.843***	.803***	1						
11	Performance	5.07	1.01	.808***	.139**	.156**	.155**	.102*	.759***	.826***	.808***	.723***	.860***	1					
12	Age	34.63	8.86	.109*	.814***	.727***	.035	.006	.088*	.106*	.037	.145**	.086*	.129**	1				
13	Gender <sup>1</sup>	0.92	0.27	.092*	.141**	.135**	.031	.023	.120*	.060	.067	.127*	.114*	.119*	.161**	1			
14	Hospital <sup>2</sup>	0.15	0.35	.069	.000	.067	-.097*	.063	.077	.036	-.040	.093*	.056	.126*	-.018	.069	1		
15	Department Size	18.24	10.44	-.043	.007	-.073	.127*	-.153**	.002	-.049	.019	-.123*	.024	.043	.006	-.135**	-.252***	1	
16	Training	2.73	1.08	.119*	.081	.155**	.051	.210**	.112*	.177**	.091	.148**	.064	.050	.009	.037	.052	-.343**	1

<sup>a</sup> n = 406<sup>1</sup> Gender: 0 = Male / 1 = Female<sup>2</sup> Hospital: 0 = Mahasarakham / 1 = Kosumphisai

\* Correlation is significant at the 0.10 level (2-tailed).

\*\* Correlation is significant at the 0.05 level (2-tailed).

\*\*\* Correlation is significant at the 0.01 level (2-tailed).

\*\*\*\* Correlation is significant at the 0.001 level (2-tailed).

Table 5.8 Multiple Regressions Analysis Results: Predicting Performance <sup>a</sup>

	Model R1.1	Model R1.2	Model R1.3	Model R1.4	Model R1.5	Model R1.6	Model R1.7	Model R1.8
Control Variables								
- Age	0.116 <sup>*</sup>	0.061 <sup>**</sup>	0.062 <sup>+</sup>	0.038	0.062 <sup>**</sup>	0.060 <sup>**</sup>	0.040	0.060 <sup>**</sup>
- Gender <sup>1</sup>	0.092 <sup>+</sup>	0.028	0.014	0.035	0.027	0.024	0.023	0.024
- Hospital <sup>2</sup>	0.122 <sup>*</sup>	0.111 <sup>***</sup>	0.069 <sup>*</sup>	0.069 <sup>*</sup>	0.110 <sup>***</sup>	0.106 <sup>***</sup>	0.065 <sup>*</sup>	0.106 <sup>***</sup>
Behaviors								
- In-Role		0.327 <sup>***</sup>			0.312 <sup>***</sup>	0.185 <sup>**</sup>		0.188 <sup>**</sup>
- OCB-Individuals		0.257 <sup>***</sup>			0.260 <sup>***</sup>	0.268 <sup>***</sup>		0.267 <sup>***</sup>
- OCB-Supervisor		-0.140 <sup>***</sup>			-0.146 <sup>***</sup>	-0.139 <sup>***</sup>		-0.136 <sup>**</sup>
- OCB-Organization		0.472 <sup>***</sup>			0.463 <sup>***</sup>	0.437 <sup>***</sup>		0.439 <sup>***</sup>
Context-Specific Human Capital			0.746 <sup>***</sup>		0.030		0.278 <sup>***</sup>	-0.010
Context-Generic Human Capital				0.796 <sup>***</sup>		0.178 <sup>***</sup>	0.566 <sup>***</sup>	0.181 <sup>***</sup>
R <sup>2</sup>	0.041	0.808	0.585	0.660	0.808	0.813	0.684	0.813
$\Delta R^2$ compared to Model R1.1		0.766 <sup>***</sup>	0.544 <sup>***</sup>	0.619 <sup>***</sup>	0.767 <sup>***</sup>	0.772 <sup>***</sup>	0.643 <sup>***</sup>	0.772 <sup>***</sup>

<sup>a</sup> Standardized coefficients were reported; n = 406

<sup>1</sup> Gender: 0 = Male / 1 = Female

<sup>2</sup> Hospital: 0 = Mahasarakham / 1 = Kosumphisai

<sup>+</sup> p < 0.10

<sup>\*</sup> p < 0.05

<sup>\*\*</sup> p < 0.01

<sup>\*\*\*</sup> p < 0.001

Table 5.9 Multiple Regressions Analysis Results: Predicting Context-Specific Human Capital <sup>a</sup>

	Model R2.1	Model R2.2a	Model R2.2b	Model R2.3	Model R2.4	Model R2.5
Control Variables						
- Age	0.072	-0.027	-0.080	-0.012	-0.013	-0.013
- Gender <sup>1</sup>	0.104 <sup>+</sup>	0.103 <sup>+</sup>	0.101 <sup>+</sup>	0.044	0.045	0.045
- Hospital <sup>2</sup>	0.071	0.069	0.055	0.015	0.016	0.013
Job Tenure		0.122				
Job Tenure (Logarithm)			0.210 <sup>**</sup>	0.004	0.005	0.005
Context-Generic Human Capital				0.823 <sup>***</sup>	0.826 <sup>***</sup>	0.824 <sup>***</sup>
Access to Information Resources				0.035		0.036
Strong Ties (Social Capital)					-0.007	-0.012
R <sup>2</sup>	0.024	0.029	0.045	0.692	0.691	0.693
$\Delta R^2$ compared to Model R2.1		0.005	0.020 <sup>**</sup>	0.668 <sup>***</sup>	0.667 <sup>***</sup>	0.668 <sup>***</sup>

<sup>a</sup> Standardized coefficients were reported; n = 406

<sup>1</sup> Gender: 0 = Male / 1 = Female

<sup>2</sup> Hospital: 0 = Mahasarakham / 1 = Kosumphisai

<sup>+</sup> p < 0.10

<sup>\*</sup> p < 0.05

<sup>\*\*</sup> p < 0.01

<sup>\*\*\*</sup> p < 0.001

Table 5.10 Multiple Regressions Analysis Results: Predicting Access to Information Resources <sup>a</sup>

	Model R3.1	Model R3.2
Control Variables		
- Hospital <sup>1</sup>	0.033	0.041
- Department Size	-0.082	-0.101 <sup>+</sup>
- Training	0.180 <sup>***</sup>	0.167 <sup>**</sup>
Strong Ties (Social Capital)		0.124 <sup>*</sup>
R <sup>2</sup>	0.052	0.067
ΔR <sup>2</sup> compared to Model R3.1		0.015 <sup>*</sup>

<sup>a</sup> Standardized coefficients were reported; n = 406

<sup>1</sup> Hospital: 0 = Mahasarakham / 1 = Kosumphisai

<sup>+</sup> p < 0.10

<sup>\*</sup> p < 0.05

<sup>\*\*</sup> p < 0.01

<sup>\*\*\*</sup> p < 0.001

Table 5.11 Multiple Regressions Analysis Results: Predicting Behaviors <sup>a</sup>

Variables	In-Role			OCB-I			OCB-S			OCB-O		
	Model R4.1	Model R4.2	Model R4.3	Model R4.4	Model R4.5	Model R4.6	Model R4.7	Model R4.8	Model R4.9	Model R4.10	Model R4.11	Model R4.12
Control Variable												
- Age	0.100 <sup>*</sup>	0.010	0.013	0.026	-0.049	-0.045	0.130 <sup>**</sup>	0.060 <sup>+</sup>	0.065 <sup>*</sup>	0.071	-0.007	-0.003
- Gender <sup>1</sup>	0.042	-0.023	-0.035 <sup>+</sup>	0.065	0.012	-0.006	0.100 <sup>**</sup>	0.049	0.025	0.099 <sup>*</sup>	0.043	0.022
- Hospital <sup>2</sup>	0.035	-0.025	-0.030	-0.044	-0.094 <sup>**</sup>	-0.100 <sup>**</sup>	0.089 <sup>+</sup>	0.042	0.033	0.050	-0.002	-0.010
Context-Generic Human Capital		0.906 <sup>***</sup>	0.669 <sup>***</sup>		0.755 <sup>***</sup>	0.435 <sup>***</sup>		0.718 <sup>***</sup>	0.268 <sup>***</sup>		0.793 <sup>***</sup>	0.409 <sup>***</sup>
Context-Specific Human Capital			0.287 <sup>***</sup>			0.387 <sup>***</sup>			0.544 <sup>***</sup>			0.465 <sup>***</sup>
R <sup>2</sup>	0.014	0.816	0.842	0.007	0.564	0.611	0.040	0.544	0.635	0.020	0.636	0.703
ΔR <sup>2</sup>		0.802 <sup>***</sup>	0.025 <sup>***</sup>		0.557 <sup>***</sup>	0.046 <sup>***</sup>		0.504 <sup>***</sup>	0.091 <sup>***</sup>		0.616 <sup>***</sup>	0.067 <sup>***</sup>

<sup>a</sup> Standardized coefficients were reported; n = 406

<sup>1</sup> Gender: 0 = Male / 1 = Female

<sup>2</sup> Hospital: 0 = Mahasarakham / 1 = Kosumphisai

<sup>+</sup> p < 0.10

<sup>\*</sup> p < 0.05

<sup>\*\*</sup> p < 0.01

<sup>\*\*\*</sup> p < 0.001

Table 5.12 Sobel Tests from Multiple Regression Analysis (Specific - Behaviors - Performance)

Mediator	IV-Mediator <sup>a</sup>	SD	t	Mediator-DV <sup>a</sup>	SD	t	Sobel test value (z)
In-Role Behavior	0.287	0.036	8.015	0.197	0.064	3.093	2.872**
OCB-I	0.421	0.061	6.899	0.258	0.046	5.652	4.352***
OCB-S	0.642	0.064	10.008	-0.121	0.038	-3.161	-3.035**
OCB-O	0.460	0.048	9.479	0.467	0.053	8.885	6.486***

<sup>a</sup> Unstandardized coefficients were reported; n = 406; IV = Context-Specific Human Capital; DV = Performance

\* p < 0.10  
 . p < 0.05  
 \*\* p < 0.01  
 \*\*\* p < 0.001

Table 5.13 Sobel Tests from Multiple Regression Analysis (Generic - Behaviors - Performance)

Mediator	IV-Mediator <sup>a</sup>	SD	t	Mediator-DV <sup>a</sup>	SD	t	Sobel test value (z)
In-Role Behavior	0.721	0.039	18.704	0.197	0.064	3.093	3.036**
OCB-I	0.508	0.066	7.754	0.258	0.046	5.652	4.533***
OCB-S	0.341	0.069	4.940	-0.121	0.038	-3.161	-2.677**
OCB-O	0.436	0.052	8.353	0.467	0.053	8.885	6.074***

<sup>a</sup> Unstandardized coefficients were reported; n = 406; IV = Context-Generic Human Capital; DV = Performance

\* p < 0.10  
 . p < 0.05  
 \*\* p < 0.01  
 \*\*\* p < 0.001

Table 5.14 Sobel Tests from Multiple Regression Analysis (Generic - Specific - Behaviors)

DV	IV-Mediator <sup>a</sup>	SD	t	Mediator-DV <sup>a</sup>	SD	t	Sobel test value (z)
In-Role Behavior	0.886	0.031	28.789	0.287	0.036	8.015	7.679***
OCB-I	0.886	0.031	28.789	0.421	0.061	6.899	6.709***
OCB-S	0.886	0.031	28.789	0.642	0.064	10.008	9.465***
OCB-O	0.886	0.031	28.789	0.460	0.048	9.479	9.086***

<sup>a</sup> Unstandardized coefficients were reported; n = 406; Mediator = Context-Specific Human Capital; IV = Context-Generic Human Capital

\* p < 0.10  
 . p < 0.05  
 \*\* p < 0.01  
 \*\*\* p < 0.001

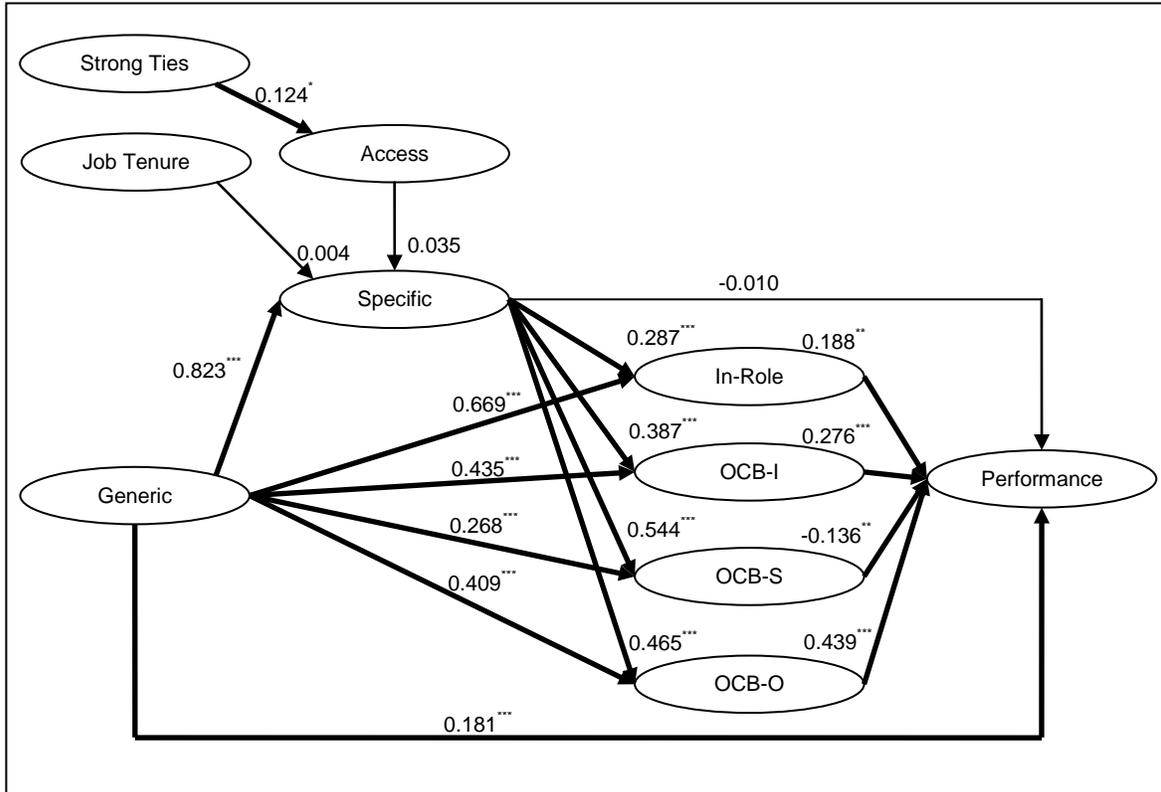


Figure 5.1 The Model by Multiple Regression Analysis <sup>a</sup>

<sup>a</sup> Standardized coefficients were reported; n = 406

- <sup>+</sup> p < 0.10
- <sup>.</sup> p < 0.05
- <sup>\*\*</sup> p < 0.01
- <sup>\*\*\*</sup> p < 0.001

### 5.5 Structural Equation Modeling (SEM) Analysis

This study used the two-step modeling approach (Anderson & Gerbing, 1988). A one-step approach estimates the measurement model and structural submodels simultaneously (Anderson & Gerbing, 1988). Two-step modeling approach is better than a one-step modeling approach because the one-step modeling approach may suffer from interpretational confounding (Anderson & Gerbing, 1988). Interpretational confounding "occurs as the assignment of empirical meaning to an unobserved variable which is other than the meaning assigned to it by an individual a priori to estimating unknown parameters" (Burt, 1976, p. 4). The two-step approach will begin with the examination of the measurement model. Once a satisfactory measurement model is obtained, the structural model will be examined using sequential chi-square difference tests. This procedure was similar to the procedure conducted by Butts, Vandenberg, DeJoy, Schaffer, and Wilson (2009). All hypotheses were tested with structural equation modeling (SEM) using LISREL 8 (Joreskog & Sorbom, 1996).

According to Hair et al. (2006), at least one absolute index and one incremental index are recommended to test the model fit. According to Hair et al. (2006), the chance of the significant chi-square is influenced by the sample size and the number of variables. Chi-square is expected to be significant if the number of observations is more than 250 and the number of observed variables is more than 12. (Hair et al., 2006). Hence, Hair et al. (2006) suggest that the model fit should be evaluated based on more than one index. In this study, five indexes were used to test the fitness of the model. The recommended cutoff values are shown in Table 5.5. The good fit model should have non-significant chi-square ( $\chi^2$ ) (Hair et al., 2006), fit indices (i.e., TLI and CFI) with values from 0.95 (Hu & Bentler, 1998, 1999); a standardized root mean residual (SRMR) with a value no more than 0.08 (Hu & Bentler, 1998, 1999) and the root mean square error of approximation (RMSEA) with a value no more than 0.10 (Browne & Cudeck, 1993). The following discussion will describe the results from the two-step modeling approach.

First, the measurement model was tested. Although the chi-square was significant ( $\chi^2 = 17748.69$ ,  $df = 4951$ ,  $p < 0.001$ ), other indicators were acceptable (RMSEA = 0.099, SRMR = 0.054, TLI or NNFI = 0.98, CFI = 0.98). Furthermore, all factor loadings in the measurement model were statistically significant ( $p < 0.05$ ). Hence, the specification of the measurement model will be used in the structural model.

Table 5.15 Fit Indexes for the Good Fit Model

Fit Indexes	Recommended Cutoff
RMSEA <sup>1</sup>	0.10 <sup>a</sup>
SRMR <sup>2</sup>	0.08 <sup>b</sup>
TLI <sup>3</sup> or NNFI <sup>4</sup>	0.95 <sup>b</sup>
CFI <sup>5</sup>	0.95 <sup>b</sup>

<sup>1</sup> RMSEA = Root Mean Square Error of Approximation

<sup>2</sup> SRMR = Standardized Root Mean Square Residual

<sup>3</sup> TLI = Tucker-Lewis Index

<sup>4</sup> NNFI = Non-Normed Fit Index

<sup>5</sup> CFI = Comparative Fit Index

<sup>a</sup> Browne and Cudeck (1993)

<sup>b</sup> Hu and Bentler (1998, 1999)

After the satisfactory measurement model was obtained, this study employed sequential chi-square difference tests (SCDTs) (Anderson & Gerbing, 1988). In order to test the mediation effect, this study compared a full mediation model with a partial mediation model and a direct-effects only model (Butt et al., 2009; Kelloway, 1998). Five sets of models were created to test mediation effects of hypotheses 3 (See Figure 5.2), 5 (See Figure 5.3), 6a, 6b, 6c, 6d (See Figure 5.4), 7a, 7b, 7c, 7d (See Figure 5.5), 8a, 8b, 8c, and 8d (See Figure 5.6). Several pairs of nested models were tested using a chi-square difference test. In this study, ten pairs of nested models were tested. According to Anderson and Gerbing (1988) the better model is the model with significantly lower chi-square. If the chi-square difference test is not significant, the more constrained model (i.e., the model with more degree of freedom) is accepted to be a better fit model (Anderson & Gerbing, 1988).

To test the mediation effect in hypothesis 3, model S1.1 (Partial mediation), model S1.2 (Direct), and model S1.3 (Full mediation) were created (See Figure 5.2). In model S1.1, context-specific human capital partially mediated the relationship between context-generic human capital and performance. That is, both the direct relationship between context-generic human capital and performance and the relationship that is mediated by context-specific human capital are present. In model S1.2, the relationship between context-generic human capital and context-specific human capital was removed (constrained to zero) from model S1.1. In model S1.3, the direct relationship between context-generic human capital and performance was removed (constrained to zero) from model S1.1.

