

THE IMPACT OF LEARNING ORGANIZATIONS ON
KNOWLEDGE PERFORMANCE, ADAPTIVE PERFORMANCE, AND FINANCIAL
PERFORMANCE

by

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(Under the Direction of Karen E. Watkins)

ABSTRACT

The purpose of this study was to (1) examine a learning organization's effects on knowledge performance, adaptive performance, and financial performance and the relationships among them and (2) identify correlations in measures of knowledge performance and adaptive performance; and thus seek to validate the knowledge performance and adaptive performance constructs.

This study employed a survey that consists of 43 items of a learning organization, 6 items of financial performance, and 6 items of knowledge performance from the *Dimensions of a Learning Organization Questionnaire (DLQO)* and 6 adapted items of adaptive performance from several empirical studies. All data were collected from April to May, 2016 using Amazon Mechanical Turk ($N = 560$). This study applied factor analysis and structural equation modeling analysis and used Mplus.

The results supported most of the research hypotheses of this study: (1) a learning organization has a positive effect on knowledge performance ($z\text{-score} = .81, p < .001$); (2) a learning organization has a positive effect on adaptive performance ($z\text{-score} = .74, p < .001$); (4)

knowledge performance has a positive effect on financial performance ($z\text{-score} = .59, p < .001$); (5) adaptive performance has a positive effect on financial performance ($z\text{-score} = .36, p < .001$); (6) knowledge performance mediates the positive relationship between a learning organization and financial performance ($z\text{-score} = .47, p < .001$); (7) adaptive performance mediates the positive relationship between a learning organization and financial performance ($z\text{-score} = .26, p < .001$); and (8) knowledge performance and adaptive performance are correlated to each other ($r = .80, p < .01$). Hypothesis (3), a learning organization has a positive effect on financial performance, was not supported.

This study reiterated the significance of a learning organization. In particular, the results suggested that a learning organization positively and indirectly affects financial performance through knowledge performance and adaptive performance, which implies the importance of learning in facilitating both intangible and tangible performance. Although this study validated the knowledge performance and adaptive performance constructs, more empirical studies are recommended to unveil the essence of organizational performance.

INDEX WORDS: Learning organizations, knowledge performance, adaptive performance, financial performance, human resource development, organizational development, knowledge assets

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DEDICATION

I dedicate this dissertation to my parents, Yukrye Yang and Keehyun Kim, as well as my sisters, Jiyoung and Juyoung. Dear Mom and Dad, I am always yours.

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CHAPTER 1

INTRODUCTION

The challenge that organizations face in the current hypercompetitive environment is threatening their survival. Achieving positive financial performance, such as high return on investments or return on assets, becomes a necessary condition for continued success and even survival. Organizations utilize their tangible assets to obtain the highest short-term financial performance; however, modern organizations can no longer achieve sustainable success only through their physical assets.

Ultimately, organizations need to acquire and use intangible assets to become flexible and cope with constant changes in both internal and external environments (Kaplan & Norton, 1992). As a way of finding an optimal source of developing such capabilities, researchers have emphasized building a systemic learning culture in organizations (Senge, 1990; Watkins & Marsick, 1993).

A primary characteristic of a learning organization is continuous learning that enables an organization to steadily transform (Watkins & Marsick, 1993). Indeed, learning is one focus area in organization studies, because not only is learning a fundamental driving force for financial performance (Kaplan & Norton, 1992) but it also provides a stable environment for creating organizational performance in general (March, 1991). In this vein, learning plays a critical role in terms of accomplishing organizational performance; and encouraging continuous learning will promote this performance.

Researchers have sought ways of facilitating learning, which are located at the heart of a learning organization (Sun & Scott, 2003). Several areas of focus in enhancing learning in organizations include, but not limited to, the role of managers (McGill, Slocum, & Lei, 1992; Ulrich, Jick, & Von Glinow, 1993) and activities that lead to learning (Garvin, 1993). They believe that considerable effort in several areas is needed for most organizations to reach the level of a learning organization to which they aspire (Örtenblad, 2001; Sun & Scott, 2003).

Watkins and Marsick (1993) explained these efforts in an integrative manner. They proposed seven action imperatives to becoming a learning organization based on their research and experience in the practical human resource development (HRD) field: creating continuous learning opportunities, promoting dialogue and inquiry, encouraging collaboration and team learning, creating systems to capture and share learning, empowering people toward a collective vision, connecting the organization to its environment, and having leaders who support learning. Furthermore, Watkins and Marsick (1997) developed the *Dimensions of a Learning Organization Questionnaire (DLOQ)*, an instrument to measure degrees of a learning organization at the individual, team, organizational, and system levels. The *DLOQ* has been widely used as a tool to diagnose a learning organization and to identify strategies to improve an organization's learning culture.

Thus far, there are more than 70 published *DLOQ* studies (Watkins & O'Neil, 2013). Recent literature reviews of learning organizations using the *DLOQ* explained how studies have been conducted (Kim, Egan, & Tolson, 2015; Song, Chermack, & Kim, 2013). Researchers have adopted the *DLOQ* in order to diagnose the degree of a learning organization and explore its diverse effects on an organization (Abdullah & Kassim, 2008; Chermack, Lynham, & Merwe, 2006; Davis & Daley, 2008; Dymock, 2003; Kassim & Nor, 2007; Wang, Yang, & McLean,

2007) as well as to examine the effects of a learning organization on organizational behavior (Dirani, 2009; Egan, Yang, & Bartlett, 2004; Park, Song, Yoon, & Kim, 2014; Parsa, Idris, Samah, Wahat, Parsa, & Parsa, 2014; Pool & Pool, 2007; Song, Kim, & Kolb, 2009; Wang, 2007) and analyze the effects of a learning organization on individual careers (Abu-Tineh, 2011; Park, 2009, Parsa et al., 2014). Furthermore, it allows researchers to explore relationships between a learning organization and issues related to knowledge (Hernandez & Watkins, 2003; Ismail, 2005; Song, 2008; Sta. Maria, 2003; Sta. Maria & Watkins, 2003).

The fact that the *DLOQ* contains items measuring perceptions of organizational performance has allowed abundant studies to investigate the relationship between a learning organization and organizational financial, knowledge, and mission performance (Awasthy & Gupta, 2011; Davis & Daley, 2008; Ellinger, Ellinger, Yang, & Howton, 2002; Kumar, 2005; Kumar & Idris, 2006; McHargue, 2003; Noubar, Rose, Kumar, & Salleh, 2011; Rose, Salleh, & Kumar, 2006; Watkins, Milton, & Kurz, 2009; Wetherington & Deniels, 2013; Yu & Chen, 2015). In particular, these studies have shown that a learning organization significantly impacts knowledge performance in addition to financial performance. However, is knowledge performance the exclusive outcome for organizations when they become learning organizations?

Studies propose an idea of taking diverse approaches in understanding performance that is impacted by learning, a promising way of utilizing intangible assets. Kaplan and Norton's (1992) balanced score card takes financial, customer, processes, and innovation and learning into consideration in measuring organizational performance, and innovation and learning functions as a foundation of the other performances. Ability cohering activities across organizations or reconfiguring these activities according to certain changes significantly affects organizational performance, and this ability largely depends on systems, processes, and cultures in

organizations (Gibson & Birkinshaw, 2004). Responsiveness (e.g., product introduction rate relative to competitors) is also regarded as a considerable factor in measuring organizational performance related to learning in organizations (Baker & Sinkula, 1999).

Although analyzing performance derived from intangible assets is challenging (Bontis, 2001; Marr & Adams, 2004), literature shows that these intangible assets share a close relationship with adaptation, i.e. the development of products and the improvement of processes in response to change. However, no studies have been conducted to identify adaptive performance in tandem with knowledge performance.

Adaptation is related to the ability of organizations to continually respond to their environments, properly process information, and quickly adjust to changes (Fiol & Lyles, 1985; Galbraith, 1973; Staber & Sydow, 2002). Adaptive performance has been studied mostly at the individual level (Charbonnier-Voirin, El Akremi, & Vandenberghe, 2010; Chen, Thomas, & Wallace, 2005; Han & Williams, 2008; Pulakos, Arad, Donoban, & Plamondon, 2000; Pulakos, Schmitt, Dorsey, Arad, Borman, & Hedge, 2002). Unlike individual adaptive performance research, adaptive performance studies at the organizational level are scarce (Morgan, Zou, Vorhies, & Katsideas, 2003; Walker & Ruekert, 1987).

Literature suggests that certain relationships underlie a learning organization and adaptive performance at the organizational level. For example, in organizations exposed to constant organizational, environmental, and technological changes, a skill-based workforce plays a significant role in coping with these changes (Youndt, Snell, Dean, & Lepak, 1996). In addition, these skills can be obtained through learning, and an organizational learning culture facilitates the workforce to acquire necessary skills. Moreover, as Kotter and Heskett (1992) demonstrated, “only cultures that can help organizations anticipate and adapt to environmental change will be

associated with superior performance over long periods of time” (p. 44). Although it is a reasonable assumption that learning organizations generate cultures that contribute to organizational performance in response to changes including adaptation, no empirical studies have been conducted to explore a learning organization’s effects on organizational adaptive performance.

The gaps in the literature regarding a learning organization, organizational knowledge, and adaptation clearly suggest the need for a precise investigation of the impact of a learning organization on adaptive performance. There is also a need for an analysis of the similarities or differences between knowledge performance and adaptive performance.

Statement of the Problem

In a knowledge-based economy, intangible assets are essential for organizations to achieve goals and ultimately ensure their survival (Delios & Beamish, 2001). As primary resources for enhancing intangible performance, intangible assets play a significant role in long-term organizational success. Intangible performance enables organizations to adapt to changes in a flexible manner, and leads to future financial performance (Banker, Potter, & Srinivasan, 2000; Olavarrieta & Friedmann, 2008).

HRD scholars and practitioners cultivate learning organizations and facilitate learning and activities to develop people and systems to achieve intangible performance. Thus far, numerous studies have revealed the significant and positive correlations between learning organizations and knowledge performance together with financial performance measured by the *DLOQ* in various organizational contexts (Awasthy & Gupta, 2011; Davis & Daley, 2008; Ellinger et al., 2002; Kumar, 2005; Kumar & Idris, 2006; McHargue, 2003; Noubar et al., 2011; Rose et al., 2006; Watkins et al., 2009; Wetherington & Deniels, 2013; Yu & Chen, 2015).

Learning, which is located at the center of a learning organization, enables an organization to steadily transform (Watkins & Marsick, 1993). In addition, it provides a stable environment for creating a fundamental driving force for organizational performance (Deeds & Decarolis, 1999; Kaplan & Norton, 1992; March, 1991). However, few studies have been conducted to investigate a learning organization's effects on intangible performance beyond knowledge performance. Furthermore, no studies revealed the relationships between intangible performance that are facilitated by a learning organization and financial performance. Guided by theories of a learning organization, this study seeks to understand the impact of a learning organization on organizational knowledge, adaptive, and financial performance and the relationships between the former two performances that are closely related with knowledge assets and financial performance.

Purpose of the Study and Research Hypotheses

The purpose of this study was to: (1) examine a learning organization's effects on knowledge performance, adaptive performance, financial performance, and the relationships among them and (2) identify correlations in measures of knowledge performance and adaptive performance; and thus seek to validate the knowledge performance and adaptive performance constructs (Benson, 1998; Nunnally & Bernstein, 1994). This study tested the following eight key research hypotheses:

1. A learning organization has a positive effect on knowledge performance.
2. A learning organization has a positive effect on adaptive performance.
3. A learning organization has a positive effect on financial performance.
4. Knowledge performance has a positive effect on financial performance.
5. Adaptive performance has a positive effect on financial performance.

6. Knowledge performance mediates the positive relationship between a learning organization and financial performance.
7. Adaptive performance mediates the positive relationship between a learning organization and financial performance.
8. Knowledge performance is correlated with adaptive performance.

Conceptual Framework

This study analyzed organizational knowledge performance, and adaptive performance, financial performance, and their relationships in the context of organizations whose employees number greater than 50 from a learning organization perspective. Watkins and Marsick's (1993) learning organization theory provided the major conceptual framework of this study. The *DLOQ* was used to assess the dimensions of a learning organization and the participants' perceptions of financial and knowledge performance. Items derived from the studies on adaptation (cf. Morgan, Zou et al., 2003; see p. 72) were used to measure perceptions of adaptive performance.

Figure 1 depicts the conceptual framework of this study. The analytic model hypothesizes that a learning organization is estimated by the dimensions of continuous learning, dialogue and inquiry, team learning, embedded systems, empowered people, system connection, and strategic leadership. A learning organization influences knowledge performance, adaptive performance, and financial performance. Both knowledge performance and adaptive performance positively affect financial performance, which mediate the positive relationships between a learning organization and financial performance.

Significance of the Study

This study can contribute to and continuously support the significant role of a learning organization in improving adaptive performance in addition to knowledge performance. Thus