The first chi-square difference test was between model S1.1 (Partial mediation) and model S1.2 (Direct). The result from Table 5.17 shows that the chi-square difference test was significant ( $\Delta\chi^2 = 601.44$ ,  $\Delta df = 1$ ,  $p < 0.001$ ). Therefore, model S1.1 ( $\chi^2 = 18151.51$ ,  $df = 4993$ ) was better than model S1.2 ( $\chi^2 = 18752.95$ ,  $df = 4994$ ). The second chi-square difference test was between model S1.1 (Partial mediation) and model S1.3 (Full mediation). The result from Table 5.13 shows that the chi-square difference test was significant ( $\Delta\chi^2 = 6.64$ ,  $\Delta df = 1$ ,  $p < 0.01$ ). Therefore, model S1.1 ( $\chi^2 = 18151.51$ ,  $df = 4993$ ) was better than model S1.3 ( $\chi^2 = 18158.15$ ,  $df = 4994$ ). These results show that context-specific human capital partially mediated the relationship between context-generic human capital and performance.

To test the mediation effect in hypothesis 5, model S2.1 (Partial mediation), model S2.2 (Direct), and model S2.3 (Full mediation) were created (See Figure 5.3). In model S2.1, access to information resources partially mediated the relationship between strong ties (social capital) and context-specific human capital. That is, there are both the direct relationship between strong ties (social capital) and context-specific human capital and the relationship that is mediated by access to information resources. In model S2.2, the relationship between strong ties (social capital) and access to information resources was removed (constrained to zero) from model S2.1. In model S2.3, the direct relationship between strong ties (social capital) and

context-specific human capital was removed (constrained to zero) from model S2.1. It should be noted that model S2.3 had the same specification as model S1.1.

First, the chi-square difference test was between model S2.1 (Partial mediation) and model S2.2 (Direct). The result from Table 5.13 shows that the chi-square difference test was significant ( $\Delta\chi^2 = 6.4$ ,  $\Delta df = 1$ ,  $p < 0.05$ ). Therefore, model S2.1 ( $\chi^2 = 18151.41$ ,  $df = 4992$ ) was better than model S2.2 ( $\chi^2 = 18157.81$ ,  $df = 4993$ ). Next, the chi-square difference test was between model S2.1 (Partial mediation) and model S2.3 (Full mediation). The result from Table 5.17 shows that the chi-square difference test was not significant ( $\Delta\chi^2 = 0.10$ ,  $\Delta df = 1$ ,  $p > 0.05$ ). Therefore, model S2.3 ( $\chi^2 = 18151.51$ ,  $df = 4993$ ) was better than model S2.1 ( $\chi^2 = 18151.41$ ,  $df = 4992$ ) because model S2.3 (full mediation) has more constrained relationships (i.e., more degrees of freedom) than model S2.1 (partial mediation). These results show that the full mediation model was the best fit model. However, the relationship between access to information resources and context-specific human capital was not significant ( $\beta = 0.02$ ,  $p > 0.05$ ).

To test the mediation effect in hypothesis 6a, 6b, 6c, and 6d, model S3.1 (Partial mediation), model S3.2 (Direct), and model S3.3 (Full mediation) were created (See Figure 5.4). In model S3.1, four types of behaviors (i.e., in-role behavior, OCB-I, OCB-S, and OCB-O) partially mediated the relationship between context-specific human capital and performance. That is, there are both the direct relationship between context-specific human capital and performance and the relationship that is mediated by four types of behaviors. This model had the same specifications as model S1.1 and model S2.3. In model S3.2, the relationships between context-specific human capital and four types of behaviors were removed (constrained to zero) from model S3.1. In model S3.3, the direct relationship between context-generic human capital and performance was removed (constrained to zero) from model S3.1.

First, the chi-square difference test was between model S3.1 (Partial mediation) and model S3.2 (Direct). The result from Table 5.17 shows that the chi-square difference test was

significant ( $\Delta\chi^2 = 246.69$ ,  $\Delta df = 4$ ,  $p < 0.001$ ). Therefore, model S3.1 ( $\chi^2 = 18151.51$ ,  $df = 4993$ ) was better than model S3.2 ( $\chi^2 = 18398.20$ ,  $df = 4997$ ). The second chi-square difference test was between model S3.1 (Partial mediation) and model S3.3 (Full mediation). The result from Table 5.17 shows that the chi-square difference test was not significant ( $\Delta\chi^2 = 2.68$ ,  $\Delta df = 1$ ,  $p > 0.05$ ). Therefore, model S3.3 ( $\chi^2 = 18154.19$ ,  $df = 4994$ ) was better than model S3.1 ( $\chi^2 = 18151.51$ ,  $df = 4993$ ) because model S3.3 (full mediation) has more constrained relationships (i.e., more degrees of freedom) than model S3.1 (partial mediation). These results show that four types of behaviors fully mediated the relationship between context-specific human capital and performance. However, the results show that the OCB-S was negatively related to performance ( $\beta = -0.18$ ,  $p < 0.001$ ). This was the opposite of the hypothesized direction. Next, model S3.3 will be used for further analysis.

To test the mediation effect in hypothesis 7a, 7b, 7c, and 7d, model S4.1 (Partial mediation), model S4.2 (Direct), and model S4.3 (Full mediation) were created (See Figure 5.5). In model S4.1, four types of behaviors (i.e., in-role behavior, OCB-I, OCB-S, and OCB-O) partially mediated the relationship between context-generic human capital and performance. That is, there are both the direct relationship between context-generic human capital and performance and the relationship that is mediated by four types of behaviors. This model had the same specifications as model S3.3. In model S4.2, the relationships between context-generic human capital and four types of behaviors were removed (constrained to zero) from model S4.1. In model S4.3, the direct relationship between context-generic human capital and performance was removed (constrained to zero) from model S4.1.

First, the chi-square difference test was between model S4.1 (Partial mediation) and model S4.2 (Direct). The result from Table 5.17 shows that the chi-square difference test was significant ( $\Delta\chi^2 = 136.6$ ,  $\Delta df = 4$ ,  $p < 0.001$ ). Therefore, model S4.1 ( $\chi^2 = 18154.19$ ,  $df = 4994$ ) was better than model S4.2 ( $\chi^2 = 18398.20$ ,  $df = 4998$ ). The second chi-square difference test was between model S4.1 (Partial mediation) and model S4.3 (Full mediation). The result from

Table 5.17 shows that the chi-square difference test was significant ( $\Delta\chi^2 = 4.92$ ,  $\Delta df = 1$ ,  $p < 0.05$ ). Therefore, model S4.1 ( $\chi^2 = 18154.19$ ,  $df = 4994$ ) was better than model S4.3 ( $\chi^2 = 18159.11$ ,  $df = 4995$ ). These results show that four types of behaviors partially mediated the relationship between context-generic human capital and performance. However, the results show that the OCB-S was negatively related to performance ( $\beta = -0.18$ ,  $p < 0.001$ ). This was the opposite of the hypothesized direction. Therefore, hypothesis 7a, 7b, 7d were supported. On the other hand, hypothesis 7c was not supported. Next, model S4.1 (model S3.3) will be used for further analysis.

To test the mediation effect in hypothesis 8a, 8b, 8c, and 8d, model S5.1 (Partial mediation), model S5.2 (Direct), and model S5.3 (Full mediation) were created (See Figure 5.6). In model S5.1, context-specific human capital partially mediated the relationship between context-generic human capital and four types of behaviors (i.e., in-role behavior, OCB-I, OCB-S, and OCB-O). That is, there are both the direct relationship between context-generic human capital and four types of behaviors and the relationships that is mediated by context-specific human capital. This model had the same specifications as model S3.3 and model S4.1. In model S5.2, the relationship between context-generic human capital and context-specific human capital was removed (constrained to zero) from model S5.1. In model S5.3, the direct relationships between context-generic human capital and four types of behaviors were removed (constrained to zero) from model S5.1.

First, the chi-square difference test was between model S5.1 (Partial mediation) and model S5.2 (Direct). The result from Table 5.17 shows that the chi-square difference test was significant ( $\Delta\chi^2 = 601.07$ ,  $\Delta df = 4$ ,  $p < 0.001$ ). Therefore, model S5.1 ( $\chi^2 = 18154.19$ ,  $df = 4994$ ) was better than model S5.2 ( $\chi^2 = 18755.26$ ,  $df = 4995$ ). The second chi-square difference test was between model S5.1 (Partial mediation) and model S5.3 (Full mediation). The result from Table 5.17 shows that the chi-square difference test was significant ( $\Delta\chi^2 = 116.6$ ,  $\Delta df = 1$ ,  $p < 0.001$ ). Therefore, model S5.1 ( $\chi^2 = 18154.19$ ,  $df = 4994$ ) was better than model S5.3 ( $\chi^2 =$

18270.79,  $df = 4998$ ). These results show that context-specific human capital partially mediated the relationship between context-generic human capital and three types of behaviors (i.e., in-role behavior, OCB-I, and OCB-O), except the relationship between context-generic and OCB-S which was a fully mediated relationship. Next, model S5.1 (model S3.3) will be used for further analysis.

The fit indexes of model S3.3 has an acceptable fit (RMSEA = 0.10, SRMR = 0.065, TLI or NNFI = 0.98, CFI = 0.98). Table 5.18 shows the descriptions of the control variables in model S3.3. Access to information resources was related to training ( $\beta = 0.18$ ,  $p < 0.01$ ). That is, registered nurses tended to access to information resources more when they have better training. Context-generic human capital was related to age ( $\beta = 0.11$ ,  $p < 0.05$ ). That is, supervisors tended to rate better context-generic human capital in older registered nurses more than younger ones. Context-specific human capital was related to gender ( $\beta = 0.05$ ,  $p < 0.05$ ). That is, supervisors tended to rate context-specific human capital in female more than male. In-role behavior was related to gender ( $\beta = -0.04$ ,  $p < 0.05$ ) and hospital ( $\beta = -0.05$ ,  $p < 0.01$ ). That is, supervisors tended to favor behavior of male registered nurses over female. Supervisors in Kosumphisai tended to rate behavior more than Mahasarakham hospital. OCB-I was related to age ( $-0.06$ ,  $p < 0.05$ ) and hospital ( $\beta = -0.10$ ,  $p < 0.01$ ). That is, supervisors tended to rate OCB-I in younger registered nurses more than older registered nurses and in Mahasarakham hospital more than in Kosumphisai hospital. Performance was related to hospital ( $\beta = 0.10$ ,  $p < 0.001$ ). That is, supervisors in Mahasarakham hospital rated their subordinates higher than supervisors in Kosumphisai hospital rated their subordinates.

Next, all hypotheses were examined using model S3.3. From model S3.3, the relationship between context-generic human capital and performance was significant ( $\beta = 0.16$ ,  $p < 0.05$ ). Hence, hypothesis 1 was supported. From model S3.3, the relationship between context-generic human capital and context-specific human capital was significant ( $\beta = 0.89$ ,  $p < 0.001$ ). Hence, hypothesis 2 was supported. From model S3.3, the relationship

between context-generic human capital and context-specific human capital was significant ( $\beta = 0.89, p < 0.001$ ). The relationship between context-generic human capital and performance was significant ( $\beta = 0.16, p < 0.001$ ). Although there was no direct relationship between context-specific human capital and performance, four types of behaviors were fully mediated the relationship between context-specific human capital and performance. Hence, hypothesis 3 was supported (partially mediated). From model S3.3, the relationship between job tenure (logarithm) and context-specific human capital was not significant ( $\beta = 0.00, p > 0.05$ ). Hence, hypothesis 4 was not supported. From model S3.3, the relationship between strong ties (social capital) and access to information resources was significant ( $\beta = 0.13, p < 0.05$ ), but the relationship between access to information resources was not significant ( $\beta = 0.02, p > 0.05$ ). Hence, hypothesis 5 was not supported.

Furthermore, the indirect effects of context-specific human capital on performance through four types of behaviors were tested by a two-tailed Sobel test (Sobel, 1982). The details of the Sobel test are in Table 5.19. From model S3.3, the relationship between context specific human capital and in-role behavior was significant ( $\beta = 0.38, p < 0.001$ ) and the relationship between in-role behavior and performance was significant ( $\beta = 0.15, p < 0.01$ ). The Sobel test supported the full mediation effect of in-role behavior ( $z = 2.016, p < 0.05$ ). Hence, hypothesis 6a was supported (fully mediated). From model S3.3, the relationship between context specific human capital and OCB-I was significant ( $\beta = 0.60, p < 0.001$ ) and the relationship between OCB-I and performance was significant ( $\beta = 0.37, p < 0.001$ ). The Sobel test supported the full mediation effect of OCB-I on the relationship between context-specific human capital and performance ( $z = 5.747, p < 0.001$ ). Hence, hypothesis 6b was supported (fully mediated). From model S3.3, the relationship between context specific human capital and OCB-S was significant ( $\beta = 0.70, p < 0.001$ ) and the relationship between OCB-S and performance was significant ( $\beta = -0.18, p < 0.001$ ). The Sobel test supported the full mediation effect of OCB-S on the relationship between context-specific human capital and

performance ( $z = -3.825, p < 0.001$ ). However, the direction was opposite of the hypothesized direction. Hence, hypothesis 6c was not supported. From model S3.3, the relationship between context specific human capital and OCB-O was significant ( $\beta = 0.77, p < 0.001$ ) and the relationship between OCB-O and performance was significant ( $\beta = 0.44, p < 0.001$ ). The Sobel test supported the full mediation effect of OCB-O on the relationship between context-specific human capital and performance ( $z = 6.193, p < 0.001$ ). Hence, hypothesis 6d was supported (fully mediated).

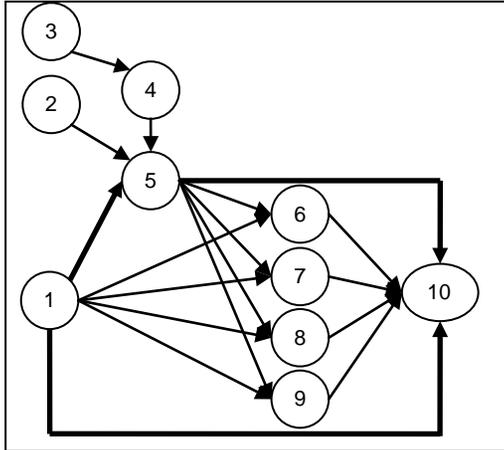
Furthermore, the indirect effects of context-specific human capital on performance through four types of behaviors were tested by a two-tailed Sobel test (Sobel, 1982). The details of the Sobel test are in Table 5.20. From model S3.3, the relationship between context-generic human capital and in-role behavior was significant ( $\beta = 0.60, p < 0.001$ ) and the relationship between in-role behavior and performance was significant ( $\beta = 0.15, p < 0.01$ ). The Sobel test supported the full mediation effect of in-role behavior ( $z = 2.063, p < 0.05$ ). Hence, hypothesis 7a was supported (partially mediated). From model S3.3, the relationship between context-generic human capital and OCB-I was significant ( $\beta = 0.25, p < 0.01$ ) and the relationship between OCB-I and performance was significant ( $\beta = 0.37, p < 0.001$ ). The Sobel test supported the partial mediation effect of OCB-I on the relationship between context-generic human capital and performance ( $z = 3.108, p < 0.01$ ). Hence, hypothesis 7b was supported (partially mediated). From model S3.3, the relationship between context specific human capital and OCB-S was significant ( $\beta = 0.12, p > 0.05$ ) and the relationship between OCB-S and performance was significant ( $\beta = -0.18, p < 0.001$ ). The Sobel test supported the full mediation effect of OCB-S on the relationship between context-specific human capital and performance ( $z = -1.452, p > 0.05$ ). Also, the direction was opposite of the hypothesized direction. Hence, hypothesis 7c was not supported. From model S3.3, the relationship between context-generic human capital and OCB-O was significant ( $\beta = 0.13, p < 0.05$ ) and the relationship between OCB-O and performance was significant ( $\beta = 0.44, p < 0.001$ ).

Hence, hypothesis 7d was supported (partially mediated). However, the Sobel test did not support the partial mediation effect of OCB-O on the relationship between context-specific human capital and performance ( $z = 1.943, p > 0.05$ ).

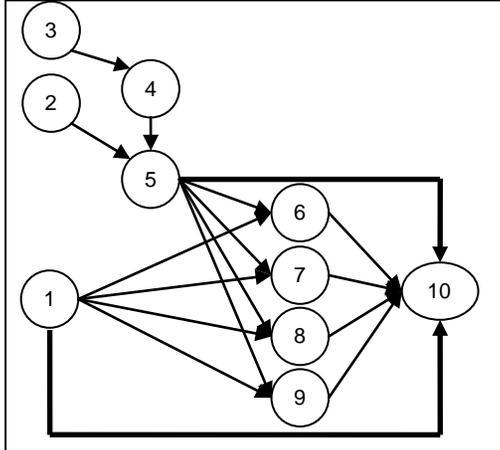
Furthermore, the indirect effects of context-specific human capital on performance through four types of behaviors were tested by a two-tailed Sobel test (Sobel, 1982). The details of the Sobel test are in Table 5.21. From model S3.3, the relationship between context-generic human capital and context-specific human capital and in-role behavior was significant ( $\beta = 0.89, p < 0.001$ ) and the relationship between context-specific human capital and in-role behavior was significant ( $\beta = 0.38, p < 0.001$ ). The Sobel test supported the partial mediation effect of context-specific human capital ( $z = 6.382, p < 0.001$ ). Hence, hypothesis 8a was supported (partially mediated). From model S3.3, the relationship between context-generic human capital and context specific human capital was significant ( $\beta = 0.89, p < 0.001$ ) and the relationship between context-specific human capital and OCB-I was significant ( $\beta = 0.60, p < 0.001$ ). The Sobel test supported the partial mediation effect of context-specific human capital on the relationship between context-generic human capital and OCB-I ( $z = 6.817, p < 0.001$ ). Hence, hypothesis 8b was supported (partially mediated). From model S3.3, the relationship between context-generic human capital and context specific human capital was significant ( $\beta = 0.89, p < 0.001$ ) and the relationship between context-specific human capital and OCB-S was significant ( $\beta = 0.70, p < 0.001$ ). The Sobel test supported the full mediation effect of context-specific human capital on the relationship between context-generic human capital and OCB-S ( $z = 7.930, p < 0.001$ ). Hence, hypothesis 8c was supported (fully mediated). From model S3.3, the relationship between context-generic human capital and context specific human capital was significant ( $\beta = 0.89, p < 0.001$ ) and the relationship between context-specific human capital and OCB-O was significant ( $\beta = 0.77, p < 0.001$ ). The Sobel test supported the partial mediation effect of context-specific human capital on the

relationship between context-generic human capital and OCB-O ( $z = 8.451, p < 0.001$ ). Hence, hypothesis 8d was supported (partially mediated).