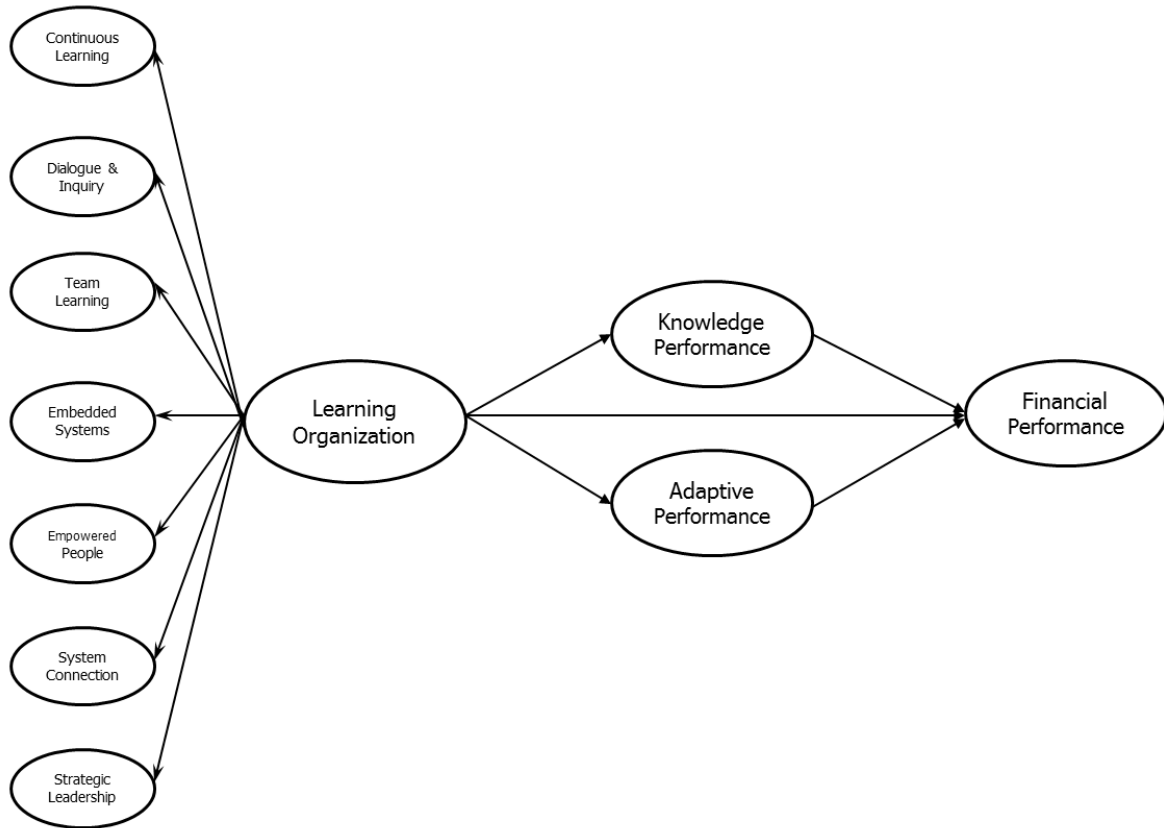


Figure 1. Conceptual framework.

far, abundant studies have revealed positive correlations between the learning organization dimensions and knowledge performance. These relationships imply a higher possibility of causal relationships between them. In addition, if organizational knowledge embraces the concept of adaptation, there is a need to explore the relationship among organizational knowledge related performances, such as adaptive performance. This study re-affirmed the necessity of becoming a learning organization, which is one of the strategic ways to ensure future financial performance and to survive in the current highly competitive and rapidly changing organizational environment.

Moreover, this study takes a significant step toward strengthening the construct validity of the current dimensionality of the theoretical framework of a learning organization proposed by Watkins and Marsick (1993, 1999) and particularly the knowledge performance measure in the *DLOQ*. In fact, the validity of the financial performance measure in the *DLOQ* has been confirmed by comparing secondary financial measures (Davis & Daley, 2008; Ellinger et al., 2002). However, only a few studies have proven the validity of the knowledge performance measure by examining relationships with other constructs of interests (Davis & Daley, 2008; Hernandez, 2000). This study validated the knowledge performance measure by investigating correlations between knowledge performance and adaptive performance.

For the practitioner, this study can contribute to the expansion of the applicability of a learning organization's influence on an organization's performance, especially in terms of organizational knowledge. As Watkins and Marsick (2003) demonstrated, knowledge assets could be a significant predictor of what an organization's future could be like under the condition that the organization optimizes the utilization of the asset. The seven pillars proposed by their framework facilitate becoming a learning organization, which enables an organization to use its knowledge assets efficiently and effectively. By revealing the relationships based on regression coefficients from a learning organization to performance based on knowledge assets in addition to identifying their relationships with financial performance, this study contributed to organizations finding increasingly more reliable ways to move forward in an uncertain future.

Operational Definitions

The following are the operational definitions of the major terms that are the focus of this study.

A Learning Organization

A learning organization is defined as an organization “that learns continuously and transforms itself. Learning is a continuous strategically used process—integrated with and running parallel to work” (Watkins & Marsick, 1993, p. 8).

Financial Performance

Financial performance is defined as “financial health and resources available for growth” (Marsick & Watkins, 2003, p. 139).

Knowledge Performance

Knowledge performance is defined as “creation and enhancement of products and services because of learning and knowledge capacity (lead indicators of intellectual capital)” (Marsick & Watkins, 2003, p. 139).

Adaptive Performance

Adaptive performance is defined as “an organization’s success in responding over time to changing conditions and opportunities in the external environment” (adapted from Walker & Ruekert, 1987, p. 19).

CHAPTER 2

REVIEW OF THE LITERATURE

In order to establish the theoretical background of this study, this chapter reviews literature associated with definitions, research streams, and relationships with the variables proposed in the research hypotheses. This literature review chapter includes three major sections. First, this chapter introduces learning organizations together with organizational learning and examines empirical studies adopting the *DLOQ*. Next, it reviews literature about knowledge performance including relationships among organizational knowledge, intangible assets, and organizational performance. Then, it navigates studies on adaptive performance.

Internet based searches were used to identify literature for inclusion in this review. For literature to be included in this review, the studies had to be scholarly articles, books, and academic dissertations discussing the above four variables. The following major keywords were used in the search process: organizational performance, learning organization, organizational learning, the *DLOQ*, knowledge performance, intangible performance, intangible assets, adaptation, adaptability, adaptive capability, and adaptive performance.

Learning Organizations

This section consists of four sub-sections. First, the two initial sections investigate organizational learning and identify differences with learning organizations. Then, the third part moves to learning organizations, and the final section examines empirical studies with the *DLOQ*. Before starting the review of organizational learning literature, it is beneficial to understand Lewin's field theory, which provides a foundation of studies in organization

development including organizational learning and learning organizations (Wendell & Cecil, 1999). The central concept in field theory is that forces simultaneously occurring in the individual psychological field and life space affect the psychological behaviors of human beings (Lewin, 1948). In field theory, behavior change is a function of the interaction between the person and his or her environment. Behaviors are regarded as conscious experiences in the life space. This means that behaviors are consequences of reconstruction resulting from changes either in the individual and the environment or processes in perceiving the environment.

Lewin's field theory also explained the mechanism of a planned change. A successful change includes "unfreezing the present level, moving to the new level, and freezing group life on the new level" (Lewin, 1947, p. 35). In order to make such a change, it requires consideration of "the total social field: the groups and subgroups involved, their relations, their value systems, etc." (Lewin, 1947, p. 32). Lewin emphasized groups, because not only did he believe that learners achieve at their highest when they experience how their behaviors influence others (Highhouse, 2002), but he also viewed learning as changes in group belongingness or ideology, which is related to culture (Lewin, 1951). Therefore, group standards affect learning and changes in organizations.

Field theory contributes to the foundation of a new approach for building a relationship among changes in the perception of actions or objects and changes in shifting attitudes. This new approach connecting the individual to the external environment prompted the development of studies regarding organizational learning and learning organizations because it shed light on the importance of understanding social contexts in learning.

Organizational Learning

Organizational learning emerged from questions about how organizations learn. The literature allows readers to interpret organizational learning from four different perspectives: adaptation, cognition, information and knowledge, and integration.

First, researchers took an adaptive approach to viewing organizational learning. One assumption at an early stage of organizational learning research was that organizational learning is organizational memory accumulated by experience based on routines in organizations (Cyert & March, 1963). When there is a stimulus that cannot be controlled by the current routines, organizations have to find a new rule in response to the stimulus. The organizational learning process is a reactive adaptation in a one-dimensional manner, which is memorizing this process. Their theory is primarily focused on the short-term success of organizational adaptation, in which organizations meet their goals.

Second, organizational learning can be understood from a cognitive perspective. Argyris and Schön (1978) explained that organizational learning is achieved by individuals serving as agents of the organization. Argyris and Schön (1996) said that organizational learning “occurs when individuals within an organization experience a problematic situation and enquire into it on the organization’s behalf” (p. 16). From their point of view, individuals learn on behalf of the organization.