Model S1.1 (Partial mediation)



Model S1.2 (Direct)



Model S1.3 (Full mediation)

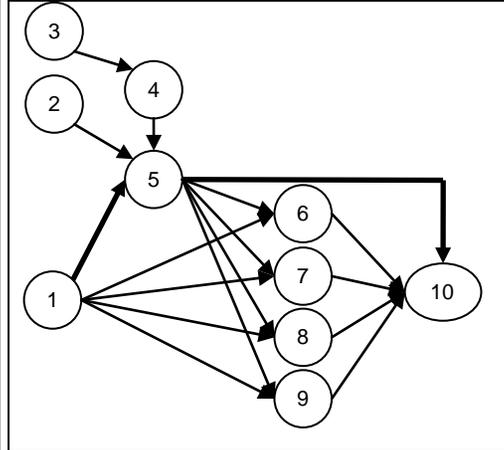
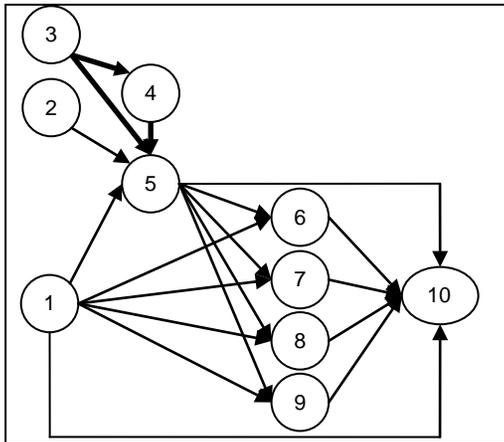
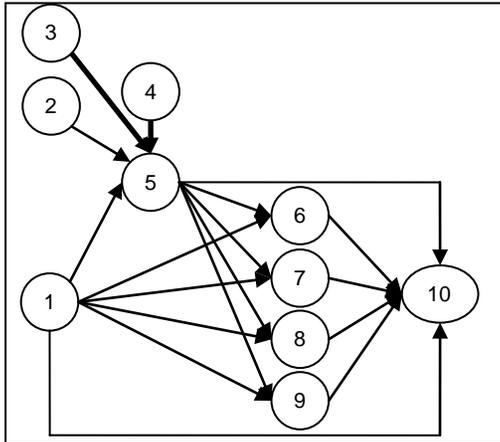


Figure 5.2 Testing a Mediation Effect of Context-Specific Human Capital (Context-Generic Human Capital - Performance)

Model S2.1 (Partial mediation)



Model S2.2 (Direct)



Model S2.3 (S1.1) (Full mediation)

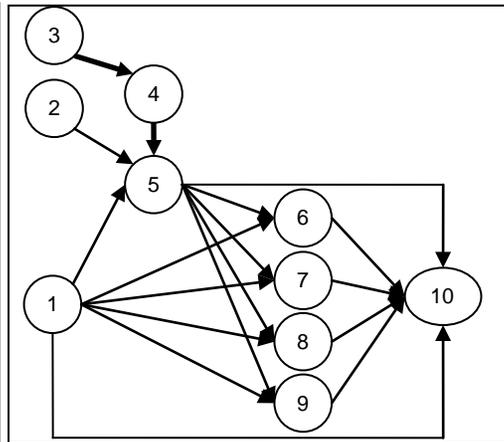
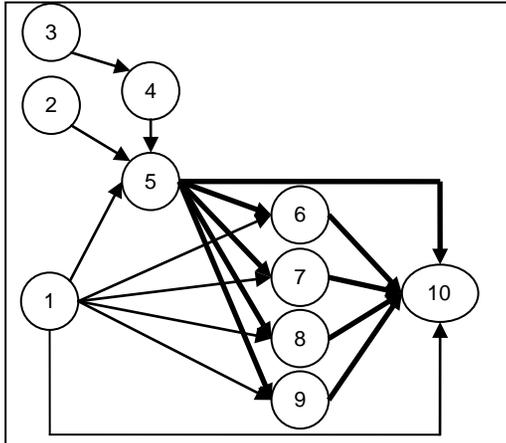
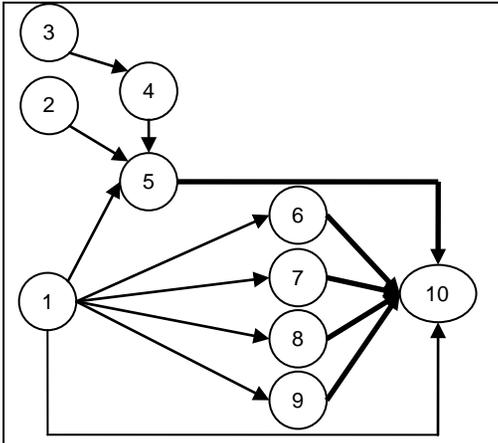


Figure 5.3 Testing a Mediation Effect of Access of Information Resources (Social Capital - Context-Specific Human Capital)

Model S3.1 (S1.1) (Partial mediation)



Model S3.2 (Direct)



Model S3.3 (Full mediation)

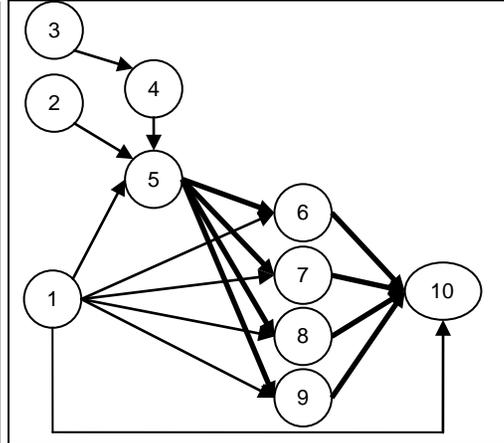
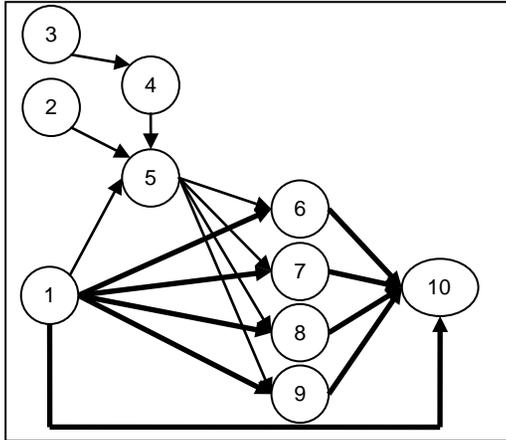
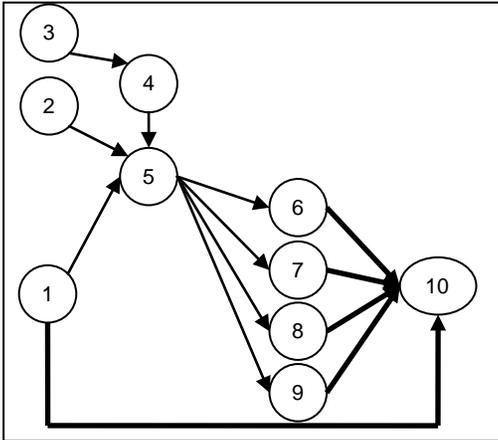


Figure 5.4 Testing Mediation Effects of Four Types of Behaviors (Context-Specific Human Capital - Performance)

Model S4.1 (S3.3) (Partial mediation)



Model S4.2 (Direct)



Model S4.3 (Full mediation)

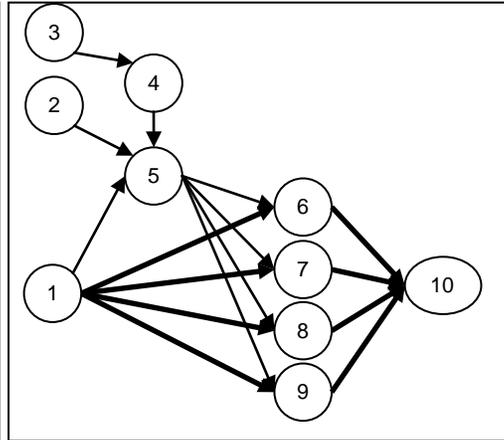
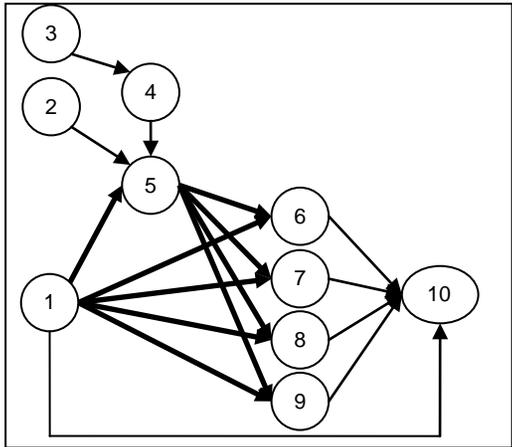
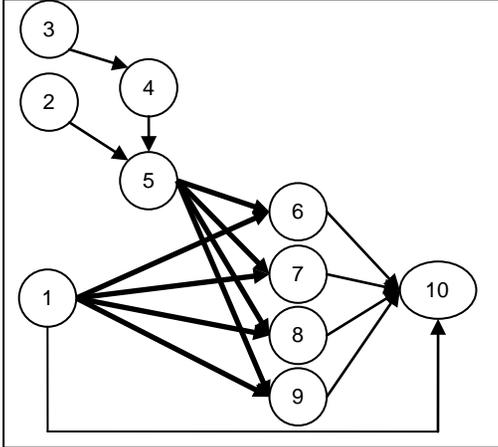


Figure 5.5 Testing Mediation Effects of Four Types of Behaviors (Context-Generic Human Capital - Performance)

Model S5.1 (S3.3) (Partial mediation)



Model S5.2 (Direct)



Model S5.3 (Full mediation)

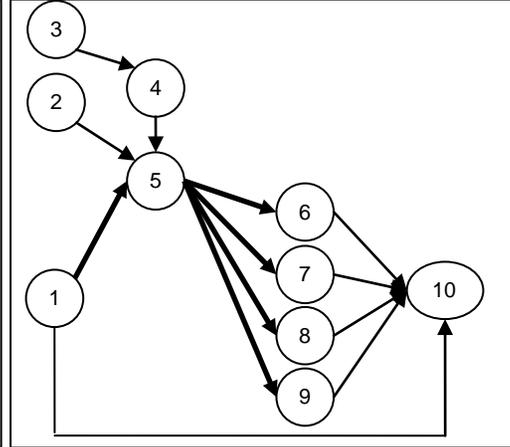


Figure 5.6 Testing a Mediation Effect of Context-Specific Human Capital (Context-Generic Human Capital - Four Types of Behaviors)

Table 5.16 Names of Variables in Model S1.1, S1.2, S1.3, S2.1, S2.2, S2.3, S3.1, S3.2, S3.3, S4.1, S4.2, S4.3, S5.1, S5.2, and S5.3

Variables	Control Variables
1 Context-Generic Human Capital	1 Age
2 Job Tenure (Logarithm)	2 Gender
3 Strong Ties (Social Capital)	3 Hospital
4 Access to Information Resources	4 Department Size
5 Context-Specific Human Capital	5 Training
6 In-Role Behavior	
7 Organizational Citizenship Behavior toward Individuals	
8 Organizational Citizenship Behavior toward the Supervisor	
9 Organizational Citizenship Behavior toward the Organization	
10 Performance	

Table 5.17 Sequential Chi-Square Difference Tests

	df	$\chi^2$	RMSEA	SRMR	TLI or NNFI	CFI	Compared to	$\Delta$ df	$\Delta\chi^2$
CFA	4951	17748.69 <sup>***</sup>	0.099	0.054	0.98	0.98			
Hypothesis 3: Specific as a mediator									
Model S1.1 (Partial mediation)	4993	18151.51 <sup>***</sup>	0.10	0.065	0.98	0.98			
Model S1.2 (Direct)	4994	18752.95 <sup>***</sup>	0.10	0.33	0.98	0.98	Model S1.1	1	601.44 <sup>***</sup>
Model S1.3 (Full Mediation)	4994	18158.15 <sup>***</sup>	0.10	0.065	0.98	0.98	Model S1.1	1	6.64 <sup>**</sup>
Hypothesis 5: Access to information resources as a mediator									
Model S2.1 Partial mediation	4992	18151.41 <sup>***</sup>	0.10	0.065	0.98	0.98			
Model S2.2 (Direct)	4993	18157.81 <sup>***</sup>	0.10	0.065	0.98	0.98	Model S2.1	1	6.4 <sup>*</sup>
Model S2.3 (S1.1) (Full mediation)	4993	18151.51 <sup>***</sup>	0.10	0.065	0.98	0.98	Model S2.1	1	0.10
Hypotheses 6a, 6b, 6c, 6d: Behaviors as mediators									
Model S3.1 (S1.1) Partial mediation	4993	18151.51 <sup>***</sup>	0.10	0.065	0.98	0.98			
Model S3.2 (Direct)	4997	18398.20 <sup>***</sup>	0.10	0.072	0.98	0.98	Model S3.1	4	246.69 <sup>***</sup>
Model S3.3 (Full mediation)	4994	18154.19 <sup>***</sup>	0.10	0.065	0.98	0.98	Model S3.1	1	2.68
Hypotheses 7a, 7b, 7c, 7d: Behaviors as mediators									
Model S4.1 (S3.3) Partial mediation	4994	18154.19 <sup>***</sup>	0.10	0.065	0.98	0.98			
Model S4.2 (Direct)	4998	18290.79 <sup>***</sup>	0.10	0.066	0.98	0.98	Model S4.1	4	136.6 <sup>***</sup>
Model S4.3 (Full mediation)	4995	18159.11 <sup>***</sup>	0.10	0.065	0.98	0.98	Model S4.1	1	4.92 <sup>*</sup>
Hypothesis 8a, 8b, 8c, 8d: Specific as a mediator									
Model S5.1 (S3.3) (Partial mediation)	4994	18154.19 <sup>***</sup>	0.10	0.065	0.98	0.98			
Model S5.2 (Direct)	4995	18755.26 <sup>***</sup>	0.10	0.33	0.98	0.98	Model S5.1	1	601.07 <sup>***</sup>
Model S5.3 (Full Mediation)	4998	18270.79 <sup>***</sup>	0.10	0.066	0.98	0.98	Model S5.1	4	116.6 <sup>***</sup>

+ p < 0.10  
 \* p < 0.05  
 \*\* p < 0.01  
 \*\*\* p < 0.001

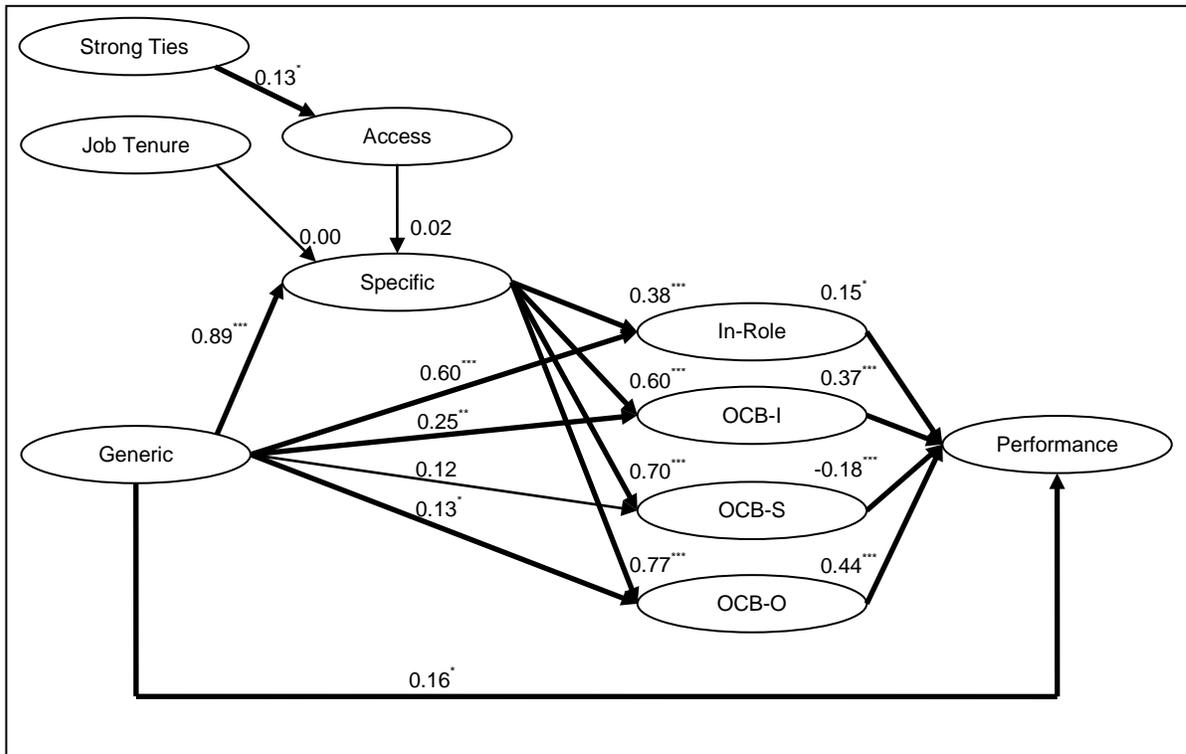


Figure 5.7 The Best Model by SEM Analysis (Model S3.3) <sup>a</sup>

<sup>a</sup> Standardized coefficients were reported; n = 406

- <sup>+</sup> p < 0.10
- <sup>\*</sup> p < 0.05
- <sup>\*\*</sup> p < 0.01
- <sup>\*\*\*</sup> p < 0.001

Table 5.18 Control Variables in SEM Model S3.3 <sup>a</sup>

Variables	Age	Gender	Hospital	Department Size	Training
Access to Information Resources			0.05	-0.11 <sup>+</sup>	0.18 <sup>**</sup>
Context-Generic Human Capital	0.11 <sup>*</sup>	0.07	0.07		
Context-Specific Human Capital	0.02	0.05 <sup>*</sup>	0.03		
In-role Behavior	-0.01	-0.04 <sup>*</sup>	-0.05 <sup>*</sup>		
OCB-I	-0.06 <sup>*</sup>	0.02	-0.10 <sup>**</sup>		
OCB-S	0.03	0.01	0.02		
OCB-O	-0.03	0.00	-0.01		
Performance	0.04 <sup>+</sup>	0.03	0.10 <sup>***</sup>		

<sup>a</sup> Standardized coefficients were reported; n = 406

<sup>+</sup> p < 0.10

<sup>\*</sup> p < 0.05

<sup>\*\*</sup> p < 0.01

<sup>\*\*\*</sup> p < 0.001

Table 5.19 Sobel Tests from SEM Analysis (Specific - Behaviors - Performance)

Mediator	IV-Mediator <sup>a</sup>	Std	t	Mediator-DV <sup>a</sup>	Std	t	Sobel test value (z)
In-Role Behavior	0.34	0.05	7.44	0.19	0.09	2.08	2.016 <sup>*</sup>
OCB-I	0.66	0.09	7.55	0.37	0.04	8.76	5.747 <sup>***</sup>
OCB-S	0.79	0.09	8.50	-0.17	0.04	-4.42	-3.825 <sup>***</sup>
OCB-O	0.76	0.08	10.06	0.49	0.06	8.53	6.193 <sup>***</sup>

<sup>a</sup> Unstandardized coefficients were reported; n = 406; IV = Context-Specific Human Capital; DV = Performance

<sup>+</sup> p < 0.10

<sup>\*</sup> p < 0.05

<sup>\*\*</sup> p < 0.01

<sup>\*\*\*</sup> p < 0.001

Table 5.20 Sobel Tests from SEM Analysis (Generic - Behaviors - Performance)

Mediator	IV-Mediator <sup>a</sup>	SD	t	Mediator-DV <sup>a</sup>	SD	t	Sobel test value (z)
In-Role Behavior	0.68	0.07	10.44	0.19	0.09	2.08	2.063 <sup>*</sup>
OCB-I	0.33	0.10	3.27	0.37	0.04	8.76	3.108 <sup>**</sup>
OCB-S	0.17	0.11	1.61	-0.17	0.04	-4.42	-1.452
OCB-O	0.16	0.08	2.01	0.49	0.06	8.53	1.943 <sup>+</sup>

<sup>a</sup> Unstandardized coefficients were reported; n = 406; IV = Context-Generic Human Capital; DV = Performance

<sup>+</sup> p < 0.10

<sup>\*</sup> p < 0.05

<sup>\*\*</sup> p < 0.01

<sup>\*\*\*</sup> p < 0.001

Table 5.21 Sobel Tests from SEM Analysis (Generic - Specific - Behaviors)

DV	IV-Mediator <sup>a</sup>	SD	t	Mediator-DV <sup>a</sup>	SD	t	Sobel test value (z)
In-Role Behavior	1.11	0.06	17.36	0.34	0.05	7.44	6.382***
OCB-I	1.11	0.06	17.36	0.66	0.09	7.55	6.817***
OCB-S	1.11	0.06	17.36	0.79	0.09	8.50	7.930***
OCB-O	1.11	0.06	17.36	0.76	0.08	10.06	8.451***

<sup>a</sup> Unstandardized coefficients were reported; n = 406; Mediator = Context-Specific Human Capital; IV = Context-Generic Human Capital

+ p < 0.10

\* p < 0.05

\*\* p < 0.01

\*\*\* p < 0.001

### 5.6 Summary

This chapter examined the data for missing value analysis, common method bias, discriminant validity, and internal consistency reliability. Then, all hypotheses were tested using two approaches. The first approach is multiple regression analysis. The second approach is structural equation modeling (SEM) analysis. Both approaches show similar results, except hypothesis 8c (See Table 5.16 for the summary). The results show that (1) context-generic human capital was positively related to performance, (2) context-generic human capital was positively related to context-specific human capital, (3) in-role behavior, OCB-I, and OCB-O partially mediated the positive relationship between context-generic human capital and performance, and (4) context-specific human capital partially mediated the positive relationship between context-generic human capital and three types of behaviors (i.e., in-role behavior, OCB-I, and OCB-O). Thus, hypothesis 1, 2, 3, 6a, 6b, 6d, 7a, 7b, 7d, 8a, 8b, 8c, and 8d were supported. Conversely, job tenure and social capital were not significantly related to context-specific human capital. In addition, OCB-S was negatively related to performance. Hence, hypothesis 4, 5, 6c, and 7c were not supported. The next chapter will present the discussion of this study.

Table 5.22 Hypothesis Results

Hypotheses	Regression Results	SEM Results
Hypothesis 1: Context-generic human capital is positively related to performance.	Supported	Supported
Hypothesis 2: Context-generic human capital is positively related to context-specific human capital.	Supported	Supported
Hypothesis 3: Context-specific human capital mediates the relationship between context-generic human capital and performance.	Supported (Partially Mediated)	Supported (Partially Mediated)
Hypothesis 4: Job tenure has a positive relationship with context-specific human capital, but this association diminishes as job tenure increases.	Not supported	Not supported
Hypothesis 5: Access to information resources mediates the relationship between social capital (specifically, strong ties) and context-specific human capital.	Not supported	Not supported
Hypothesis 6a: In-role behavior mediates the relationship between context-specific human capital and performance.	Supported (Fully Mediated)	Supported (Fully Mediated)
Hypothesis 6b: Organizational citizenship behavior toward individuals (OCB-I) mediates the relationship between context-specific human capital and performance.	Supported (Fully Mediated)	Supported (Fully Mediated)
Hypothesis 6c: Organizational citizenship behavior toward the supervisor (OCB-S) mediates the relationship between context-specific human capital and performance.	Not Supported	Not Supported
Hypothesis 6d: Organizational citizenship behavior toward the organization (OCB-O) mediates the relationship between context-specific human capital and performance.	Supported (Fully Mediated)	Supported (Fully Mediated)
Hypothesis 7a: In-role behavior mediates the relationship between context-generic human capital and performance.	Supported (Partially Mediated)	Supported (Partially Mediated)
Hypothesis 7b: Organizational citizenship behavior toward individuals (OCB-I) mediates the relationship between context-generic human capital and performance.	Supported (Partially Mediated)	Supported (Partially Mediated)
Hypothesis 7c: Organizational citizenship behavior toward the supervisor (OCB-S) mediates the relationship between context-generic human capital and performance.	Not Supported	Not Supported
Hypothesis 7d: Organizational citizenship behavior toward the organization (OCB-O) mediates the relationship between context-generic human capital and performance.	Supported (Partially Mediated)	Supported (Partially Mediated)
Hypothesis 8a: Context-specific human capital mediates the relationship between context-generic human capital and in-role behavior.	Supported (Partially Mediated)	Supported (Partially Mediated)
Hypothesis 8b: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward individuals (OCB-I).	Supported (Partially Mediated)	Supported (Partially Mediated)

Table 5.22 - *Continued*

<p>Hypothesis 8c: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward the supervisor (OCB-S).</p>	<p>Supported (Partially Mediated)</p>	<p>Supported (Fully Mediated)</p>
<p>Hypothesis 8d: Context-specific human capital mediates the relationship between context-generic human capital and organizational citizenship behavior toward the organization (OCB-O).</p>	<p>Supported (Partially Mediated)</p>	<p>Supported (Partially Mediated)</p>

## CHAPTER 6

### DISCUSSION

#### 6.1 Introduction

In the last chapter, the data were examined and then analyzed using multiple regression analysis and structural equation modeling (SEM) analysis. Both methods yielded the same results. The findings supported thirteen hypotheses (i.e., 1, 2, 3, 6a, 6b, 6d, 7a, 7b, 7d, 8a, 8b, 8c, and 8d) and rejected four hypotheses (i.e., 4, 5, 6c and 7c). This chapter will further discuss the results of this study.

#### 6.2 Discussion of Results

In this study, there are several findings. First, the main effect of context-generic human capital is significantly related to performance. This result was consistent with prior literature (e.g., McMahan et al., 1999; Wright & McMahan, 1992; Wright, McMahan, & McWilliams, 1994; Wright & McMahan, 2011) suggesting that context-generic human capital can improve performance. That is, registered nurses with more general knowledge, skills, and abilities (KSAs) tended to perform better than those with less general KSAs. Moreover, this relationship between context-generic human capital and performance was partially mediated by in-role behavior, OCB-I, and OCB-O. This result shows that employee behaviors are not the only reason that people with high context-generic human capital have better performance.

Furthermore, the relationship between context-generic human capital and three types of employee behavior (i.e., in-role behavior, OCB-I, and OCB-O) was partially mediated by context-specific human capital. In addition, the result of context-specific human capital as a mediator of the relationship between context-generic human capital and OCB-S was different between the multiple regression approach and the SEM approach. From the multiple

regression approach, the relationship between context-generic human capital and OCB-S was partially mediated by context-specific human capital. On the other hand, the relationship between context-generic human capital and OCB-S was fully mediated by context-specific human capital in the SEM approach.

From these results, registered nurses with more context-generic human capital were more likely to have more context-specific human capital. Consequentially, these high context-specific human capital registered nurses will have better in-role behavior, OCB-I, and OCB-O. As a result, registered nurses with higher in-role behavior, OCB-I, and OCB-O will perform better than other registered nurses. This shows that behavior that aligns with the job description (i.e., in-role behavior), helping others (i.e., OCB-I) and helping organization (i.e., OCB-O) are better for registered nurses because it will increase their performance. In other words, registered nurses with high context-generic human capital had high performance because they had high context-specific human capital, thus increasing performance through better in-role behavior, OCB-I, and OCB-O.

One surprising finding in this study was that registered nurses with high context-specific human capital tended to have more OCB-S, but registered nurses with high OCB-S tended to have less performance. Contradicting the prior research (e.g., Pandey & McMahan, 2011), this result shows that helping supervisor excessively may not be a good idea because it could reduce performance. OCB-S might be negatively related to performance for several reasons.

Based on the multifoci social exchange logic of the target similarity model, Lavelle et al. (2009) conducted a study of target-specific organizational citizenship behaviors (OCBs) of nurses in a hospital. They found that OCB toward the supervisor (OCB-S) was positively related to perceived supervisor support. In addition, they found that OCB toward the workgroup (OCB-I) was positively related to perceived workgroup support. Finally, they found that OCB toward the organization was positively related to perceived organizational support (OCB-O). It can be implied that workgroup support and organizational support enhanced the performance of

the registered nurses. However, supervisor support might be negatively related to the performance of registered nurses.

In Eastern culture, people tend to prefer equality systems over equity systems because they want to create the harmony in the system. According to inequity theory (Adams, 1965), people are motivated to resolve the inequity when an inequity occurs. The supervisor may think that the equality system (i.e., treat everybody equally) is better than an equity system (i.e., treat each person based on their behavior). When the supervisor treats every registered nurse equally, the registered nurses may perceive this treatment as an inequity because they did not receive the same ratio of support for their helping behavior that was related to the supervisor. That is, the supervisor may use the equality fairness system, but the registered nurses may judge the exchange relationship based on the equity system. Therefore, registered nurses with more OCB-S may have less motivation to work, thus reducing their overall performance.

In addition, the negative effect of OCB-S might occur because the supervisor tried to be fair in their support to every nurse under his or her control regardless of their OCB-S. Therefore, everyone got the same support from their supervisor. Unfortunately, registered nurses who had high OCB-S wasted their time on their supervisor's tasks, thus reducing their time to work on their necessary tasks. On the other hand, registered nurses who had low OCB-S had plenty of time to work on their necessary tasks, thus improving their performance.

Moreover, this difference might occur because of the different culture between Thai nurses and US nurses. People in Thailand tend to be influenced by large power distance, low individualism, and strong uncertainty avoidance, while people in the US tend to be influenced by small power distance, high individualism, and weak uncertainty avoidance (Hofstede, 1980, 1983). That is, OCB-S might be considered as improper behavior for Thai people because of the cultural differences. Therefore, registered nurses in this present study who tried to impress their supervisor might be rated as low performance workers.

Furthermore, the supervisor might think that helping others (OCB-I) and helping the organization (OCB-O) were included in the job description of the Thai registered nurses because of the collectivism culture of Thai people. In contrast, the supervisor might think that helping the supervisor (OCB-S) might be considered as an unimportant task for registered nurses. Hence, registered nurses who had high OCB-S might waste their time on helping their supervisor and were unable to effectively perform their important tasks in their job, thus lowering their performance. In other words, registered nurses might provide more time to work on their supervisor's unnecessary tasks, thus reducing time on their important tasks.

Finally, the supervisor may feel guilty that he or she rated registered nurses who were helping him or her higher than other registered nurses. According to Folger's referent cognitions theory (Folger, 1986a, 1986b, 1987, 1993; Cropanzano, Byrne, Bobocel, & Rupp, 2001), an unfair judgment is a result from a situation where an individual believes a more favorable outcome would have resulted from an alternative procedure that should have been used. Therefore, the supervisor might try to correct the evaluation by lowering the performance rating of those registered nurses to create fairness in the rating judgment. However, the supervisor might overcorrect the performance rating. Hence, the registered nurses with high OCB-S might be rated lower than their actual performance.

Moreover, job tenure (logarithm) was not significantly related to context-specific human capital when context-generic human capital was included in the model. This might occur because of the high education of registered nurses. According to McDaniel et al. (1988) employees who work in high-complexity jobs tend to have better education; therefore, they may not require more knowledge from experience. Most of the registered nurses had at least an undergraduate degree (98.52%). Additionally, all of the registered nurses in Thailand were trained as interns in real hospitals before they graduated. As a result, they might learn most of the specific knowledge, skills, and abilities from the nursing college, thus reducing the effect of job tenure on context-specific human capital.

In addition, when regressing context-specific human capital on job tenure without context-generic human capital in the model, job tenure (logarithm) was significantly related to context-specific human capital and it was a better predictor than original job tenure. Although job tenure (logarithm) had a little effect on context-specific human capital compared to context-generic human capital, this result shows evidence that the non-linear model of job tenure was a better model than the linear model

Furthermore, access to information resources did not mediate the relationship between strong ties (social capital) and context-specific human capital. Although strong ties (social capital) was significantly related to access to information resources, access to information resources was not significantly related to context-specific human capital. This finding shows that strong ties (social capital) increased access to information resources, but that access to information resources did not transfer to be more context-specific human capital. As stated earlier, social capital could provide both advantages and disadvantages to registered nurses. According to the weak-tie theory (Granovetter, 1973), social network requires time and energy to maintain relationships especially those with strong ties (Boorman, 1975; Hansen, 1999). For this reason, social capital neither increases nor decreases context-specific human capital.

Another explanation for the non-significant relationship between social capital and context-specific human capital is that this study might not have captured the valid social capital of registered nurses. According to the longitudinal study by Conti, Galeotti, Mueller, and Pudney (2012), popularity of high school students can lead to better earnings 40 years later. Popularity that was related to adult earnings must be measured by the number of friendship nominations that the high school student received from his or her friends (Conti et al., 2012). On the other hand, popularity that was measured by the number of his or her friendships nominated by himself or herself was not related to his or her adult earnings (Conti et al., 2012). The study by Conti et al. (2012) shows that the measure of social capital in this study might be an inappropriate measurement because the strong ties are nominated by registered nurses

themselves. For a good measurement, the strong ties of a particular registered nurse should be nominated by his or her friends.

### 6.3 Summary

In conclusion, this chapter discussed the results of this study. There were thirteen supported hypotheses (i.e., 1, 2, 3, 6a, 6b, 6d, 7a, 7b, 7d, 8a, 8b, 8c, and 8d) and four rejected hypotheses (i.e., 4, 5, 6c, and 7c). Consistent with the prior literature, context-generic human capital was directly related to performance and this relationship was partially mediated by context-specific human capital. Moreover, in-role behavior and target-specific OCBs (i.e., OCB-I, OCB-S, OCB-O) fully mediated the positive relationship between context-specific human capital and performance. However, the relationship between OCB-S was negatively related to performance. This negative relationship might occur because of the negative effect of supervisor support, the inequity of social exchange between registered nurses and their supervisor, the overcorrecting performance rating from the supervisor, and the cultural differences between Thailand and the US. In addition, strong ties (social capital) and job tenure (logarithm) did not significantly increase context-specific human capital. The non-significant relationship between job tenure (logarithm) and context-specific human capital might occur because of the high education of the registered nurses. Moreover, the non-significant relationship between strong ties (social capital) and context-specific human capital might occur because of the improper measurement of strong ties (social capital). The next chapter will present the conclusions of this study.

## CHAPTER 7

### CONCLUSION

#### 7.1 Introduction

The previous chapter discussed the results of this study. The findings supported thirteen hypotheses (i.e., 1, 2, 3, 6a, 6b, 6d, 7a, 7b, 7d, 8a, 8b, 8c, and 8d) and rejected four hypotheses (i.e., 4, 5, 6c, and 7c). In this chapter, the theoretical contributions and practical implications from these findings will be explained. Then, the limitations and suggestions for future research will be explained.

#### 7.2 Theoretical Contributions

There are several theoretical contributions of this study to the strategic HRM literature. Since the culture is different between Thailand and the US (Hofstede, 1983; House et al., 2004), this study tested the generalizability of human capital and social capital theories in Thailand. Thirteen hypotheses were supported based on the theories developed in the US. However, four hypotheses were not supported. The following section will explain this findings in details.

First, this study shows that context-generic human capital was different from context-specific human capital and there was a significant relationship between them. Since the introduction of the context-generic and context-specific human capital by Ployhart and Moliterno (2011), there is little research on the relationship between context-generic human capital and context-specific human capital. Ployhart et al. (2011) studied this relationship in a restaurant chain. However, the study by Ployhart et al. (2011) was operated at the organizational level. As predicted, this study shows evidence that context-generic human capital was significantly related to context-specific human capital at the individual level. Furthermore, this study shows that context-specific human capital can be measured by the four dimensions (i.e., value,

rareness, inimitability, and non-substitutability) of the resource-based view (RBV) of the firm. Hence, context-generic human capital can lead to context-specific human capital which is valuable, rare, inimitable, and non-substitutable.

Second, this study illustrates that in-role behavior, OCB-I, and OCB-O partially mediated the relationship between context-generic human capital and performance. These results were in line with the model by Wright and McMahan (1992) that behavior is the mediator between human capital and performance. Moreover, this study shows that context-specific human capital partially mediated the relationships between context-generic human capital and these three types of employee behaviors (i.e., in-role behavior, OCB-I, and OCB-O). Most research has been conducted on the direct relationship between each component of human capital and performance (e.g., Gathmann & Schönberg, 2010; Harris & McMahan, 2008; Hawkins & Dulewicz, 2007; Ng et al., 2005; Pil & Leana, 2009; Wright et al., 1995b). For example, Harris and McMahan (2008) found that NCAA basketball teams consisting of players with better knowledge and skills were positively related to better team performance. Therefore, this study extends the existing literature by examining the mediators of the relationship between context-generic human capital and performance (i.e., in-role behavior, OCB-I, OCB-O, and context-specific human capital).

However, this study shows that OCB-S did not mediate the relationship between context-generic human capital and performance. This result was contradictory to the study of US registered nurses by Pandey and McMahan (2011) which found that in-role behavior and all target-specific OCBs (OCB-I, OCB-S, and OCB-O) mediated the relationship between human capital and performance. This difference might occur because of the different culture between Thai nurses and US nurses. That is, OCB-S might not be considered as important for Thai nurses as for US nurses. In addition, registered nurses might allot more time to work on their supervisor's unnecessary tasks, thus reducing time on their important tasks. Finally, registered

nurses might try too hard to impress their supervisor. These behaviors might consider as inappropriate behaviors, thus negatively affecting the performance of registered nurses.

Moreover, based on the multifoci social exchange logic of the target similarity model, Lavelle et al. (2009) conducted the study of target-specific organizational citizenship behaviors (OCBs) of nurses in a hospital. First, they found that OCB toward the supervisor (OCB-S) was positively related to perceived supervisor support. Second, they found that OCB toward the workgroup (OCB-I) was positively related to perceived workgroup support. Finally, they found that OCB toward the organization (OCB-O) was positively related to perceived organizational support. It can be implied that workgroup support and organizational support enhanced the performance of the registered nurses, but supervisor support might not relate to the performance of registered nurses.

Third, this study shows that the nonlinear effect of job tenure on context-specific human capital was low compared to context-generic human capital. Several researchers (e.g., McDaniel et al., 1988; Ng et al., 2005; Ng & Feldman, 2010; Quinones et al., 1995; Sturman, 2003) found that job experience increased performance. For example, a meta-analysis by McDaniel et al. (1988) found a nonlinear relationship between experience and performance. However, this study shows that job experience has a minor impact on performance and context-specific human capital did not mediate the relationship between job experience and performance.

Fourth, this study found that the benefits of social capital to human capital were very minimal. Several researchers have found a relationship between social capital and performance (e.g., Bruderl & Preisendorfer, 1998; Burt, 1997; Coleman, 1988; Pil & Leana, 2009; Sagas & Cunningham, 2005). For example, Burt (1997) found that managers with more social capital tended to have early promotions and better bonuses. The study by Burt (1997) shows that social capital can be the source of information. Moreover, social capital can improve context-specific human capital by increasing the number of information sources (Burt, 1997;

Coleman, 1988). In addition, social capital can improve employee behaviors by increasing the willingness to share knowledge among employees (Chisholm & Nielsen, 2009). However, these benefits of social capital did not transfer to better context-specific human capital in this study.

Fifth, this study shows that the cultural differences between Thailand and the US (Hofstede, 1983; House, Hanges, Javidan, Dorfman, & Gupta, 2004) might play a role in the non-significant relationship. People in Thailand tend to be influenced by large power distance, low individualism, and strong uncertainty avoidance, while people in the US tend to be influenced by small power distance, high individualism, and weak uncertainty avoidance (Hofstede, 1980, 1983). Social capital increased access to information resources, but it did not increase context-specific human capital. This might be due to the fact that Thai people often learn more from formal training than from their social networks.

### 7.3 Practical Implications

This study offers a number of important practical implications. From the individual point of view, registered nurses need to consider having more education in order to improve their productivity. Registered nurses can gain context-specific human capital if they have higher context-generic human capital (i.e., knowledge, skills, and ability). Since there is evidence that ability increases with years of schooling (Becker, 1964; Jensen, 1998; Hitt et al., 2001), registered nurses might consider having more education if possible before entering the workforce. Moreover, registered nurses should perform in-role behavior, help other individuals (i.e., OCB-I), and help the organization (i.e., OCB-O) because these behaviors increase their performance. In contrast, registered nurses should avoid impressing the supervisor by helping him or her because this behavior (i.e., OCB-S) might reduce their performance. Likewise, registered nurses should not pay too much attention to their social capital because it is less likely to contribute to their human capital. Furthermore, registered nurses should focus on their

formal training since the evidence shows that experience from one's job has little impact on context-specific human capital.

From the organizational point of view, hospitals will gain the most benefits if they invest in registered nurses with high context-generic human capital. Hence, hospitals might select only high talent candidates in order to gain the most benefits from their investments. Nevertheless, this selective recruitment should not discriminate against particular gender or skin color (Strober, 1990). In addition, since this study found that the experience of the registered nurses was not related to context-specific human capital, the hospital should not use the experience of the registered nurses as the sole criterion for recruitment.