Argyris and Schön (1978, 1996) focused on collective learning and continuous reflection in organizational learning. They explained this process through the concept of single-loop and double-loop learning. In single-loop learning, errors are detected and corrected in a continuous process of work. On the other hand, in double-loop learning, errors bring questions and challenges concerning taken-for-granted assumptions. Therefore, a collective understanding of

change and modification of long-held values and assumptions in organizations are located at the center of the cognitive perspective in understanding organizational learning.

Some researchers attempted to combine the adaptive and cognitive perspective in understanding organizational learning, especially when intra- and external organizational factors were considered together. Meyer (1982) studied how organizations adapt in response to unexpected external changes in their environments. He identified the antecedents of such changes, which he called environmental jolts, as market strategy, organizational structure, organizational ideology, and slack resource deployment. According to him, organizations react in two different ways against unprecedented environmental changes: resiliency, which refers to the tendency to absorb effects from environmental jolts; or retention, which refers to the tendency to seek new relationships among the antecedents he identified. He further linked resilience to single-loop learning and retention to double-loop learning similar to Argyris and Schön's (1978, 1996) interpretation of organizational learning.

Similarly, March (1991) regarded organizational learning as one of the “adaptive processes” (p. 71) between exploiting current existing knowledge and exploring usable knowledge. From his perspective, organizational learning is the utilization of organizational knowledge that is accumulated mutually by individuals and organizations. According to him, organizations acquire knowledge from individuals who are socialized to share common beliefs that organizations hold simultaneously. In addition, the primary purpose for organizations to exploit and explore organizational knowledge is to attain a more superior position than other organizations.

Thirdly, there are studies that view organizational learning from the information processing and knowledge creation perspectives (Huber, 1991; Nonaka & Dakeuchi, 1995).

Huber (1991) interpreted organizational learning as the outcome of processes from knowledge acquisition, information distribution, and information interpretation, to organizational memory. He further broke down each process with factors affecting the process: knowledge acquisition is associated with congenital learning, experimental learning, vicarious learning, grafting, and searching and noticing; information interpretation is associated with cognitive maps and framing, media richness, information overload, and unlearning; and organizational memory is associated with storing and retrieving information and computer-based organizational memory.

Nonaka and Takeuchi (1995) focused on knowledge creation and innovation. Based on their understanding of Japanese organizations, they argued that knowledge creation produces continuous innovation, and this innovation yields competitive advantages. They divided knowledge into two types, tacit and explicit, according to Polanyi's (1966) classification of human knowledge. Explicit knowledge refers to knowledge that can be expressed to others either verbally or textually, such as databases and work manuals in organizations. As the opposite of explicit knowledge, Polanyi (1966) introduced the notion of tacit knowledge. By shifting back and forth between tacit and explicit knowledge, "organizational knowledge creation can be viewed as an upward spiral process starting at the individual level moving up to the collective (group) level, and then to the organizational level, sometimes reaching out to the interorganizational level" (Nonaka, 1994, p. 20). Here, the directions of interactions create knowledge related to four different modes: socialization, combination, externalization, and internalization. For example, socialization refers to creating tacit knowledge through tacit knowledge, such as building a group based on interactions that bring shared experiences; combination indicates creating explicit knowledge from explicit knowledge by reconstructing existing information in a more concrete manner; and externalization means turning tacit

knowledge into explicit knowledge, in which dialogue plays a critical role in shifting knowledge that was hidden within one person to public expression; internalization is changing explicit knowledge into tacit knowledge that is associated with learning and skillful routines (Nonaka, 1994, pp.18-19). Nonaka (1994) stressed that the externalization and internalization modes are significant in terms of their relationship to the interaction between tacit and explicit knowledge among the four modes. In addition, internalization is specifically important when it comes to organizational learning (Nonaka, 1994).

Lastly, more recent studies have explained organizational learning in more holistic and integrative ways. Crossan, Lane, and White (1999) proposed a framework of organizational learning with the following four steps: intuiting, interpreting, integrating, and institutionalizing. Their framework took March's (1991) view—exploration and exploitation in explaining organizational learning. In their framework, organizational learning is multi-level; intuiting and interpreting occur at the individual level, integrating occurs at the group level, and institutionalizing occurs at the organizational level. They emphasized dialogue and joint actions for the integrating process and embedding individual and group learning into the systems, structures, procedures, and strategies of organizations (p. 525).

The above studies show that organizational learning has been understood in various ways. Organizational learning is related to organizational memory obtained from the routines, individuals' learning as agents of organizations, or the balance between a utilization of existing knowledge and an exploration of new knowledge. It occurs at the individual, group, organizational, and inter-organizational levels. Although various theories emphasized different perspectives, as the recent integrative view shows, ongoing feedback from individuals to groups

and even to organizations has emerged as a significant aspect of organizational learning (Crossan et al, 1999).

Although the above views assist in the understanding of organizational learning in a diverse manner, “organizational learning lacks theoretical integration and research is being done in a non-cumulative way” (Prange, 1999, p. 25). Huber (1991) explained that one of the reasons could be that “the landscape of research...is sparsely populated” (p. 108). Consequently, “there is little agreement on what organizational learning is or how it should be assessed” (Huber, 1991, p. 108). In addition, despite its practical importance, “organizational learning does not provide ‘useful’ knowledge for practitioners” (Prange, 1999, p. 25). Considering that organizational learning lacks discussion on “how organizations might be guided to learn more effectively” (Huber, 1991, p. 109), this study focuses on a learning organization—as an ideal environment for facilitating learning in organizations.

Differences between Organizational Learning and Learning Organizations

There is a term, learning organization, a universal appellation together with organizational learning, which one encounters when exploring organizations and learning. They were used interchangeably until the 1990s (Sun & Scott, 2003). In spite of the fact that it is very challenging to draw a clear line between the two terms, researchers started to identify distinctions between learning organizations and organizational learning in the late 1990’s.

Firstly, organizational learning is a process in organizations whereas a learning organization is a form of organization. Tsang (1997) viewed organizational learning as a descriptive term and learning organizations as a prescriptive term. Similarly, Örténblad (2001) differentiated organizational learning as a process in organizations that naturally occurs, from a learning organization, as a form of organization that needs certain efforts to be carried out. From

his perspective, not every organization has to be a learning organization, while organizational learning occurs in most organizations.

Secondly, considering that a learning organization is a form of organization, there need to be efforts to reach the aspired level of forming a learning organization. Örtenblad (2001) pointed out that a learning organization is an ideal form of organization; as nobody knows what a learning organization would look like, it is therefore unreachable and unknown. Sun and Scott (2003) identified a learning organization as “where learning takes place that moves an organization towards a desired state” (p. 204). They emphasized that “learning must transfer from individual(s) to collective(s) to organizational to inter-organizational, and vice versa, and ‘must’ result in changes in behavior” (p. 204). Therefore, unlike organizational learning that occurs naturally by factors surrounding organizations, an organization can be tailored to reach a certain degree of a learning culture in the learning organization. In this way, a learning organization is an organization development concept, while organizational learning is more of an organizational behavior concept (Watkins, 2014).

A characteristic of learning organizations is that they are able to be cultivated through efforts that distinguish them from organizational learning. Then, what are learning organizations and the ways in which these organizations become learning organizations? The following section explores definitions and features of learning organizations followed by an introduction to the *DLOQ* and empirical studies adopting the *DLOQ*.