Moreover, a high performance work system (HPWS) might need to be introduced in the organization because it was found to be related to better human capital (Jiang et al., 2012). According to Jiang et al. (2012), a high performance work system (HPWS) includes skill-enhancing HR practices (i.e., recruitment, selection, and training), motivation-enhancing HR practices (i.e., performance appraisal, compensation, incentive, benefit, promotion and career development, and job security), and opportunity enhancing HR practices (i.e., job design, work teams, employee involvement, formal grievance and complaint processes, and information sharing). Therefore, the hospital should employ the best HR practices in terms of skill-enhancing, motivation-enhancing, and opportunity-enhancing.

#### 7.4 Limitations

Several limitations should be noted in this current study. First, this study was not a multilevel study. According to Kozlowski and Klein (2000) the research that integrates two or more levels is called a multilevel study. Since this study emphasizes individual performance, it may not be generalized to the organizational level. That is, employees with better performance may not lead to better firm performance (Ployhart & Moliterno, 2011; Wright & McMahan, 2011).

Second, this study uses a cross-sectional research method, so the relationships should be interpreted with caution in that the direction of the relationships might be reversed. According to Cook and Campbell (1979), three criteria should be met in order to infer cause: covariation between the presumed cause and effect, the temporal precedence of the cause, and the ability to control or rule out alternative explanations for a possible cause-and-effect connection. In order to achieve the covariation, an effect must be present when the cause is present and must be absent when the cause is absent (Cook & Campbell, 1979; Wright, Gardner, Moynihan, & Allen, 2005). Furthermore, temporal precedence requires that the cause must exist before the outcome (Cook & Campbell, 1979; Wright et al., 2005). Finally, all other variables that might cause the outcome must be controlled (Cook & Campbell, 1979; Wright et al., 2005). In this study, these criteria were not met, thus limiting the conclusions regarding the direction of the relationships.

### 7.5 Future Research

As previously discussed in the last chapter, OCB-S was negatively related to performance. Thus, future research should examine the reasons for the negative relationship between OCB-S and performance. Perceived support from one's supervisor may need to be measured in order to test whether it is a key factor for a negative effect of the relationship between OCB-S and performance. Moreover, performance may need to be measured using objective items rather than subjective items. These objective items will test whether the supervisor is biased or the registered nurses are indeed underperforming.

Moreover, since employee behaviors (i.e., in-role behavior, OCB-I, and OCB-O) partially mediated the relationship between context-generic human capital and performance, there could be other mediators that explain the relationship between these two variables. For example, people with better context-generic human capital might have greater attention from

the supervisor; hence, they might get greater support from the supervisor. Hence, future research should include these mediators in the model.

Furthermore, social capital has little effect on context-specific human capital. Therefore, future research may try to find another way to measure social capital. According to the longitudinal study by Conti et al. (2012), only popularity that was measured by the number of friendship nominations that the high school student received from his or her friends was related to adult earnings. In contrast, popularity that was measured by the number of one's friendships nominated by himself or herself had no effect on his or her adult earnings. Based on the longitudinal study by Conti et al. (2012), the key to measuring social capital (strong ties) is not the number the names nominated by the registered nurse (i.e., the number of his or her friends that this registered nurse knew well), but the number of friendship nominations by his or her friends (i.e., the number of his or her friends who considered this registered nurse as their close friend. This new measurement may improve the effect of the relationship between social capital and context-specific human capital.

According to Cook and Campbell (1979), three criteria should be met in order to infer cause: covariation between the presumed cause and effect, the temporal precedence of the cause, and the ability to control or rule out alternative explanations for a possible cause-and-effect connection. Since this study cannot fulfill these three criteria because it was a cross-sectional study, future research should employ a longitudinal study or an experimental study in order to test the causal links between relationships. The longitudinal study and the experimental study can measure the cause before the outcome. Also, the experimental study can measure the outcome when there is no cause.

As previous noted, this study was not a multilevel study, thus limiting the inference across organizational levels. According to Kozlowski and Klein (2000), the research that integrates two or more levels is called a multilevel study. However, Ployhart and Moliterno (2011) argue that "there is no fully articulated multilevel theory describing how the human

capital resource is created and transformed across organizational levels" (p. 127). Therefore, future research should employ human capital at both an individual level and an organizational level. Moreover, performance should be measured from both an individual level and an organizational level to test whether the relationships in this study are consistent in both levels.

### 7.6 Summary

The purpose of this study was to theoretically develop and empirically test the relationships among multiple dimensions of human capital, social capital, employee behaviors, and performance by emphasizing the mechanisms (i.e., the mediators) between them. This chapter concluded the study with the theoretical contributions, suggested practical implementations, limitations, and possible future research.

This study answered the first research question by showing that in-role behavior, OCB-I, and OCB-O partially mediated the relationship between context-generic human capital and performance. Moreover, context-specific human capital mediated the relationships between context-generic human capital and these four types of behaviors (i.e., in-role behavior, OCB-I, OCB-S, and OCB-O). However, the second and third research questions were unable to be answered because job tenure and social capital were not significantly related to context-specific human capital.

APPENDIX A  
QUESTIONNAIRE (ENGLISH)

## **Informed Consent Document**

### **PRINCIPAL INVESTIGATOR**

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### **TITLE OF PROJECT**

Individual Human Capital and Performance: An Empirical Study in Thailand

### **INTRODUCTION**

You are being asked to participate in a research study about human capital and social capital in your hospital. Your participation is voluntary. Refusal to participate or discontinuing your participation at any time will involve no penalty or loss of benefits to which you are otherwise entitled. Please ask questions if there is anything you do not understand.

### **PURPOSE**

The purpose of this study is to explore the relationship between human capital, social capital, and performance of nurses in Thailand.

### **DURATION**

Nurses: Participation in this study will last approximately 10 minutes.  
Supervisors: Participation in this study will last approximately 20 minutes per each questionnaire. The total time will depend on the number of your subordinates.

### **NUMBER OF PARTICIPANTS**

The number of anticipated participants in this research study is 550.  
Nurses: 500  
Supervisors: 50

**PROCEDURES**

Nurses: You will be asked to fill the questionnaire about your demographic data and social networks in your department.

Supervisors: You will be asked to fill the questionnaire about your subordinates in your department.

**POSSIBLE BENEFITS**

This study will add the new knowledge of human capital and social capital to the literature.

Also, the hospital could efficiently manage human capital and social capital of nurses in order to improve their performance.

**POSSIBLE RISKS/DISCOMFORTS**

There are no perceived risks or discomforts for participating in this research study. Should you experience any discomfort please inform the researcher, you have the right to quit any study procedures at any time at no consequence.

**COMPENSATION**

There is no compensation.

**ALTERNATIVE PROCEDURES**

There are no alternative procedures offered for this study. However, you can elect not to participate in the study or quit at any time at no consequence.

**VOLUNTARY PARTICIPATION**

Participation in this research study is voluntary. You have the right to decline participation in any or all study procedures or quit at any time at no consequence.

**CONFIDENTIALITY**

Every attempt will be made to see that your study results are kept confidential. A copy of this signed consent form and all data collected from this study will be stored in Department of Management, College of Business, University of Texas at Arlington for at least three (3) years after the end of this research. The results of this study may be published and/or presented at meetings without naming you as a participant. Additional research studies could evolve from the information you have provided, but your information will not be linked to you in anyway; it will be anonymous. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and personnel particular to this research have access to the study records. Your records will be kept completely confidential according to current legal requirements. They will not be revealed unless required by law, or as noted above. The IRB at UTA has reviewed and approved this study and the information within this consent form. In the unlikely event it becomes necessary for the Institutional Review Board to review your research records, the University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law.



<b>Confidential</b>
<i>Your answers in this questionnaire and all other information you give us will be held in strictest confidence. If the results of this research are published or presented at scientific meetings, your identity will not be disclosed.</i>

Nurse ID: \_\_\_\_\_

Supervisor ID: \_\_\_\_\_

**Part 1: Background Information**

**Instruction:** Please fill in the blanks or mark X on  that matches you.

1. Gender: (Male / Female)
2. When were you born? \_\_\_\_\_
3. Education: (Associate's Degree / Bachelor's Degree /  
 Higher than Bachelor's Degree: Please indicate \_\_\_\_\_)
4. When did you graduate? \_\_\_\_\_
5. What is your current department? \_\_\_\_\_
6. What is your present job called? \_\_\_\_\_
7. What do you do on your present job? \_\_\_\_\_
8. What is your position level? (Practitioner / Professional / Senior Professional /  
Expert)
9. How long have you been on your present job? \_\_\_\_\_ years \_\_\_\_\_ months
10. How long have you been in this hospital? \_\_\_\_\_ years \_\_\_\_\_ months
11. How long have you been in other hospitals? \_\_\_\_\_ years \_\_\_\_\_ months
12. What is your present salary? \_\_\_\_\_ Bath / Month
13. What is your incentive in each month, on average?  
Position allowance \_\_\_\_\_ Bath / Month  
Overtime \_\_\_\_\_ Bath / Month  
Government Support \_\_\_\_\_ Bath / Month  
Others \_\_\_\_\_ Bath / Month
14. To what extent have you participated in work-related training programs since joining this hospital?  
( not at all /  rarely /  once a year /  2 or 3 times per year /  
 more than 3 times per year)

**Part 2: Social Capital**

Please think about people in your department who have acted to help your career by speaking on your behalf, providing you with information, career opportunities, advice, or psychological support or whom you have regularly spoken regarding difficulties at work, alternative job opportunities or long-term goals

**Instruction:** Please mark X on the empty cells that represent each person

Number	How close you felt to this person*				Organizational level		
	Especially close	Close	Less close	Distant	Lower	Same	Higher
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

\* Essentially close: can communicate in every topic  
 Close: can communicate in almost all topics  
 Less close: can communicate in many topics  
 Distant: can communicate in some topics.

**For Nurse**

**Part 3: Access to Information Resources**

**Instruction:** Please indicate the extent to which you agree with each statement by circling your answer on the right.

	Strongly Disagree						Strongly Agree
1. You can obtain information resources necessary to support your new ideas.	1	2	3	4	5	6	7
2. When you need additional information resources to do your job, you can usually get them.	1	2	3	4	5	6	7
3. You have access to information resources you need to do your job well.	1	2	3	4	5	6	7

**Thank you very much for your co-operation**

**Confidential**

*Your answers in this questionnaire and all other information you give us will be held in strictest confidence. If the results of this research are published or presented at scientific meetings, your identity will not be disclosed.*

Nurse ID \_\_\_\_\_

Supervisor ID \_\_\_\_\_

**Part 1.1: Knowledge**

**Instruction:** Please indicate the extent to which you agree that each statement describes knowledge of this nurse by circling your answer on the right.

**This nurse has knowledge as follows:**

	Strongly Disagree	Strongly Agree
<b>1 Nursing:</b> Knowledge of the information and techniques needed to diagnose and treat human injuries, diseases, and deformities. This includes symptoms, treatment alternatives, drug properties and interactions, and preventive health-care measures.	1 2 3 4 5 6 7	
<b>2 Patient Service:</b> Knowledge of principles and processes for providing patient services. This includes patient needs assessment, meeting quality standards for services, and evaluation of patient satisfaction.	1 2 3 4 5 6 7	
<b>3 Psychology:</b> Knowledge of human behavior and performance; individual differences in ability, personality, and interests; learning and motivation; psychological research methods; and the assessment and treatment of behavioral and affective disorders.	1 2 3 4 5 6 7	
<b>4 Language:</b> Knowledge of the structure and content of the language including the meaning and spelling of words, rules of composition, and grammar.	1 2 3 4 5 6 7	
<b>5 Education and Training:</b> Knowledge of principles and methods for curriculum and training design, teaching and instruction for individuals and groups, and the measurement of training effects.	1 2 3 4 5 6 7	
<b>6 Therapy and Counseling:</b> Knowledge of principles, methods, and procedures for diagnosis, treatment, and rehabilitation of physical and mental dysfunctions, and for career counseling and guidance.	1 2 3 4 5 6 7	
<b>7 Biology:</b> Knowledge of plant and animal organisms, their tissues, cells, functions, interdependencies, and interactions with each other and the environment.	1 2 3 4 5 6 7	
<b>8 Mathematics:</b> Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.	1 2 3 4 5 6 7	
<b>9 Sociology and Anthropology:</b> Knowledge of group behavior and dynamics, societal trends and influences, human migrations, ethnicity, cultures and their history and origins.	1 2 3 4 5 6 7	
<b>10 Public Safety and Security:</b> Knowledge of relevant equipment, policies, procedures, and strategies to promote effective local, state, or national security operations for the protection of people, data, property, and institutions.	1 2 3 4 5 6 7	

**For Supervisor**

**Part 1.2: Skills**

**Instruction:** Please indicate the extent to which you agree that each statement describes skills of this nurse by circling your answer on the right.

**This nurse has skills as follows:**

	Strongly Disagree						Strongly Agree
<b>1 Social Perceptiveness:</b> Being aware of others' reactions and understanding why they react as they do.	1	2	3	4	5	6	7
<b>2 Active Listening:</b> Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.	1	2	3	4	5	6	7
<b>3 Coordination:</b> Adjusting actions in relation to others' actions.	1	2	3	4	5	6	7
<b>4 Speaking:</b> Talking to others to convey information effectively.	1	2	3	4	5	6	7
<b>5 Critical Thinking:</b> Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.	1	2	3	4	5	6	7
<b>6 Reading Comprehension:</b> Understanding written sentences and paragraphs in work related documents.	1	2	3	4	5	6	7
<b>7 Service Orientation:</b> Actively looking for ways to help people.	1	2	3	4	5	6	7
<b>8 Monitoring:</b> Monitoring/Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.	1	2	3	4	5	6	7
<b>9 Judgment and Decision Making:</b> Considering the relative costs and benefits of potential actions to choose the most appropriate one.	1	2	3	4	5	6	7
<b>10 Science:</b> Using scientific rules and methods to solve problems.	1	2	3	4	5	6	7

**Part 1.3 Abilities**

**Instruction:** Please indicate the extent to which you agree that each statement describes abilities of this nurse by circling your answer on the right.

**This nurse has abilities as follows:**

	Strongly Disagree						Strongly Agree
<b>1 Problem Sensitivity:</b> The ability to tell when something is wrong or is likely to go wrong. It does not involve solving the problem, only recognizing there is a problem.	1	2	3	4	5	6	7
<b>2 Inductive Reasoning:</b> The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).	1	2	3	4	5	6	7
<b>3 Oral Comprehension:</b> The ability to listen to and understand information and ideas presented through spoken words and sentences.	1	2	3	4	5	6	7
<b>4 Deductive Reasoning:</b> The ability to apply general rules to specific problems to produce answers that make sense.	1	2	3	4	5	6	7
<b>5 Information Ordering:</b> The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).	1	2	3	4	5	6	7
<b>6 Oral Expression:</b> The ability to communicate information and ideas in speaking so others will understand.	1	2	3	4	5	6	7
<b>7 Written Comprehension:</b> The ability to read and understand information and ideas presented in writing.	1	2	3	4	5	6	7
<b>8 Speech Clarity:</b> The ability to speak clearly so others can understand you.	1	2	3	4	5	6	7
<b>9 Speech Recognition:</b> The ability to identify and understand the speech of another person.	1	2	3	4	5	6	7
<b>10 Written Expression:</b> The ability to communicate information and ideas in writing so others will understand.	1	2	3	4	5	6	7

**For Supervisor**

**Part 2.1: Value**

**Instruction:** Please indicate the extent to which you agree that each statement describes knowledge, skills, and abilities of this nurse by circling your answer on the right.

**This nurse has knowledge, skills, and abilities that ...**

	Strongly Disagree			Strongly Agree			
1 are instrumental for creating innovations.	1	2	3	4	5	6	7
2 create patient value.	1	2	3	4	5	6	7
3 help minimize costs of service.	1	2	3	4	5	6	7
4 enable your hospital to provide exceptional patient service.	1	2	3	4	5	6	7
5 contribute to the development of new service opportunities.	1	2	3	4	5	6	7
6 develop services that are considered the best in the hospital industry.	1	2	3	4	5	6	7
7 directly affect organizational efficiency and productivity.	1	2	3	4	5	6	7
8 enable your hospital to respond to new or changing patient demands.	1	2	3	4	5	6	7
9 allow your hospital to offer low prices.	1	2	3	4	5	6	7
10 directly affect patient satisfaction.	1	2	3	4	5	6	7
11 are needed to maintain high quality services.	1	2	3	4	5	6	7
12 are instrumental for making process improvements.	1	2	3	4	5	6	7

**Part 2.2: Rareness**

**Instruction:** Please indicate the extent to which you agree that each statement describes knowledge, skills, and abilities of this nurse by circling your answer on the right.

**This nurse has knowledge, skills, and abilities that ...**

	Strongly Disagree				Strongly Agree		
1 are not widely available in the labor market.	1	2	3	4	5	6	7
2 are not available to other nurses.	1	2	3	4	5	6	7
3 are widely considered the best in the hospital.	1	2	3	4	5	6	7
4 are customized to the nurse's particular needs.	1	2	3	4	5	6	7

**Part 2.3: Inimitability**

**Instruction:** Please indicate the extent to which you agree that each statement describes knowledge, skills, and abilities of this nurse by circling your answer on the right.

**This nurse has knowledge, skills, and abilities that ...**

	Strongly Disagree				Strongly Agree		
1 are developed through on the job experiences.	1	2	3	4	5	6	7
2 are difficult for other nurses to learn from this nurse.	1	2	3	4	5	6	7
3 are difficult for other nurses to imitate or duplicate.	1	2	3	4	5	6	7

**Part 2.4: Non-Substitutability**

**Instruction:** Please indicate the extent to which you agree that each statement describes knowledge, skills, and abilities of this nurse by circling your answer on the right.

**This nurse has knowledge, skills, and abilities that ...**

	Strongly Disagree				Strongly Agree		
1 would be very difficult to replace.	1	2	3	4	5	6	7
2 are unique to this nurse.	1	2	3	4	5	6	7
3 distinguish this nurse from other nurses.	1	2	3	4	5	6	7

**For Supervisor**

**Part 3.1: In-Role Behavior**

**Instruction:** Please indicate the extent to which you agree or disagree with each of the following statements regarding this nurse by circling your answer on the right.

**This nurse has behavior as follows:**

	Strongly Disagree	Strongly Agree
<b>1 Assisting and Caring for Others:</b> Providing personal assistance, medical attention, emotional support, or other personal care to others such as coworkers or patients.	1 2 3 4 5 6 7	
<b>2 Documenting/Recording Information:</b> Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.	1 2 3 4 5 6 7	
<b>3 Getting Information:</b> Observing, receiving, and otherwise obtaining information from all relevant sources.	1 2 3 4 5 6 7	
<b>4 Communicating with Supervisor, Peers, or Subordinates:</b> Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.	1 2 3 4 5 6 7	
<b>5 Making Decisions and Solving Problems:</b> Analyzing information and evaluating results to choose the best solution and solve problems.	1 2 3 4 5 6 7	
<b>6 Identifying Objects, Actions, and Events:</b> Identifying information by categorizing, estimating, recognizing differences or similarities, and detecting changes in circumstances or events.	1 2 3 4 5 6 7	
<b>7 Establishing and Maintaining Interpersonal Relationships:</b> Developing constructive and cooperative working relationships with others, and maintaining them over time.	1 2 3 4 5 6 7	
<b>8 Organizing, Planning, and Prioritizing Work:</b> Developing specific goals and plans to prioritize, organize, and accomplish your work.	1 2 3 4 5 6 7	
<b>9 Evaluating Information to Determine Compliance with Standards:</b> Using relevant information and individual judgment to determine whether events or processes comply with laws, regulations, or standards.	1 2 3 4 5 6 7	
<b>10 Updating and Using Relevant Knowledge:</b> Keeping up-to-date technically and applying new knowledge to your job.	1 2 3 4 5 6 7	

*For Supervisor*

**Part 3.2: Organizational Citizenship Behavior (Individual)**

**Instruction:** Please indicate the extent to which you agree or disagree with each of the following statements regarding this nurse by circling your answer on the right.