Learning Organizations Theories

Scholars began to pay a great deal of attention to learning organizations when Senge (1990) published *The Fifth Discipline*. Senge (1990) conceptualized a learning organization as “a place where people continually expand their capacity to create the results they truly desire, where

new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together” (p. 3). He proposed that a learning organization consists of five fundamental components: personal mastery, mental models, shared vision, team learning, and system thinking. As a frame of thinking, system thinking enables an organization to understand itself as a whole as well as the circular or dynamic relationships between each part of the organization, and also allows consideration of the possible consequences of various situations. The fifth discipline is significantly important in understanding learning organizations, because system thinking not only integrates all of the disciplines, but also serves as a pillar penetrating throughout other learning organization theories.

The exploration of boundaries to identify the dimensions and components of learning organizations continued. Pedler, Boydell, and Burgoyne (1991) used the term *the learning company*, which they defined as “an organization that facilitates the learning of all its members and continuously transforms itself” (p. 1). They emphasized structures that echo learning-centered strategies as learning opportunities: (1) informing (having information technology enabled to inform and empower people), (2) formative accounting and control (that assist learning), (3) internal exchange (internal members regard themselves as external members as well), and (4) reward flexibility assist (5) a learning approach to strategy and (6) participative policy-making are reflected in (7) enabling structures; (8) boundary workers as environmental scanners and (9) inter-company learning that mirrors the enabling structures create (10) learning climate and (11) self-learning development for all. The learning company “tak[es] learning seriously and put[s] it at the centre of its values and operating processes” (Pedler, 1995, p. 23), and these eleven characteristics play a fundamental role in realizing personal development and collaborative inquiry, which eventually contributes to enable an organization to transform itself.

This differs from the training company, which only provides opportunities for learning basic knowledge or developing skills.

Marquardt and Reynolds (1994) also proposed an equal number of elements for being global learning organizations: (1) appropriate structures, (2) corporate learning culture, (3) empowerment, (4) environmental scanning, (5) knowledge creation and transfer, (6) learning technology, (7) quality, (8) strategy, (9) supportive atmosphere, (10) teamwork and networking, and (11) vision. They pointed out quality as one of the essential elements, continuous improvement of quality can be done by a continual question of “how can this be done better” (p. 64), and individuals consistently learn to do everything better in learning organizations. Thus, unlike the previous learning company, global learning organizations put individual and group learning at the center, which are surrounded by the above eleven elements.

The role of managers is also a significant element in explaining learning organizations (McGill et al., 1992; Ulrich et al., 1993). According to McGill et al. (1992), managers as leaders play a primary role in developing employees. Managers in a learning organization are expected to be open and think systemically, creative, and have a sense of efficacy and empathy. In learning organizations, managers invite all possible perspectives in order to make optimal decisions instead of insisting on their own views; they approach a problem with consideration of every aspect that is related to the problem in a holistic manner; managers’ personal flexibility and willingness to take risks enable them to acquire higher levels of efficacy as they actively engage in solving a problem based on their true understanding of themselves; they are concerned with ethics, corporate citizenship, and relationships.

Furthermore, Ulrich et al. (1993) used the term *learning capability* which stresses the significance of managers’ roles in generating and generalizing ideas, thus ensuring the ideas have

an impact. According to Ulrich et al. (1993), ways to encourage a commitment to learning capability are as follows: make learning a visible and central element of the strategic intent; invest in learning; publicly talk about learning; measure, benchmark, and track learning; and create symbols of learning. They also found that continuous improvement (e.g., systems or processes), competence acquisition, experimentation, and boundary spanning are ways of generating ideas based on their empirical analysis of over 380 businesses around the world. In addition, they highlighted that shared mindset, management actions for positive consequences that include appraisal, recognition, and reward, flexible governance, capacity for change, and leadership secure the impacts of the ideas. More importantly, they underlined that sharing ideas across time and vertical and horizontal boundaries as well as across the external and geographic boundaries of organizations is extremely important in acquiring learning capability.

In addition, Jerez-Gomez, Cespedes-Lorente, and Valle-Cabrera (2003) proposed a measure of *learning capability*. With their measure, they revealed that learning capacity is a multi-dimensional construct, which has the dimensions of managerial commitment, systems perspective, openness and experimentation, and knowledge transfer and integration as its sub-constructs. They also confirmed that the above dimensions are significantly and positively correlated with each other, and their correlations range from .40 to .48 ($p < .01$).

Knowledge acquisition, distribution, and utilization are also important aspects in understanding learning organizations. DiBella, Nevis, and Gould (1996) used the term *capacity* “(or process) within an organization to maintain or improve performance based on experience” (p. 363). Their framework explains how organizations obtain, share, and take advantage of knowledge by using seven continuums that have bi-polar orientations. Organizations develop new knowledge from internal or external sources; they invest knowledge in products or

processes; they document knowledge in personal or collective forms; they disseminate knowledge in a formal or informal manner; they learn to improve their current status or to challenge assumptions underlying the current status; they value and support internally-focused or marketing-driven chains; they focus on individual or group skill development (DiBella et al., 1996).

In addition to providing perspectives on elements or characteristics of learning organizations, Dibella (1995) discussed diverse approaches to understanding learning organizations by taking the normative, developmental, and capability perspectives. According to Dibella (1995) the normative perspective sees that the occurrence of learning in organizations depends largely on situations that relate to developing and using skills. The developmental perspective regards organizational evolution affected by certain factors, such as age or size, as influencers that develop learning organizations to acquire the organizational capabilities of adaptation or renewal (Dibella, 1995). Rather than focusing on situations or conditions that affect the process of becoming a learning organization, the capability perspective focuses on cultures and competencies based on continuous collective learning from shared experiences, which makes one organization distinctive from another. This perspective, thus, emphasizes uncovering of differences across organizations, and even within them (Dibella, 1995).

Meanwhile, Garvin (1993) and Goh (1998) provided more concrete and strategic approaches to learning organizations. Garvin (1993) defined a *learning organization* as "an organization skilled at creating, acquiring and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights" (p. 80). Learning organizations are especially adept at the following activities: systemic problem solving, experimentation with new approaches, learning from their own experience and past history, learning from the experiences

and best practices of others, and transferring knowledge quickly and efficiently throughout the organization (Garvin, 1993). In addition, using scientific methods and data, searching and testing new knowledge, sharing learning from successes and failures with employees, seeking new perspectives from external environments, and having mechanisms that spread knowledge in a speedy and efficient manner facilitate the above activities (Garvin, 1993). Later, Garvin, Edmondson, and Gino (2008) proposed a diagnostic tool measuring the degree to which the learning environment, the learning process, and leadership reinforce learning. They also provided benchmark scores that help an organization evaluate itself and find areas for improvement.

Goh (1998) suggested the five strategic building blocks of learning organizations as follows: clarity and support of the mission and vision, shared leadership and involvement, a culture that encourages experimentation, ability to transfer knowledge across organizational boundaries, and teamwork and cooperation. According to Goh (1998), shared vision allows employees to take actions that are consistent with organizational goals and missions; shared leadership invites employees' voices in decision-making processes; a learning culture together with rewards systems accelerates finding new knowledge and opportunities; systems that transfer knowledge as well as successful practices to entire organizations are ideal for learning organizations; working as teams produces opportunities for collective knowledge. In addition, Goh (2001) empirically tested these five blocks, especially experimentation and shared leadership and involvement, to ascertain whether they were correlated with performance outcome as measured by job satisfaction.