**This nurse has behavior as follows:**

	Strongly Disagree						Strongly Agree
1 Helps coworkers who have been absent	1	2	3	4	5	6	7
2 Willingly gives his or her time to help coworkers who have work-related problems	1	2	3	4	5	6	7
3 Adjusts his or her work schedule to accommodate coworkers' requests for time off	1	2	3	4	5	6	7
4. Goes out of the way to make newer nurses feel welcome in the work group	1	2	3	4	5	6	7
5 Shows genuine concern and courtesy toward coworkers, even under the most trying business or personal situations	1	2	3	4	5	6	7
6 Assists coworkers with their duties	1	2	3	4	5	6	7
7 Passes along work-related information to coworkers	1	2	3	4	5	6	7

**Part 3.3: Organizational Citizenship Behavior (Supervisor)**

**Instruction:** Please indicate the extent to which you agree or disagree with each of the following statements regarding this nurse by circling your answer on the right.

**This nurse has behavior as follows:**

	Strongly Disagree						Strongly Agree
1 Accepts added responsibility when you are absent	1	2	3	4	5	6	7
2 Helps you when you have a heavy work load	1	2	3	4	5	6	7
3 Assists you with your work (when not asked)	1	2	3	4	5	6	7
4 Takes a personal interest in you	1	2	3	4	5	6	7
5 Passes along work-related information to you	1	2	3	4	5	6	7
6 Shows genuine concern and courtesy toward you, even under the most trying business or personal situations	1	2	3	4	5	6	7

*For Supervisor*

**Part 3.4: Organizational Citizenship Behavior (Organization)**

**Instruction:** Please indicate the extent to which you agree or disagree with each of the following statements regarding this nurse by circling your answer on the right.

**This nurse has behavior as follows:**

	Strongly Disagree						Strongly Agree
1 Punctuality	1	2	3	4	5	6	7
2 Attendance at work is above the norm	1	2	3	4	5	6	7
3 Gives advance notice if unable to come to work	1	2	3	4	5	6	7
4 Does not take unnecessary time off work	1	2	3	4	5	6	7
5 Does not take extra breaks	1	2	3	4	5	6	7
6 Does not spend time in idle conversation	1	2	3	4	5	6	7
7 Attends functions that are not required but that help the hospital image	1	2	3	4	5	6	7
8 Attends and participates in voluntary meetings regarding the hospital	1	2	3	4	5	6	7
9 Defends the hospital when other nurses criticize it	1	2	3	4	5	6	7
10 Shows pride when representing the hospital in public	1	2	3	4	5	6	7
11 Offers ideas to improve the functioning of the hospital	1	2	3	4	5	6	7
12 Expresses loyalty toward the hospital	1	2	3	4	5	6	7

***For Supervisor***

**Part 4: In-Role Performance**

**Instruction:** Please indicate the extent to which you agree or disagree with each of the following statements regarding this nurse by circling your answer on the right.

**This nurse has performance as follows:**

	Strongly Disagree				Strongly Agree		
1 Adequately completes assigned duties	1	2	3	4	5	6	7
2 Fulfills responsibilities specified in job description	1	2	3	4	5	6	7
3 Performs tasks that are expected of him/her	1	2	3	4	5	6	7
4 Meets formal performance requirements of the job	1	2	3	4	5	6	7
5 Engages in activities that will directly affect his/her performance evaluation	1	2	3	4	5	6	7

**Thank you very much for your co-operation**

APPENDIX B  
QUESTIONNAIRE (THAI)

## เอกสารแสดงความยินยอม

### ชื่อผู้วิจัย

ปกรณ์ สัจจงพงษ์

นักศึกษาปริญญาเอก

THAILAND Address:

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### ชื่อที่ปรึกษา

Dr. Gary C. McMahan

Associate Professor

Department of Management, College of Business,

University of Texas at Arlington, USA

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### หัวข้อการศึกษาวิจัย

ทุนมนุษย์และผลการปฏิบัติงาน: การศึกษาวิจัยในประเทศไทย

## **บทนำ**

คุณกำลังถูกขอให้เข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยเกี่ยวกับทุนมนุษย์และทุนทางสังคมในโรงพยาบาลของคุณ การเข้าร่วมตอบแบบสอบถามของคุณเป็นความสมัครใจ การปฏิเสธที่จะเข้าร่วมตอบแบบสอบถามหรือหยุดในเวลาใดๆ จะไม่มีบทลงโทษหรือการสูญเสียผลประโยชน์ที่คุณจะได้รับสิทธิอย่างอื่น กรุณาคำถามถ้าคุณมีอะไรที่ไม่เข้าใจ

## **วัตถุประสงค์**

วัตถุประสงค์ของการศึกษาวิจัยครั้งนี้คือการสำรวจความสัมพันธ์ระหว่างทุนมนุษย์ ทุนทางสังคมและผลการปฏิบัติงานของพยาบาลในประเทศไทย ทุนมนุษย์ในการศึกษาวิจัยนี้ประกอบด้วยความรู้ทักษะ ความชำนาญและความสามารถของพยาบาล ทุนทางสังคมในการศึกษาวิจัยนี้คือความสัมพันธ์ของพยาบาลในหน่วยงาน

## **ระยะเวลา**

*พยาบาล:* การศึกษาวิจัยนี้จะมี 1 ช่วงเวลา การเข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยนี้จะใช้เวลาประมาณ 10 นาที

*ผู้บังคับบัญชา:* การศึกษาวิจัยนี้จะมี 1 ช่วงเวลา การเข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยนี้จะใช้เวลาประมาณ 20 นาทีต่อแบบสอบถามต่อช่วงเวลา เวลารวมทั้งหมดจะขึ้นอยู่กับจำนวนของผู้ได้บังคับบัญชาของคุณ

## **จำนวนผู้เข้าร่วมตอบแบบสอบถาม**

จำนวนผู้เข้าร่วมตอบแบบสอบถามที่คาดการณ์ไว้ในการศึกษาวิจัยครั้งนี้คือ 550 คน

*พยาบาล:* 500 คน

*ผู้บังคับบัญชา:* 50 คน

## ขั้นตอน

**พยาบาล:** คุณจะต้องกรอกแบบสอบถามเกี่ยวกับข้อมูลส่วนตัวของคุณและเครือข่ายทางสังคมในหน่วยงานของคุณ การศึกษาวิจัยนี้จะจัดขึ้นในโรงพยาบาลของคุณใน 1 ช่วงเวลา ผู้บังคับบัญชาของคุณจะ ไม่เห็นข้อมูลของคุณ

**ผู้บังคับบัญชา:** คุณจะต้องกรอกแบบสอบถามเกี่ยวกับผู้ได้บังคับบัญชาในหน่วยงานของคุณ การศึกษาวิจัยนี้จะจัดขึ้นใน โรงพยาบาลของคุณใน 1 ช่วงเวลา

## ประโยชน์ที่คาดว่าจะได้รับ

การศึกษาวิจัยครั้งนี้จะเพิ่มความรู้ใหม่ด้านทุนมนุษย์และทุนทางสังคม นอกจากนี้โรงพยาบาลจะสามารถจัดการทุนมนุษย์และทุนทางสังคมของพยาบาลให้มีประสิทธิภาพมากยิ่งขึ้น

## ความเสี่ยงที่เป็นไปได้

ไม่มีความเสี่ยงใดๆ สำหรับการเข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยครั้งนี้ หากท่านรู้สึกไม่สบายใจในการตอบแบบสอบถามนี้ โปรดแจ้งผู้วิจัย คุณมีสิทธิที่จะออกจากการศึกษาวิจัยครั้งนี้ได้ตลอดเวลาโดยไม่มีผลกระทบใดๆ

## ค่าตอบแทน

ไม่มีค่าตอบแทน

## ตัวเลือกอื่น

ไม่มีทางเลือกอื่นสำหรับการศึกษาวิจัยครั้งนี้ อย่างไรก็ตามคุณสามารถเลือกที่จะไม่เข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยหรือเลิกเมื่อใดก็ได้ โดยไม่มีผลกระทบใดๆ

## การเข้าร่วมตอบแบบสอบถามด้วยความสมัครใจ

การเข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยครั้งนี้เป็นความสมัครใจ คุณมีสิทธิที่จะปฏิเสธการเข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยหรือเลิกเมื่อใดก็ได้ โดยไม่มีผลกระทบใดๆ การศึกษาวิจัยนี้

จะไม่เกี่ยวข้องกับการจ้างงานของคุณ คำตอบของคุณจะถูกเก็บเป็นความลับและไม่มีชื่อระบุเมื่อข้อมูลถูกประมวลผล

### **การรักษาความลับ**

1. ผู้วิจัยจะพยายามอย่างเต็มที่เพื่อเก็บข้อมูลของคุณเป็นความลับ
2. สำเนาของเอกสารแสดงความยินยอมที่ถูกลงนามในครั้งนี้อาจจะถูกรวบรวมจากการศึกษาวิจัยจะถูกเก็บไว้ในภาควิชาบริหารธุรกิจ มหาวิทยาลัยเท็กซัสแห่งอาร์ลิงตันเป็นเวลาอย่างน้อยสามปีหลังจากสิ้นสุดการศึกษาวิจัยครั้งนี้
3. ผลการศึกษาวิจัยครั้งนี้อาจจะถูกเผยแพร่และ/หรือนำเสนอในที่ประชุม โดยไม่มีการเปิดเผยชื่อของคุณว่าเป็นผู้เข้าร่วมตอบแบบสอบถาม
4. อาจจะมีการศึกษาวิจัยเพิ่มเติมจากข้อมูลที่คุณให้ แต่ข้อมูลของคุณจะไม่ถูกเชื่อมโยงกับคุณ ข้อมูลทั้งหมดจะไม่มีชื่อระบุไว้
5. ถึงแม้สิทธิและความเป็นส่วนตัวของคุณจะถูกรักษาไว้ เลขานุการของกรมสุขภาพและบริการมนุษยศาสตร์ มหาวิทยาลัยเท็กซัสแห่งอาร์ลิงตัน คณะกรรมการ IRB และนักวิจัยจะสามารถเข้าถึงข้อมูลนี้
6. ข้อมูลของคุณจะถูกเก็บเป็นความลับอย่างสมบูรณ์ตามข้อกำหนดของกฎหมายในปัจจุบัน
7. ข้อมูลพวกนี้จะไม่ถูกเปิดเผยเว้นแต่กฎหมายกำหนดหรือตามหมายเหตุที่ระบุไว้ข้างต้น
8. คณะกรรมการ IRB ที่มหาวิทยาลัยเท็กซัสแห่งอาร์ลิงตัน ได้ตรวจสอบและอนุมัติการศึกษาวิจัยนี้ และข้อมูลที่อยู่ในระยะเอกสารแสดงความยินยอมนี้
9. หากเกิดกรณีที่สุดวิสัยซึ่งเป็นที่จำเป็นที่คณะกรรมการ IRB ต้องตรวจสอบข้อมูลของคุณ มหาวิทยาลัยเท็กซัสแห่งอาร์ลิงตันจะปกป้องความลับของข้อมูลเหล่านี้ในขอบเขตที่กฎหมายกำหนด

### **ติดต่อสอบถาม**

คำถามเกี่ยวกับการศึกษาวิจัยครั้งนี้สามารถสอบถาม นายปกรณ์ สัจพงษ์

(pakorn.sujchaphong@mavs.uta.edu หรือ โทรศัพท์ในเมืองไทย: (66) 81-483-2241 / โทรศัพท์ในสหรัฐอเมริกา: (1) 817-323-8345) หรือ Dr. Gary McMahan (gmcmahan@uta.edu) คำถามต่างๆที่คุณมีที่เกี่ยวกับสิทธิของคุณในการเป็นผู้เข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยหรือการบาดเจ็บที่เกิด

จากการศึกษาวิจัยสามารถส่งมาที่คณะกรรมการบริหารงานวิจัย หน่วยงานบริการกฎข้อบังคับ ที่ (1)  
817-272-2105 หรือ regulatoryservices@uta.edu

ในฐานะที่เป็นตัวแทนของการศึกษาวิจัยครั้งนี้ ผมได้อธิบายวัตถุประสงค์ ขั้นตอน ผลประโยชน์และความเสี่ยงที่เกี่ยวข้องกับการศึกษาวิจัยครั้งนี้

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ลายมือชื่อและชื่อของนักวิจัยหลักหรือบุคคลที่ได้รับความยินยอม

วันที่

### ยินยอม

1. โดยการลงนามด้านล่างนี้ เป็นการยืนยันว่าคุณอายุ 18 ปีขึ้นไปและได้อ่านหรือมีคนอ่านเอกสารฉบับนี้ให้คุณ
2. คุณได้รับทราบเกี่ยวกับวัตถุประสงค์ ขั้นตอน ผลประโยชน์และความเสี่ยงที่เป็นไปได้ของการศึกษาวิจัยนี้ และคุณได้รับสำเนาของเอกสารนี้
3. คุณได้รับ โอกาสที่จะถามคำถามก่อนที่จะลงลายมือชื่อของคุณ และได้รับการบอกว่าคุณสามารถถามคำถามอื่น ๆ ได้ตลอดเวลา
4. คุณสมัครใจในการเข้าร่วมในการศึกษาวิจัยครั้งนี้
5. โดยการลงนามในเอกสารนี้ คุณจะไม่มีเสียดสีตามกฎหมายใดๆ
6. การปฏิเสธที่จะเข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยนี้จะไม่มีการลงโทษหรือการสูญเสียผลประโยชน์ใดๆ ที่คุณควรได้รับอย่างอื่น
7. คุณอาจจะหยุดการเข้าร่วมตอบแบบสอบถามในการศึกษาวิจัยนี้ได้ตลอดเวลาโดยไม่มี การลงโทษหรือการสูญเสียผลประโยชน์ใดๆ ที่คุณควรได้รับอย่างอื่น

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ลายมือชื่อของอาสาสมัคร

วันที่

ข้อตกลงความลับของข้อมูล

คำตอบใบแบบสอบถามนี้และข้อมูลอื่น ๆ ทั้งหมดที่ท่านให้เราจะถูกเก็บเป็นความลับ หากผลการศึกษาวิจัยครั้งนี้มีการเผยแพร่หรือนำเสนอในที่ประชุมทางวิทยาศาสตร์ ชื่อของคุณจะไม่ถูกเปิดเผย

รหัสนพยาบาล .....

รหัสนหัวหน้า .....

**ส่วนที่ 1: ข้อมูลส่วนตัว**

วิธีการ: โปรดเติมคำตอบลงในช่องว่างหรือทำเครื่องหมาย X ใน  ที่ตรงกับตัวคุณ

1 เพศ: ( ผู้ชาย /  ผู้หญิง)

2 ปีเกิด .....

3 การศึกษา: ( อนุปริญญา /  ปริญญาตรี /  สูงกว่าปริญญาตรี: โปรดระบุ .....

4 ปีที่จบการศึกษา .....

5 ชื่อหน่วยงาน/หอผู้ป่วย .....

6 ชื่อของงานปัจจุบัน .....

7 หน้าที่ของท่านในงานปัจจุบัน .....

8 ระดับตำแหน่ง ( ปฏิบัติการ /  ชำนาญการ /  ชำนาญการพิเศษ /  เชี่ยวชาญ)

9 อายุของงานปัจจุบัน ..... ปี ..... เดือน

10 อายุการทำงานในโรงพยาบาลนี้ ..... ปี ..... เดือน

11 อายุการทำงานในโรงพยาบาลอื่น ..... ปี ..... เดือน

12 เงินเดือนปัจจุบันของคุณ ..... บาท / เดือน

13 เงินพิเศษเพิ่มเติมในแต่ละเดือนโดยเฉลี่ย

เงินประจำตำแหน่ง ..... บาท / เดือน

เงินค่าล่วงเวลา (OT) ..... บาท / เดือน

เงินค่าวิชาชีพที่รัฐบาลจ่ายให้ ..... บาท / เดือน

เงินอื่นๆ ..... บาท / เดือน

14 คุณเข้ารับการฝึกอบรมที่เกี่ยวข้องกับงานตั้งแต่เข้ามาทำงานในโรงพยาบาลนี้มากน้อยเพียงใด

( ไม่เคย /  นานๆครั้ง /  ปีละครั้ง /  ปีละ 2-3ครั้ง /  มากกว่าปีละ 3 ครั้ง)

**ส่วนที่ 2: ทวนทางสังคม**

กรุณานึกถึงบุคคลในหน่วยงานของคุณที่ช่วยเหลืออาชีพการงานของคุณ เป็นตัวแทนของคุณในการสื่อสาร ให้ข้อมูลข่าวสาร ให้โอกาสทางอาชีพ ข้อเสนอแนะ หรือ ช่วยเหลือด้านจิตใจ หรือ เป็นบุคคลที่คุณพูดคุยเกี่ยวกับความยากง่ายของงาน โอกาสในงานต่างๆ หรือ เป้าหมายระยะยาว

วิธีการ: โปรดทำเครื่องหมาย X ลงในช่องว่างที่ตรงกับบุคคลแต่ละคน

คนที่	ความสัมพันธ์กับบุคคลนี้*				ระดับในหน่วยงาน		
	สนิทมาก	สนิท	ค่อนข้างสนิท	ห่างไกล	ต่ำกว่าคุณ	เท่ากับคุณ	สูงกว่าคุณ
1							
2							
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20							

หมายเหตุ \* สนิทมาก หมายถึง ติดต่อพูดคุยได้ทุกเรื่อง  
 สนิท หมายถึง ติดต่อพูดคุยได้เกือบทุกเรื่อง  
 ค่อนข้างสนิท หมายถึง ติดต่อพูดคุยได้หลายเรื่อง  
 ห่างไกล หมายถึง ติดต่อพูดคุยได้เฉพาะบางเรื่องเท่านั้น

**ส่วนที่ 3: การเข้าถึงแหล่งข้อมูลต่างๆ**

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความด้านล่าง โดยให้วงกลมคำตอบในช่องด้านขวา

	ไม่เห็นด้วย อย่างมาก	เห็นด้วย อย่างมาก
1. คุณสามารถหาแหล่งข้อมูลต่างๆได้อย่างเพียงพอในการสนับสนุนแนวความคิดใหม่ๆของคุณ	1 2 3 4 5 6 7	
2. เมื่อคุณต้องการแหล่งข้อมูลต่างๆเพิ่มเติมในการทำงาน คุณมักจะเข้าถึงแหล่งข้อมูลนั้นๆได้	1 2 3 4 5 6 7	
3. คุณสามารถเข้าถึงแหล่งข้อมูลต่างๆที่คุณต้องการในการทำงานของคุณได้เป็นอย่างดี	1 2 3 4 5 6 7	

**ขอบคุณอย่างสูงสำหรับความร่วมมือของคุณ**

## ข้อตกลงความลับของข้อมูล

คำตอบใบแบบสอบถามนี้และข้อมูลอื่น ๆ ทั้งหมดที่ท่านให้เราจะถูกเก็บเป็นความลับ หากผลการศึกษาวิจัยครั้งนี้มีการเผยแพร่หรือนำเสนอในที่ประชุมทางวิทยาศาสตร์ ชื่อของคุณจะไม่ถูกเปิดเผย

รหัสพยาบาล .....

รหัสด้านหน้า .....

## ส่วนที่ 1.1: ความรู้

วิธีการ: โปรดระบุว่าท่านเห็นด้วยเพียงใดกับข้อความเกี่ยวกับความรู้ของพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา

พยาบาลท่านนี้มีควมรู้ดังต่อไปนี้

	ไม่เห็นด้วย		เห็นด้วย				
	อย่างมาก			อย่างมาก			
<b>1 ความรู้ด้านพยาบาลศาสตร์:</b> ความรู้เกี่ยวกับข้อมูลและเทคนิคที่ใช้ในการวินิจฉัยและรักษาคอนไซ์ที่บาดเจ็บ, เจ็บป่วย, ผิดปกติ, หรือพิการ ความรู้นี้ได้แก่ อาการของโรค, วิธีการรักษาแบบต่างๆ, คุณสมบัติและผลข้างเคียงของยาชนิดต่างๆ, และวิธีดูแลสุขภาพเชิงป้องกัน	1	2	3	4	5	6	7
<b>2 การบริการคนไข้:</b> ความรู้เกี่ยวกับหลักการและวิธีการบริการคนไข้ ความรู้นี้ประกอบด้วย การประเมินความต้องการของคนไข้, การประเมินมาตรฐานคุณภาพของการบริการ, และการประเมินความพึงพอใจของคนไข้	1	2	3	4	5	6	7
<b>3 จิตวิทยา:</b> ความรู้เกี่ยวกับพฤติกรรมและประสิทธิภาพของมนุษย์; ความเข้าใจในความแตกต่างของบุคคลในเรื่องความสามารถ, บุคลิกภาพ, และความสนใจ; การเรียนรู้และการจูงใจ; วิธีวิจัยทางจิตวิทยา; และการประเมินและรักษาความผิดปกติทางพฤติกรรมและอารมณ์	1	2	3	4	5	6	7
<b>4 ภาษา:</b> ความรู้เกี่ยวกับโครงสร้างและเนื้อหาของภาษา ซึ่งประกอบด้วย ความหมายและการสะกดคำ, กฎของสร้างประโยค, และไวยากรณ์	1	2	3	4	5	6	7
<b>5 การศึกษาและการฝึกอบรม:</b> ความรู้เกี่ยวกับหลักการและวิธีการสำหรับการออกแบบหลักสูตรและการฝึกอบรม, การสอนและการแนะนำสำหรับบุคคลและกลุ่ม, และการประเมินผลการฝึกอบรม	1	2	3	4	5	6	7

สำหรับหัวหน้า

<p><b>6 การบำบัดและการให้คำปรึกษา:</b> ความรู้เกี่ยวกับหลักการ, วิธีการ, และขั้นตอนการวินิจฉัย, การรักษา, และการฟื้นฟูความผิดปกติทางร่างกายและจิตใจ, และการให้คำปรึกษาและแนะแนวทางในการประกอบอาชีพ</p>	<p>1 2 3 4 5 6 7</p>
<p><b>7 ชีววิทยา:</b> ความรู้เกี่ยวกับพืชและสัตว์, เนื้อเยื่อ, เซลล์, การทำงาน, การพึ่งพากัน, และปฏิสัมพันธ์ระหว่างกันและต่อสิ่งแวดล้อม</p>	<p>1 2 3 4 5 6 7</p>
<p><b>8 คณิตศาสตร์:</b> ความรู้เกี่ยวกับเลขคณิต, พีชคณิต, เรขาคณิต, แคลคูลัส, สถิติ, และการประยุกต์ใช้</p>	<p>1 2 3 4 5 6 7</p>
<p><b>9 สังคมวิทยาและมานุษยวิทยา:</b> ความรู้เกี่ยวกับพฤติกรรมและการเปลี่ยนแปลงของกลุ่มคน, แนวโน้มและอิทธิพลของสังคม, การอพยพของมนุษย์, เชื้อชาติ, วัฒนธรรม, และประวัติศาสตร์และต้นกำเนิดของวัฒนธรรม</p>	<p>1 2 3 4 5 6 7</p>
<p><b>10 ความปลอดภัยในชีวิตและทรัพย์สิน:</b> ความรู้เกี่ยวกับอุปกรณ์, นโยบาย, ขั้นตอน, และกลยุทธ์ที่เกี่ยวข้องในการส่งเสริมความปลอดภัยสำหรับท้องถิ่นหรือประเทศชาติในการปกป้องผู้คน, ข้อมูล, ทรัพย์สินและสถาบันอย่างมีประสิทธิภาพ</p>	<p>1 2 3 4 5 6 7</p>

## ส่วนที่ 1.2: ทักษะความชำนาญ

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับทักษะความชำนาญของพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา

พยาบาลท่านนี้มีทักษะความชำนาญดังต่อไปนี้

	ไม่เห็นด้วย อย่างมาก	เห็นด้วย อย่างมาก
1 การรับรู้ทางสังคม: การรับรู้ปฏิกิริยาของผู้อื่นและเข้าใจว่าทำไมพวกเขามีปฏิกิริยาแบบนั้น	1	2 3 4 5 6 7
2 การเป็นผู้ฟังที่ดี: การให้ความสนใจอย่างเต็มที่กับสิ่งที่ผู้อื่นพูด, การใช้เวลาในการทำความเข้าใจจุดสำคัญของเนื้อหา, การตั้งคำถามตามความเหมาะสม, และไม่รบกวนในช่วงเวลาที่ไม่เหมาะสม	1	2 3 4 5 6 7
3 การประสานงาน: การปรับพฤติกรรมให้สัมพันธ์กับพฤติกรรมของผู้อื่น	1	2 3 4 5 6 7
4 การพูด: การพูดคุยกับผู้อื่นเพื่อถ่ายทอดข้อมูลได้อย่างมีประสิทธิภาพ	1	2 3 4 5 6 7
5 การคิดเชิงวิเคราะห์: การใช้ตรรกะและเหตุผลในการระบุจุดแข็งและจุดอ่อนของทางเลือกของวิธีการ, ข้อเสนอหรือแนวทางในการแก้ไขปัญหา	1	2 3 4 5 6 7
6 การอ่านเพื่อความเข้าใจ: การเข้าใจประโยคและเนื้อหาในเอกสารที่เกี่ยวข้องกับการทำงาน	1	2 3 4 5 6 7
7 จิตใจในการบริการ: กระตือรือร้นในการมองหาวิธีการช่วยเหลือผู้อื่น	1	2 3 4 5 6 7
8 การตรวจสอบและการประเมิน: การตรวจสอบ/การประเมินประสิทธิภาพการทำงานของตัวเอง, บุคคลอื่น, หรือองค์กร เพื่อให้เกิดการปรับปรุง หรือดำเนินการแก้ไข	1	2 3 4 5 6 7
9 คุณพินิจและการตัดสินใจ: การใช้ข้อดีและข้อเสียของทางเลือกต่างๆ เพื่อพิจารณาเลือกสิ่งที่เหมาะสมที่สุด	1	2 3 4 5 6 7
10 วิทยาศาสตร์: การใช้กฎและวิธีการทางวิทยาศาสตร์ในการแก้ปัญหา	1	2 3 4 5 6 7

## ส่วนที่ 1.3:ความสามารถ

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับความสามารถของพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา

พยาบาลท่านนี้มีความสามารถดังต่อไปนี้

	ไม่เห็นด้วย อย่างมาก						เห็นด้วย อย่างมาก
<b>1 ความไวในการรับรู้ปัญหา :</b> ความสามารถในการรับรู้ว่ามีสิ่งผิดปกติหรือมีโอกาที่จะเกิดสิ่งผิดปกติ ความสามารถนี้ไม่เกี่ยวข้องกับการแก้ปัญหา เพียงแต่เป็นการรับรู้ว่ามีปัญหาเกิดขึ้น	1	2	3	4	5	6	7
<b>2 การใช้เหตุผลแบบจุดเล็กสู่ภาพรวม:</b> ความสามารถในการรวบรวมข้อมูลเล็กๆน้อยๆให้อยู่ในรูปแบบกฎทั่วไปหรือข้อสรุป (รวมถึงการหาความสัมพันธ์ระหว่างเหตุการณ์ที่ดูเหมือนไม่เกี่ยวข้องกัน)	1	2	3	4	5	6	7
<b>3 ความเข้าใจในการใช้ภาษาพูด:</b> ความสามารถที่จะฟังและทำความเข้าใจข้อมูลและความคิดที่นำเสนอผ่านทางคำพูด	1	2	3	4	5	6	7
<b>4 การใช้เหตุผลจากภาพรวมสู่จุดเล็ก:</b> ความสามารถในการประยุกต์กฎทั่วไปในการแก้ไขปัญหาเฉพาะอย่างเพื่อให้ได้คำตอบที่สมเหตุสมผล	1	2	3	4	5	6	7
<b>5 การเรียงลำดับข้อมูล:</b> ความสามารถในการจัดสิ่งของหรือพฤติกรรมให้อยู่ในลำดับหรือรูปแบบตามกฎเฉพาะอย่างหรือกรอบกฎเกณฑ์ (เช่น รูปแบบของตัวเลข, ตัวอักษร, คำ, รูปภาพ, เครื่องหมายคณิตศาสตร์)	1	2	3	4	5	6	7
<b>6 การแสดงออกทางภาษาพูด:</b> ความสามารถในการสื่อสารข้อมูลและความคิดโดยการพูดเพื่อให้ผู้อื่นเข้าใจ	1	2	3	4	5	6	7
<b>7 ความเข้าใจในงานเขียน:</b> ความสามารถที่จะอ่านและทำความเข้าใจข้อมูลและความคิดที่นำเสนอในงานเขียน	1	2	3	4	5	6	7
<b>8 ความชัดเจนในการออกเสียงพูด:</b> ความสามารถในการออกเสียงพูดอย่างชัดเจนเพื่อให้ผู้อื่นสามารถเข้าใจคุณ	1	2	3	4	5	6	7
<b>9 การรับรู้คำพูด:</b> ความสามารถในการแยกแยะและเข้าใจคำพูดของบุคคลอื่น	1	2	3	4	5	6	7
<b>10 การแสดงออกโดยการเขียน:</b> ความสามารถในการสื่อสารข้อมูลและความคิดโดยการเขียนเพื่อให้ผู้อื่นเข้าใจ	1	2	3	4	5	6	7

## ส่วนที่ 2.1: คุณค่า

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับความรู้, ทักษะความชำนาญ, และความสามารถของพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา  
 พยาบาลท่านนี้มีความรู้ ทักษะความชำนาญ และความสามารถ ที่ .....

	ไม่เห็นด้วย				เห็นด้วย		
	1	2	3	4	5	6	7
1 มีบทบาททำให้เกิดความคิดสร้างสรรค์	1	2	3	4	5	6	7
2 สร้างความคุ้มค่าแก่คนไข้	1	2	3	4	5	6	7
3 ช่วยลดค่าใช้จ่ายในการบริการ	1	2	3	4	5	6	7
4 ช่วยให้โรงพยาบาลนี้มีบริการที่ดีต่อคนไข้	1	2	3	4	5	6	7
5 ช่วยให้เกิดการพัฒนาการบริการในแบบใหม่	1	2	3	4	5	6	7
6 พัฒนาการบริการที่ถือว่าดีที่สุดเมื่อเทียบกับโรงพยาบาลอื่น	1	2	3	4	5	6	7
7 เพิ่มประสิทธิภาพและประสิทธิผลของโรงพยาบาลนี้	1	2	3	4	5	6	7
8 ช่วยให้โรงพยาบาลนี้ตอบสนองต่อความต้องการใหม่ๆหรือความต้องการที่เปลี่ยนแปลงไปของคนไข้ได้	1	2	3	4	5	6	7
9 ช่วยให้โรงพยาบาลนี้บริการคนไข้ได้ในราคาถูกลง	1	2	3	4	5	6	7
10 สร้างความพึงพอใจต่อคนไข้	1	2	3	4	5	6	7
11 จำเป็นในการรักษาคุณภาพของการบริการ	1	2	3	4	5	6	7
12 มีบทบาทในการปรับปรุงกระบวนการต่างๆ	1	2	3	4	5	6	7

**ส่วนที่ 2.2: ความหายาก**

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับความรู้, ทักษะความชำนาญ, และความสามารถของพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา  
**พยาบาลท่านนี้มีความรู้ ทักษะความชำนาญ และความสามารถ ที่ .....**

	ไม่เห็นด้วย				เห็นด้วย	
	อย่างมาก				อย่างมาก	
1 มีไม่มากในตลาดแรงงาน	1	2	3	4	5	6 7
2 ไม่มีในพยาบาลท่านอื่น	1	2	3	4	5	6 7
3 ดีที่สุดในโรงพยาบาล	1	2	3	4	5	6 7
4 ถูกปรับให้เหมาะสมกับความต้องการในงานของพยาบาลท่านนี้	1	2	3	4	5	6 7

**ส่วนที่ 2.3: เลียนแบบไม่ได้**

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับความรู้, ทักษะความชำนาญ, และความสามารถของพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา  
**พยาบาลท่านนี้มีความรู้ ทักษะความชำนาญ และความสามารถ ที่ .....**

	ไม่เห็นด้วย				เห็นด้วย	
	อย่างมาก				อย่างมาก	
1 พัฒนาจากประสบการณ์ทำงาน	1	2	3	4	5	6 7
2 ยากที่พยาบาลท่านอื่นจะเรียนรู้ไปจากพยาบาลท่านนี้	1	2	3	4	5	6 7
3 ยากในการเลียนแบบจากพยาบาลท่านอื่น	1	2	3	4	5	6 7

**ส่วนที่ 2.4: ไม่สามารถทดแทนได้**

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับความรู้, ทักษะความชำนาญ, และความสามารถของพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา  
**พยาบาลท่านนี้มีความรู้ ทักษะความชำนาญ และความสามารถ ที่ .....**

	ไม่เห็นด้วย				เห็นด้วย		
	1	2	3	4	5	6	7
1 ยากในการหาพยาบาลท่านอื่นมาแทน	1	2	3	4	5	6	7
2 เป็นเอกลักษณ์ของพยาบาลท่านนี้	1	2	3	4	5	6	7
3 ทำให้พยาบาลท่านนี้แตกต่างจากพยาบาลท่านอื่น	1	2	3	4	5	6	7

## ส่วนที่ 3.1: พฤติกรรมในหน้าที่

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา

พยาบาลท่านนี้มีพฤติกรรมดังต่อไปนี้

	ไม่เห็นด้วย อย่างมาก	เห็นด้วย อย่างมาก
1 ช่วยเหลือและดูแลผู้อื่น: ให้ความช่วยเหลือในงาน, รักษาพยาบาล, สนับสนุนทางอารมณ์, หรือดูแลผู้อื่น เช่น เพื่อนร่วมงาน หรือ คนไข้	1	2 3 4 5 6 7
2 ทำรายงานและจัดเก็บข้อมูล: ป้อน, คัดลอก, บันทึก, จัดเก็บ, หรือรักษาข้อมูลในรูปแบบเป็นลายลักษณ์อักษรหรือสื่ออิเล็กทรอนิกส์	1	2 3 4 5 6 7
3 เข้าถึงข้อมูล: ตั้งเกต, รับ, และเก็บข้อมูลจากแหล่งข้อมูลที่เกี่ยวข้องทั้งหมด	1	2 3 4 5 6 7
4 ติดต่อสื่อสารกับ หัวหน้า เพื่อนร่วมงาน และลูกน้อง: ให้ข้อมูลกับผู้บังคับบัญชา, เพื่อนร่วมงาน, และผู้ได้บังคับบัญชาผ่านทางโทรศัพท์, เอกสาร, จดหมายอิเล็กทรอนิกส์, หรือตัวต่อตัว	1	2 3 4 5 6 7
5 ตัดสินใจ และ แก้ไขปัญหา: วิเคราะห์ข้อมูลและประเมินผลลัพธ์เพื่อเลือกทางออกที่ดีที่สุด และนำไปแก้ปัญหา	1	2 3 4 5 6 7
6 แยกแยะ สิ่งของ, พฤติกรรม, และ เหตุการณ์ต่างๆ: แยกแยะข้อมูลโดยการจัดหมวดหมู่, การประมาณการ, การรับรู้ถึงความแตกต่างหรือคล้ายคลึงกันของข้อมูล, และการตรวจสอบการเปลี่ยนแปลงของสิ่งแวดล้อมหรือเหตุการณ์	1	2 3 4 5 6 7
7 สร้าง และ รักษาความสัมพันธ์ระหว่างบุคคล: พัฒนาความสัมพันธ์อันดีกับผู้อื่น และรักษาความสัมพันธ์นี้ตลอดเวลา	1	2 3 4 5 6 7
8 จัดการ, วางแผน, และ จัดลำดับงาน : พัฒนาเป้าหมายและแผนงานที่ชัดเจนเพื่อจัดลำดับความสำคัญ, จัดระเบียบ, และบรรลุเป้าหมาย	1	2 3 4 5 6 7
9 ประเมินข้อมูลเพื่อรักษามาตรฐาน: ใช้ข้อมูลที่เกี่ยวข้องและวิจารณ์งานส่วนบุคคลเพื่อตรวจสอบเหตุการณ์หรือกระบวนการว่าถูกต้องตามกฎหมาย, ระเบียบ, หรือมาตรฐาน	1	2 3 4 5 6 7
10 ปรับปรุงและนำความรู้ที่เกี่ยวข้องมาใช้: เรียนรู้เทคนิคที่ทันสมัย และใช้ความรู้ใหม่ๆกับงาน	1	2 3 4 5 6 7

### ส่วนที่ 3.2: พฤติกรรมที่นอกเหนือหน้าที่ (บุคคล)

วิธีการ: โปรดระบุว่าท่านเห็นด้วยเพียงใดกับข้อความเกี่ยวกับพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา

พยาบาลท่านนี้มีพฤติกรรมดังต่อไปนี้

	ไม่เห็นด้วย			เห็นด้วย			
	อย่างมาก						
1 ช่วยเหลือเพื่อนร่วมงานที่ขาดงาน	1	2	3	4	5	6	7
2 เต็มใจใช้เวลาของเขาเพื่อช่วยเหลือเพื่อนร่วมงานที่มีปัญหาด้านงาน	1	2	3	4	5	6	7
3 ปรับตารางเวลาทำงานของเขาเพื่อรองรับการขาดงานของเพื่อนร่วมงาน	1	2	3	4	5	6	7
4 ช่วยทำให้พยาบาลใหม่คุ้นเคยกับหน่วยงาน	1	2	3	4	5	6	7
5 แสดงความเป็นห่วงเป็นใยและจริงใจต่อเพื่อนร่วมงาน ทั้งในสถานที่ทำงานหรือสถานการณ์ส่วนตัว	1	2	3	4	5	6	7
6 ช่วยเหลือเพื่อนร่วมงานในงานต่างๆ	1	2	3	4	5	6	7
7 กระจายข้อมูลที่เกี่ยวข้องกับงานให้เพื่อนร่วมงาน	1	2	3	4	5	6	7

### ส่วนที่ 3.3: พฤติกรรมที่นอกเหนือหน้าที่ (หัวหน้า)

วิธีการ: โปรดระบุว่าท่านเห็นด้วยเพียงใดกับข้อความเกี่ยวกับพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา

พยาบาลท่านนี้มีพฤติกรรมดังต่อไปนี้

	ไม่เห็นด้วย			เห็นด้วย			
	อย่างมาก						
1 ขอมรับผิดชอบงานเพิ่มเมื่อคุณหยุดงาน	1	2	3	4	5	6	7
2 ช่วยเหลือคุณเมื่อคุณทำงานหนัก	1	2	3	4	5	6	7
3 ช่วยเหลืองานของคุณ (แม้คุณไม่ได้ขอร้อง)	1	2	3	4	5	6	7
4 ให้ความสนใจกับคุณเป็นการส่วนตัว	1	2	3	4	5	6	7
5 บอกข้อมูลที่เกี่ยวข้องกับงานกับคุณ	1	2	3	4	5	6	7
6 แสดงความเป็นห่วงเป็นใยและจริงใจต่อคุณ ทั้งในสถานที่ทำงานหรือสถานการณ์ส่วนตัว	1	2	3	4	5	6	7