Furthermore, Gephart, Marsick, Van Buren, and Sapiro (1996) provided essential features together with facilitative organizational systems that are commonly found in various learning organization models. They regarded *learning organizations* as “an enhanced capacity to learn,

adapt, and change” (p. 36). In learning organizations, continuous learning occurs at the individual, group, and organizational level; systems that capture and synthesize learning enable learning at the systems-level to be greater than sum of the individual and group levels (Gephart et al., 1996). A culture that values learning, including opportunities and rewards and the well-being of employees based on trust and openness, is important in learning organizations (Gephart et al., 1996). Critical and systems thinking, a spirit of flexibility and experimentation, and a people-centered approach are also essential features of learning organizations (Gephart et al., 1996). In addition, facilitative organizational systems are inter-correlated: vision and strategy, leadership and management, culture, structure, change management, and systems and processes including communication, information, and knowledge systems, performance management and support systems, and technology (Gephart et al., 1996, p. 41).

Table 1 supports Gephart et al.’s (1996) analysis on the common elements of learning organizations. As seen in Table 1, it is certain that having systems that encourage and share learning across organizations is essential in learning organizations (Garvin, 1993; Goh, 1998; Jerez-Gomez et al., 2003; Marquardt & Reynolds, 1994; McGill et al., 1992; Pedler et al., 1991; Senge, 1990; Ulrich et al., 1993); in addition, systems providing appropriate and flexible rewards including working patterns are beneficial (Pedler et al., 1991; Ulrich et al., 1993). Another significant aspect is connectivity to their external environments, as organizations should have a strong sense of their external environments (Garvin, 1993; Goh, 1998; Marquardt & Reynolds, 1994; McGill et al., 1992; Pedler et al., 1991). Supportive leadership towards learning is also a significant factor in learning organizations (Goh, 1998; Jerez-Gomez et al. 2003; McGill et al., 1992; Ulrich et al., 1993).

Table 1
Components and Characteristics of Learning Organizations

| Authors | People | Team | Empowering | Structure | | Connecting the | Providing |
|--------------------------------|---|---------------|----------------------------------|---|--|--|--|
| Watkins & Marsick (1993; 1999) | Continuous learning opportunities Promoting dialogue & inquiry | Team learning | people toward a collected vision | Systems to capture and share learning | | organization to its environment | strategic leadership for learning |
| Senge (1990) | Personal mastery (Mental model) | Team learning | Shared vision | | | (System thinking) | |
| Pedler et al. (1991) | Self-development for all | | (Participatory policy making) | Enabling structures Informing Internal exchange | Formative accounting and control Reward flexibility | Boundary workers as environmental scanner Inter-company learning | Learning climate |
| McGill et al. (1992) | | | (Efficacy: clear vision*) | Openness: ready availability of all information to all members* | Creativity: long-term reward policies* | Systemic thinking: relationships across an organization and between an organization and external forces* Empathy: sense of ethics in dealing with | Managers' behavior: openness; systemic thinking; creativity; efficacy; empathy |

Table 1 (continued)

| Authors | People | | | Structure | | | | |
|-----------------------------|--|--|-------------------------------|--|--|---|---|-------------------|
| Ulrich et al. (1993) | Competencies for learning (training/development) | | | Structures, work processes, and systems encourage learning | Performance management systems encourage learning (appraisal, rewards) | employees and customers/clients* | Leadership that commits to learning | |
| Garvin (1993) | | | | Sharing learning from successes/failures with employees Having mechanisms that spread knowledge quickly and efficiently | | Seeking new perspectives from external environments | | |
| Marquardt & Reynolds (1994) | Individual learning | Group learning Team work Net-working | Empowerment (Vision Strategy) | Appropriate structure Knowledge creation and transfer | Learning technology (Continuous improvement of quality) | Environmental scanning | Corporate learning culture Supportive atmosphere | |
| Goh (1998) | Team work | | (Mission and vision) | Transfer of knowledge | | Transfer of knowledge | Leadership | (Experimentation) |

Table 1 (continued)

| Authors | People | | Structure | | |
|---------------------------|---------------------------------|--------------------------------|------------------------------------|----------------------|-------------------------------------|
| Jerez-Gomez et al. (2003) | | (Openness and experimentation) | Knowledge transfer and integration | (System perspective) | Managerial commitment |
| Garvin et al. (2008) | Supportive learning environment | | Concrete learning process | | Leadership that reinforces learning |

Note. (Closest location of the component or characteristic); *examples of managerial practices promote managers' behaviors.

There are several distinguishing points among scholars. For example, Pedler et al. (1991) regarded systems for controlling financial resources as an important component. Marquardt and Reynolds (1994) said proficient use of technology assists learning activities as well as systems that capture learning. Marquardt and Reynolds (1994) and Pedler et al. (1991) suggested a learning culture, learning climate or supportive atmosphere is also a considerable aspect of learning organizations. Although the classification of people and structure in Table 1 is not able to perfectly accommodate the above discussed elements, it can be seen that scholars tend to explain the structural perspectives in organizations; however, some scholars highlighted individual and group/team learning in organizations (Marquardt & Reynolds, 1994; Pedler et al., 1991; Senge, 1990; Ulrich et al., 1993).

Despite these efforts for understanding learning organizations, Garavan (1997) evaluated that “the learning organization literature does not give sufficient attention to the type of individual which is suited to a learning organization” (p. 27). In fact, individual learning is one of the significant elements as seen in Table 1; however, the primary focus is encouraging learning at this level rather than identifying differences in individuals or their learning processes and effects on outcomes resulted from such differences (Garavan, 1997). In addition, valid measures of learning outcomes are insufficient, which yields vagueness in explaining how learning organizations contribute to producing superior learning outcomes (Garavan, 1997).

These various understandings and critiques suggest that taking a comprehensive and solid approach is more desirable to understand learning organizations. More integrated views can be found from Watkins and Marsick’s (1993) framework of the learning organization. Their framework is not only inclusive, but also concerns a cognitive perspective of individuals (Watkins & Golembiewski, 1995). In fact, learning organizations care more about system-level

learning rather than individual learning; however, individuals are valuable not only because they learn as agents of organizations, but also their cognition is a genuine aspect of learning and transformation (Agyris & Schön, 1978, 1996). Moreover, Watkins and Marsick (1997) developed a measure reflecting their framework, which further links learning to organizational outcomes (i.e., the *DLOQ*). Thus, their theory provides the framework for this study.

Watkins and Marsick (1993) defined a *learning organization* as an organization that cultivates a learning culture, so continuous learning occurs at every level—individual, team, organizational, and societal. As a result, the organization is able to transform itself in a timely manner. Their theory primarily focused on system-level continuous learning and its positive impact on organizational performance derived from financial assets as well as non-financial knowledge capital (see Figure 2, Marsick & Watkins, 1999; 2003).

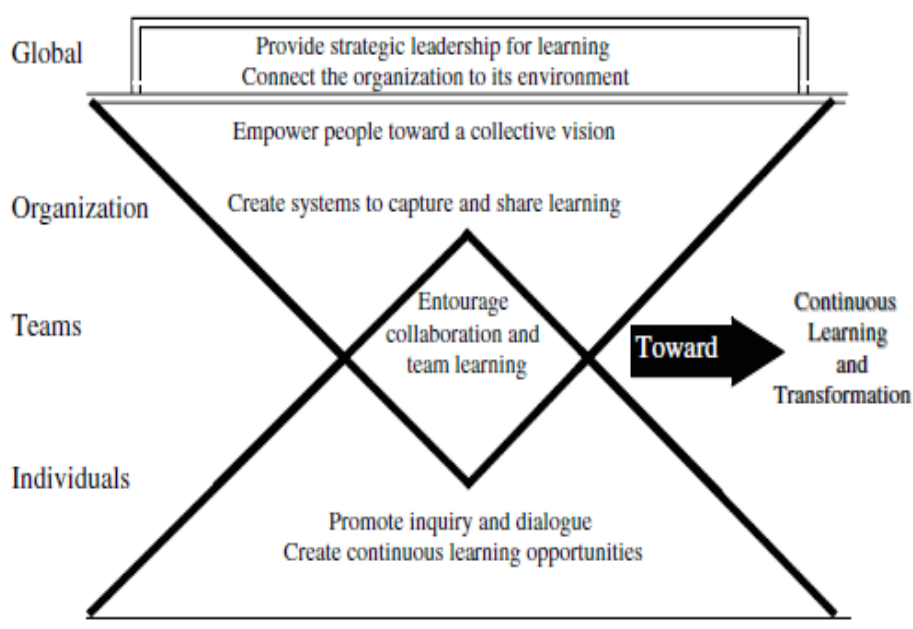


Figure 2. Learning organization action imperatives. Reprinted from *Facilitating learning organizations: Making learning count* (p. 11), by V. J. Marsick, and K. E. Watkins, 1999, Brookfield, VT: Gower. Copyright 1999 by V. J. Marsick, and K. E. Watkins. Reprinted with permission.

In order to create maximized outcomes, Watkins and Marsick (1993) suggested organizations create continuous learning opportunities, promote dialogue and inquiry, encourage collaboration and team learning, create systems to capture and share learning, empower people toward a collective vision, connect the organization to its environment, and have leaders who support learning (Marsick & Watkins, 1999). The next section continues to discuss their seven dimensions, an instrument for measuring the dimensions (i.e., the *DLOQ*), and empirical studies using the *DLOQ*.

The Dimensions of a Learning Organization

Continuous Learning, the first and fundamental dimension, is essential for envisioning the ideal organization wherein individuals are able to experience learning from their work in both formal and informal ways, especially by dealing with problems or challenges that are embedded within their work (Watkins & Marsick, 1993). The continuous work and learning model (Watkins & Marsick, 1993) explains that continuous learning is an iterative process with the following steps: frame the experience, experience challenges, interpret context, examine alternative solutions, reflect in and on action, produce a solution, assess intended and unintended consequences, and plan one's next steps. These steps can be strategized based on the organizational vision, purpose, resistance, and so forth (Watkins & Marsick, 1993).

Dialogue and Inquiry is about interactions between individuals. Inquiry differs from talk in terms of its role as a mediator of learning (Watkins & Marsick, 1993). Dialogue and inquiry trigger learning by exploring “the many sets of unexamined social codes reflected in what they say or refrain from saying” (Watkins & Marsick, 1993, p. 75) in a safe and collaborative environment. In order to facilitate dialogue and inquiry, Watkins and Marsick

proposed that individuals should share their own thoughts, ask for others' thoughts, learn about others' responses, and keep open to others' points of view.

Team Learning enables organizations to achieve success through collective thinking among individuals in organizations (Watkins & Marsick, 1993). Watkins and Marsick (1993) identified the process of team learning as follows: framing, reframing, integrating perspective, experimenting, and crossing boundaries. They recommended assessing team learning skills and changing organizational and team learning conditions to enhance team learning.

Embedded Systems allow for individual learning to become learning at the organizational level (Watkins & Marsick, 1993). This dimension, emphasizing systems that capture and share learning, is a primary way that organizations can continue to perform in spite of their losses in personnel by retaining what individuals know in a knowledge management system. Learning organizations should be knowledgeable in managing information for learning and development (Watkins & Marsick, 1993).

Empowered People are directed towards a shared vision in the learning organization (Watkins & Marsick, 1993). Watkins and Marsick (1993) defined *empowerment* as "active and interactive, with employees and managers engaged in dialogue about their mutual interests" (p. 196). Empowerment happens by harmonizing cultural factors (e.g., values, beliefs, or assumptions) regardless of power; thus, it is critical to have a shared vision to lessen conflicts in organizations (Watkins & Marsick, 1993).

System Connection refers to an organization's awareness of its connection with both external (e.g., community) and internal environments (e.g., work-life balance) (Watkins & Marsick, 1993). It "motivates people to invest in continuous learning and change by creating a link among the long-term needs of individuals, society, and the workplace" (p. 218).

Leaders are people who interpret situations and make decisions, and thus *leadership* is essential for implementing the six dimensions mentioned above (Watkins & Marsick, 1993) to support and create learning cultures in organizations. They lead and model a strategic use of learning to enhance performance. Table 2 shows the above seven dimensions and their definitions.

Table 2
Learning Organization Dimensions and their Definitions

| Dimension | Definition |
|--|--|
| Create continuous learning opportunities | Learning is designed into work so that people can learn on the job; opportunities are provided for ongoing education and growth. |
| Promote inquiry and dialogue | People gain productive reasoning skills to express their views and the capacity to listen and inquire into the views of others; the culture is changed to support questioning, feedback, and experimentation. |
| Encourage collaboration and team learning | Work is designed to use groups to access different modes of thinking; groups are expected to learn together and work together; collaboration is valued by the culture and rewarded. |
| Create systems to capture and share learning | Both high- and low-technology systems to share learning are created and integrated with work; access is provided and systems are maintained. |
| Empower people toward a collective vision | People are involved in setting, owning and implementing a joint vision; responsibility is distributed close to decision making so that people are motivated to learn toward that for which they are accountable. |
| Connect the organization to its environment | People are helped to see the impact of their work on the entire enterprise; people scan the environment and use information to adjust work practices; the organization is linked to its community. |
| Provide strategic leadership for learning | Leaders model, champion and support learning; leadership uses learning strategically for business results. |

Note. Learning organization action imperatives. Reprinted from *Facilitating learning organizations: Making learning count* (p. 50), by V. J. Marsick, and K. E. Watkins, 1999, Brookfield, VT: Gower. Copyright 1999 by V. J. Marsick, and K. E. Watkins. Reprinted with permission.

Watkins and Marsick (1997) developed the *DLOQ*, which captures degrees of the organizational learning dimensions at the individual, team, organizational, and system levels. The forty-three items of the *DLOQ* have been used as a research tool for studying learning organizations, and over 70 articles have been published using the *DLOQ* (Watkins & O'Neil, 2013). The next section reviews empirical studies adopting the *DLOQ*.

Empirical Studies Using the *DLOQ*

Thus far, studies have applied the *DLOQ* to identify areas for improvement in organizations by examining mean scores of the dimensions. Despite the fact that the studies seen in Table 3 used various scales and different numbers of items in diverse organizational contexts which limits direct comparisons among the dimensions, the *System Connections* and *Leadership* dimensions frequently showed higher means, whereas the *Embedded Systems* and *Empowered People* dimensions exhibited relatively lower means based on their frequencies. These mean scores indicate that respondents perceived their organizations as stronger in the former two dimensions and weaker in the latter two dimensions compared to the other dimensions. In addition, several common themes emerged from the reviewing process. These themes included applications of the *DLOQ* to different cultural contexts, relationships between learning organizations and diverse aspects in organizations including organizational behavior and organizational performance.