### ส่วนที่ 3.4: พฤติกรรมที่นอกเหนือหน้าที่ (องค์กร)

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา

พยาบาลท่านนี้มีพฤติกรรมดังต่อไปนี้

	ไม่เห็นด้วย				เห็นด้วย		
	1	2	3	4	5	6	7
1 ตรงต่อเวลา	1	2	3	4	5	6	7
2 มาทำงานมากกว่าพนักงานอื่น	1	2	3	4	5	6	7
3 แจ้งให้ทราบล่วงหน้าก่อนที่จะหยุดงาน	1	2	3	4	5	6	7
4 ไม่หยุดพักโดยไม่มีเหตุผล	1	2	3	4	5	6	7
5 ไม่หยุดพักเกินเวลา	1	2	3	4	5	6	7
6 ไม่ใช้เวลากับการสนทนาที่ไม่เกี่ยวกับงาน	1	2	3	4	5	6	7
7 เข้าร่วมกิจกรรมที่ไม่ได้บังคับตามหน้าที่ แต่ช่วยสร้างภาพลักษณ์ที่ดีให้กับโรงพยาบาล	1	2	3	4	5	6	7
8 เข้าร่วมและมีส่วนร่วมในการประชุมที่ไม่ได้บังคับตามหน้าที่ แต่เกี่ยวกับโรงพยาบาล	1	2	3	4	5	6	7
9 ปกป้องโรงพยาบาลเมื่อพยาบาลท่านอื่นวิพากษ์วิจารณ์	1	2	3	4	5	6	7
10 โชว์ความภาคภูมิใจเมื่อได้เป็นตัวแทนของโรงพยาบาลในที่สาธารณะ	1	2	3	4	5	6	7
11 ให้ความคิดเห็นในการปรับปรุงการทำงานของโรงพยาบาล	1	2	3	4	5	6	7
12 แสดงความจงรักภักดีต่อโรงพยาบาล	1	2	3	4	5	6	7

**ส่วนที่ 4: ผลงาน**

วิธีการ: โปรดระบุว่าคุณเห็นด้วยเพียงใดกับข้อความเกี่ยวกับของพยาบาลท่านนี้ โดยให้วงกลมคำตอบในช่องด้านขวา

พยาบาลท่านนี้มีผลงานดังต่อไปนี้

	ไม่เห็นด้วย				เห็นด้วย		
	1	2	3	4	5	6	7
1 ทำงานตามหน้าที่ได้ครบถ้วน	1	2	3	4	5	6	7
2 รับผิดชอบงานตามรายละเอียดของงาน	1	2	3	4	5	6	7
3 ทำงานตามที่ได้รับมอบหมาย	1	2	3	4	5	6	7
4 ทำงานผ่านเกณฑ์การประเมินผลการปฏิบัติงาน	1	2	3	4	5	6	7
5 เข้าร่วมกิจกรรมที่เป็นส่วนหนึ่งของการประเมินผลการปฏิบัติงานของเขา	1	2	3	4	5	6	7

ขอบคุณอย่างสูงสำหรับความร่วมมือของคุณ

APPENDIX C  
TABLES OF RESULTS (SUPPLEMENT)

Table C1 Context-Generic Human Capital : Item-Total Statistics & Inter-Item Correlation Matrix [30 items]

	Item-Total Correlation	K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
K1	.773	1.000	.819	.690	.650	.693	.725	.586	.496	.527	.628	.652	.603	.560	.665	.691	.693	.605	.655	.689	.642
K2	.808	.819	1.000	.762	.668	.713	.764	.635	.558	.601	.663	.662	.646	.631	.715	.702	.698	.666	.687	.708	.668
K3	.810	.690	.762	1.000	.715	.647	.734	.673	.602	.730	.689	.743	.718	.733	.709	.651	.665	.654	.668	.689	.684
K4	.783	.650	.668	.715	1.000	.664	.666	.713	.658	.679	.718	.618	.637	.617	.685	.616	.689	.578	.638	.642	.728
K5	.731	.693	.713	.647	.664	1.000	.702	.663	.579	.640	.685	.606	.563	.509	.592	.628	.637	.544	.609	.612	.641
K6	.822	.725	.764	.734	.666	.702	1.000	.685	.584	.665	.686	.697	.639	.626	.705	.689	.711	.675	.700	.708	.676
K7	.731	.586	.635	.673	.713	.663	.685	1.000	.815	.770	.708	.584	.586	.538	.578	.546	.592	.541	.546	.570	.705
K8	.658	.496	.558	.602	.658	.579	.584	.815	1.000	.785	.684	.502	.562	.478	.524	.521	.548	.488	.508	.510	.664
K9	.733	.527	.601	.730	.679	.640	.665	.770	.785	1.000	.761	.631	.636	.602	.615	.559	.602	.580	.594	.591	.691
K10	.834	.628	.663	.689	.718	.685	.686	.708	.684	.761	1.000	.711	.706	.679	.703	.672	.734	.673	.742	.703	.711
S1	.828	.652	.662	.743	.618	.606	.697	.584	.502	.631	.711	1.000	.768	.786	.716	.679	.713	.698	.700	.734	.700
S2	.817	.603	.646	.718	.637	.563	.639	.586	.562	.636	.706	.768	1.000	.793	.785	.673	.732	.697	.710	.720	.691
S3	.803	.560	.631	.733	.617	.509	.626	.538	.478	.602	.679	.786	.793	1.000	.792	.703	.713	.731	.706	.722	.680
S4	.876	.665	.715	.709	.685	.592	.705	.578	.524	.615	.703	.716	.785	.792	1.000	.809	.820	.750	.785	.764	.745
S5	.847	.691	.702	.651	.616	.628	.689	.546	.521	.559	.672	.679	.673	.703	.809	1.000	.804	.719	.810	.816	.752
S6	.890	.693	.698	.665	.689	.637	.711	.592	.548	.602	.734	.713	.732	.713	.820	.804	1.000	.746	.811	.824	.808
S7	.815	.605	.666	.654	.578	.544	.675	.541	.488	.580	.673	.698	.697	.731	.750	.719	.746	1.000	.782	.760	.710
S8	.860	.655	.687	.668	.638	.609	.700	.546	.508	.594	.742	.700	.710	.706	.785	.810	.811	.782	1.000	.852	.757
S9	.870	.689	.708	.689	.642	.612	.708	.570	.510	.591	.703	.734	.720	.722	.764	.816	.824	.760	.852	1.000	.801
S10	.860	.642	.668	.684	.728	.641	.676	.705	.664	.691	.711	.700	.691	.680	.745	.752	.808	.710	.757	.801	1.000
A1	.874	.731	.739	.703	.661	.635	.751	.596	.521	.591	.717	.773	.718	.718	.774	.779	.797	.759	.777	.803	.718
A2	.856	.708	.710	.661	.599	.662	.751	.571	.494	.590	.679	.752	.680	.670	.760	.792	.781	.722	.769	.798	.737
A3	.887	.672	.690	.694	.667	.593	.704	.612	.531	.588	.710	.747	.743	.735	.816	.734	.833	.740	.760	.780	.748
A4	.848	.674	.677	.659	.625	.608	.684	.551	.477	.556	.691	.720	.684	.661	.762	.778	.788	.714	.789	.789	.728
A5	.872	.653	.665	.661	.737	.638	.701	.687	.600	.627	.721	.702	.688	.661	.763	.759	.785	.708	.769	.769	.802
A6	.866	.605	.640	.683	.650	.550	.664	.563	.498	.577	.700	.733	.746	.732	.816	.744	.816	.711	.762	.736	.733
A7	.852	.659	.652	.617	.629	.610	.679	.583	.482	.537	.696	.687	.676	.677	.763	.744	.809	.701	.736	.752	.744
A8	.807	.587	.597	.575	.609	.505	.645	.512	.431	.464	.650	.668	.654	.660	.753	.705	.787	.684	.691	.705	.687
A9	.847	.625	.638	.614	.626	.524	.655	.546	.480	.528	.683	.709	.688	.698	.766	.721	.805	.721	.755	.764	.738
A10	.835	.618	.654	.622	.630	.579	.664	.559	.492	.530	.691	.677	.649	.647	.740	.718	.778	.699	.740	.742	.724

Table C1 - *Continued*

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10
K1	.731	.708	.672	.674	.653	.605	.659	.587	.625	.618
K2	.739	.710	.690	.677	.665	.640	.652	.597	.638	.654
K3	.703	.661	.694	.659	.661	.683	.617	.575	.614	.622
K4	.661	.599	.667	.625	.737	.650	.629	.609	.626	.630
K5	.635	.662	.593	.608	.638	.550	.610	.505	.524	.579
K6	.751	.751	.704	.684	.701	.664	.679	.645	.655	.664
K7	.596	.571	.612	.551	.687	.563	.583	.512	.546	.559
K8	.521	.494	.531	.477	.600	.498	.482	.431	.480	.492
K9	.591	.590	.588	.556	.627	.577	.537	.464	.528	.530
K10	.717	.679	.710	.691	.721	.700	.696	.650	.683	.691
S1	.773	.752	.747	.720	.702	.733	.687	.668	.709	.677
S2	.718	.680	.743	.684	.688	.746	.676	.654	.688	.649
S3	.718	.670	.735	.661	.661	.732	.677	.660	.698	.647
S4	.774	.760	.816	.762	.763	.816	.763	.753	.766	.740
S5	.779	.792	.734	.778	.759	.744	.744	.705	.721	.718
S6	.797	.781	.833	.788	.785	.816	.809	.787	.805	.778
S7	.759	.722	.740	.714	.708	.711	.701	.684	.721	.699
S8	.777	.769	.760	.789	.769	.762	.736	.691	.755	.740
S9	.803	.798	.780	.789	.769	.736	.752	.705	.764	.742
S10	.718	.737	.748	.728	.802	.733	.744	.687	.738	.724
A1	1.000	.834	.805	.791	.761	.748	.765	.721	.749	.717
A2	.834	1.000	.784	.853	.751	.743	.747	.687	.721	.721
A3	.805	.784	1.000	.811	.801	.861	.832	.812	.836	.788
A4	.791	.853	.811	1.000	.786	.765	.734	.700	.734	.747
A5	.761	.751	.801	.786	1.000	.802	.783	.752	.782	.785
A6	.748	.743	.861	.765	.802	1.000	.840	.852	.847	.825
A7	.765	.747	.832	.734	.783	.840	1.000	.816	.821	.843
A8	.721	.687	.812	.700	.752	.852	.816	1.000	.865	.792
A9	.749	.721	.836	.734	.782	.847	.821	.865	1.000	.839
A10	.717	.721	.788	.747	.785	.825	.843	.792	.839	1.000

Table C2 Access to Information Resources: Item-Total Statistics & Inter-Item Correlation Matrix [3 items]

	Item-Total Correlation	Access1	Access2	Access3
Access1	.829	1.000	.780	.802
Access2	.846	.780	1.000	.825
Access3	.862	.802	.825	1.000

Table C3 Context-Specific Human Capital: Item-Total Statistics & Inter-Item Correlation Matrix [22 items]

	Item-Total Correlation	Value1	Value2	Value3	Value4	Value5	Value6	Value7	Value8	Value9	Value10	Value11	Value12	Rare1	Rare2	Rare3	Rare4
Value1	.777	1.000	.803	.700	.711	.817	.768	.758	.753	.638	.724	.758	.821	.572	.491	.491	.505
Value2	.831	.803	1.000	.815	.852	.814	.815	.823	.802	.661	.825	.832	.807	.610	.498	.532	.571
Value3	.798	.700	.815	1.000	.816	.791	.788	.818	.786	.772	.742	.775	.752	.578	.433	.524	.547
Value4	.815	.711	.852	.816	1.000	.820	.806	.842	.791	.652	.846	.833	.776	.621	.485	.521	.568
Value5	.830	.817	.814	.791	.820	1.000	.855	.855	.842	.714	.764	.782	.834	.604	.496	.518	.564
Value6	.848	.768	.815	.788	.806	.855	1.000	.893	.853	.705	.764	.791	.809	.644	.506	.583	.587
Value7	.863	.758	.823	.818	.842	.855	.893	1.000	.874	.751	.776	.809	.824	.663	.527	.575	.576
Value8	.824	.753	.802	.786	.791	.842	.853	.874	1.000	.720	.759	.811	.817	.621	.493	.525	.552
Value9	.721	.638	.661	.772	.652	.714	.705	.751	.720	1.000	.644	.634	.644	.530	.401	.509	.481
Value10	.804	.724	.825	.742	.846	.764	.764	.776	.759	.644	1.000	.849	.782	.587	.465	.531	.609
Value11	.822	.758	.832	.775	.833	.782	.791	.809	.811	.634	.849	1.000	.857	.609	.482	.517	.592
Value12	.833	.821	.807	.752	.776	.834	.809	.824	.817	.644	.782	.857	1.000	.644	.519	.527	.594
Rare1	.814	.572	.610	.578	.621	.604	.644	.663	.621	.530	.587	.609	.644	1.000	.794	.774	.738
Rare2	.730	.491	.498	.433	.485	.496	.506	.527	.493	.401	.465	.482	.519	.794	1.000	.802	.658
Rare3	.760	.491	.532	.524	.521	.518	.583	.575	.525	.509	.531	.517	.527	.774	.802	1.000	.737
Rare4	.761	.505	.571	.547	.568	.564	.587	.576	.552	.481	.609	.592	.594	.738	.658	.737	1.000
Inimit1	.722	.599	.638	.640	.594	.632	.666	.637	.613	.579	.602	.636	.650	.552	.430	.502	.596
Inimit2	.694	.446	.450	.409	.418	.465	.447	.479	.436	.464	.433	.417	.456	.662	.775	.676	.607
Inimit3	.679	.425	.423	.416	.405	.452	.452	.474	.455	.483	.422	.433	.449	.642	.726	.622	.611
NonSub1	.749	.501	.503	.467	.484	.498	.526	.532	.482	.476	.487	.495	.507	.712	.802	.799	.648
NonSub2	.820	.564	.616	.613	.610	.592	.668	.661	.611	.514	.627	.630	.631	.745	.664	.697	.727
NonSub3	.812	.549	.602	.576	.594	.576	.625	.637	.580	.483	.597	.604	.607	.751	.716	.724	.712

Table C3 - *Continued*

	Inimit1	Inimit2	Inimit3	NonSub1	NonSub2	NonSub3
Value1	.599	.446	.425	.501	.564	.549
Value2	.638	.450	.423	.503	.616	.602
Value3	.640	.409	.416	.467	.613	.576
Value4	.594	.418	.405	.484	.610	.594
Value5	.632	.465	.452	.498	.592	.576
Value6	.666	.447	.452	.526	.668	.625
Value7	.637	.479	.474	.532	.661	.637
Value8	.613	.436	.455	.482	.611	.580
Value9	.579	.464	.483	.476	.514	.483
Value10	.602	.433	.422	.487	.627	.597
Value11	.636	.417	.433	.495	.630	.604
Value12	.650	.456	.449	.507	.631	.607
Rare1	.552	.662	.642	.712	.745	.751
Rare2	.430	.775	.726	.802	.664	.716
Rare3	.502	.676	.622	.799	.697	.724
Rare4	.596	.607	.611	.648	.727	.712
Inimit1	1.000	.506	.498	.506	.666	.609
Inimit2	.506	1.000	.896	.798	.630	.677
Inimit3	.498	.896	1.000	.748	.625	.661
NonSub1	.506	.798	.748	1.000	.732	.785
NonSub2	.666	.630	.625	.732	1.000	.914
NonSub3	.609	.677	.661	.785	.914	1.000

Table C4 In-Role Behavior: Item-Total Statistics & Inter-Item Correlation Matrix [10 items]

	Item-Total Correlation	Behav1	Behav2	Behav3	Behav4	Behav5	Behav6	Behav7	Behav8	Behav9	Behav10
Behav1	.790	1.000	.693	.706	.715	.700	.695	.770	.687	.709	.674
Behav2	.826	.693	1.000	.871	.718	.747	.726	.637	.720	.730	.766
Behav3	.861	.706	.871	1.000	.768	.795	.787	.639	.749	.766	.788
Behav4	.846	.715	.718	.768	1.000	.791	.770	.761	.736	.744	.753
Behav5	.901	.700	.747	.795	.791	1.000	.896	.719	.848	.838	.815
Behav6	.896	.695	.726	.787	.770	.896	1.000	.718	.861	.849	.802
Behav7	.794	.770	.637	.639	.761	.719	.718	1.000	.707	.723	.704
Behav8	.879	.687	.720	.749	.736	.848	.861	.707	1.000	.878	.802
Behav9	.892	.709	.730	.766	.744	.838	.849	.723	.878	1.000	.844
Behav10	.873	.674	.766	.788	.753	.815	.802	.704	.802	.844	1.000

Table C5 OCB-I: Item-Total Statistics & Inter-Item Correlation Matrix [7 items]

	Item-Total Correlation	OCB_I1	OCB_I2	OCB_I3	OCB_I4	OCB_I5	OCB_I6	OCB_I7
OCB_I1	.843	1.000	.813	.865	.734	.744	.737	.703
OCB_I2	.886	.813	1.000	.837	.782	.798	.808	.768
OCB_I3	.851	.865	.837	1.000	.753	.738	.738	.705
OCB_I4	.870	.734	.782	.753	1.000	.840	.806	.826
OCB_I5	.888	.744	.798	.738	.840	1.000	.879	.831
OCB_I6	.885	.737	.808	.738	.806	.879	1.000	.846
OCB_I7	.856	.703	.768	.705	.826	.831	.846	1.000

Table C6 OCB-S: Item-Total Statistics & Inter-Item Correlation Matrix [6 items]

	Item-Total Correlation	OCB_S1	OCB_S2	OCB_S3	OCB_S4	OCB_S5	OCB_S6
OCB_S1	.811	1.000	.859	.788	.657	.735	.705
OCB_S2	.889	.859	1.000	.894	.731	.798	.765
OCB_S3	.898	.788	.894	1.000	.790	.804	.803
OCB_S4	.848	.657	.731	.790	1.000	.816	.894
OCB_S5	.880	.735	.798	.804	.816	1.000	.856
OCB_S6	.884	.705	.765	.803	.894	.856	1.000

Table C7 OCB-O: Item-Total Statistics & Inter-Item Correlation Matrix [12 items]

	Item-Total Correlation	OCB_O1	OCB_O2	OCB_O3	OCB_O4	OCB_O5	OCB_O6	OCB_O7	OCB_O8	OCB_O9	OCB_O10	OCB_O11	OCB_O12
OCB_O1	.753	1.000	.660	.618	.609	.689	.592	.605	.583	.623	.509	.561	.610
OCB_O2	.714	.660	1.000	.541	.539	.549	.574	.587	.589	.584	.537	.619	.567
OCB_O3	.690	.618	.541	1.000	.727	.655	.555	.468	.483	.517	.495	.558	.517
OCB_O4	.721	.609	.539	.727	1.000	.822	.530	.516	.495	.525	.546	.542	.544
OCB_O5	.759	.689	.549	.655	.822	1.000	.671	.543	.496	.574	.551	.559	.589
OCB_O6	.742	.592	.574	.555	.530	.671	1.000	.642	.600	.651	.522	.604	.641
OCB_O7	.792	.605	.587	.468	.516	.543	.642	1.000	.879	.746	.616	.667	.739
OCB_O8	.772	.583	.589	.483	.495	.496	.600	.879	1.000	.758	.611	.657	.704
OCB_O9	.832	.623	.584	.517	.525	.574	.651	.746	.758	1.000	.744	.772	.846
OCB_O10	.745	.509	.537	.495	.546	.551	.522	.616	.611	.744	1.000	.792	.713
OCB_O11	.802	.561	.619	.558	.542	.559	.604	.667	.657	.772	.792	1.000	.768
OCB_O12	.819	.610	.567	.517	.544	.589	.641	.739	.704	.846	.713	.768	1.000

Table C8 Performance: Item-Total Statistics & Inter-Item Correlation Matrix [5 items]

	Item-Total Correlation	Perform1	Perform2	Perform3	Perform4	Perform5
Perform1	.941	1.000	.926	.927	.872	.878
Perform2	.943	.926	1.000	.943	.868	.871
Perform3	.950	.927	.943	1.000	.884	.875
Perform4	.913	.872	.868	.884	1.000	.893
Perform5	.912	.878	.871	.875	.893	1.000

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