The *DLOQ* has been used to diagnose learning organizations in different cultural contexts. About ten studies exist that examine the validity of the *DLOQ* in different countries with local languages: Brazil, China, Colombia, Iran, Korea, Lebanon, Malaysia, Taiwan, and Turkey (Basim, Sesen, & Korkmazyurek, 2007; Dirani, 2009; Hernandez & Watkins, 2003; Lien, Hung, Yang, & Li, 2006; Menezes, Guimarães, & Bido, 2011; Song et al., 2009;

Table 3
Means of a Learning Organization's Dimensions

| Authors | CL | DI | TL | ES | EP | SC | SL | FP | KP | MP | Sample |
|----------------------------|-------------|-------------|------|------|-------------|-------------|-------------|------|------|------|---|
| McHargue (1999) | 4.16 | 4.15 | 4.33 | 3.78 | 4.20 | 4.35 | 4.73 | 5.52 | 4.32 | 2.92 | U.S./ NPOs ($N = 264$); cited in Watkins et al. (2009) |
| Hernandez (2003) | 3.94 | 4.16 | 4.01 | 4.09 | 4.21 | 3.96 | 4.27 | | | | Colombia/ ($N = 628$); cited in Watkins & Dirani (2013) |
| Sta.Maria & Watkins (2003) | 4.05 | 4.08 | 3.84 | 3.97 | 3.79 | 3.98 | 4.21 | | | | Malaysia/ government ($N = 628$) |
| Milton (2003) | 4.26 | 4.35 | 4.32 | 3.13 | 4.15 | 3.99 | 4.42 | 3.80 | 3.79 | 4.22 | International association ($N = 264$); cited in Watkins et al. (2009) |
| Egan et al. (2004) | 3.24 | 3.58 | 3.75 | 3.35 | 3.49 | 3.68 | 3.54 | | | | U.S./ IT ($N = 245$) |
| McCaffrey (2004) | 4.07 | 4.07 | 3.99 | 3.78 | 3.84 | 4.10 | 4.29 | 3.92 | 3.88 | | Australia/ public sector ($N = 237$); cited in Watkins et al. (2009) |
| Power & Waddell (2004) | 5.13 | 4.52 | 4.60 | 4.32 | 4.21 | 4.53 | 4.52 | 4.91 | 4.79 | | Australia/ multiple industry ($N = 62$); selected items |
| Yang et al. (2004) | 3.90 | 3.79 | 3.85 | 3.34 | 3.66 | 3.93 | 4.13 | 4.13 | 4.10 | | U.S./ multiple organizations ($N = 836$) |
| Zhang et al. (2004) | 3.74 | 3.78 | 3.77 | 3.55 | 3.75 | 4.11 | 4.00 | 4.40 | 4.37 | | China/ state owned enterprises ($N = 477$) |
| Chermack et al. (2006) | 4.00 | 4.48 | 4.38 | 3.37 | 4.25 | 4.10 | 4.40 | | | | U.S. ($N = 9$)/ educational institute; pre-scenario planning |

Table 3 (continued)

| Authors | CL | DI | TL | ES | EP | SC | SL | FP | KP | MP | Sample |
|--------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---|
| | 5.14 | 5.21 | 5.21 | <i>4.13</i> | 5.06 | <i>5.00</i> | 5.29 | | | | Post-scenario planning |
| Dymock & McCarthy (2006) | 3.90 | <i>3.65</i> | <i>3.72</i> | <i>3.85</i> | <i>3.50</i> | <i>3.75</i> | 4.10 | | | | Australia/ manufacturing (<i>N</i> = 80); sited in Watkins & Dirani (2013) |
| Bridges, Bierema, & Valentine (2007) | 4.30 | <i>3.50</i> | 4.30 | <i>3.60</i> | <i>3.80</i> | <i>4.10</i> | <i>4.20</i> | | | | U.S./ health service (<i>N</i> = 831); 21 items |
| Wang (2007) | <i>3.40</i> | <i>3.33</i> | <i>3.34</i> | <i>3.51</i> | <i>3.43</i> | 3.63 | 3.68 | | | | China/ private and state owned enterprises (<i>N</i> = 991); 21 items |
| Davis & Daley (2008) | <i>3.94</i> | <i>3.97</i> | <i>3.96</i> | <i>3.22</i> | <i>3.73</i> | 4.05 | 4.12 | <i>4.32</i> | <i>4.10</i> | | U.S./ manufacturing and service (<i>N</i> = 592) |
| Song (2008) | <i>3.52</i> | <i>3.55</i> | <i>3.54</i> | <i>3.47</i> | <i>3.40</i> | 3.72 | 3.72 | | | | Korea/ for-profit (<i>N</i> = 446); 21 items |
| Jamali, Sidani, & Zouein (2009) | <i>3.79</i> | <i>3.81</i> | <i>3.55</i> | <i>3.66</i> | <i>3.35</i> | 3.84 | 3.96 | | | | Lebanon/ banking, IT (<i>N</i> = 227) |
| Song, Joo, & Chermack (2009) | <i>3.68</i> | <i>3.70</i> | <i>3.65</i> | <i>3.61</i> | <i>3.55</i> | 3.75 | 3.76 | | | | Korea/ for-profit (<i>N</i> = 1,529); 21 items |
| Watkins et al. (2009) | 3.21 | <i>3.11</i> | <i>3.12</i> | <i>3.07</i> | <i>2.84</i> | <i>3.13</i> | 3.41 | <i>3.18</i> | <i>2.95</i> | <i>3.31</i> | U.S./ public health (<i>N</i> = 675) |
| Weldy & Gillis (2010) | 3.73 | <i>3.38</i> | <i>3.48</i> | <i>3.40</i> | <i>3.09</i> | <i>3.33</i> | 3.55 | <i>3.64</i> | <i>3.67</i> | | U.S./ for-profit (<i>N</i> = 143) |
| Hung, Yang, Lien, & McLean (2010) | <i>3.71</i> | <i>3.71</i> | <i>3.67</i> | 3.79 | 3.79 | 3.79 | 3.79 | | | | Taiwan/ high-tech industry (<i>N</i> = 355) |

Table 3 (continued)

| Authors | CL | DI | TL | ES | EP | SC | SL | FP | KP | MP | Sample |
|------------------------------------|-------------|-------------|-------------|-------------|------|-------------|-------------|----|----|----|---|
| Abu-Tineh (2011) | 3.93 | 3.93 | 3.99 | 3.87 | 3.87 | 3.87 | 3.87 | | | | Qatar/ university faculty ($N = 100$); selected items |
| Sharifirad, (2011) | 3.54 | 3.30 | 2.98 | 2.75 | 2.72 | 2.78 | 3.04 | | | | Iran/ public and private sectors ($N = 625$) |
| Song et al. (2011) | 4.33 | 4.43 | 4.38 | 4.24 | 4.45 | 4.76 | 4.50 | | | | Korea/ for-profit ($N = 446$); 21 items |
| Holyoke, Sturko, Wood, & Wu (2012) | 4.42 | 4.78 | 4.68 | 4.26 | 4.35 | 4.61 | 4.96 | | | | U.S./ university faculty ($N = 59$) |
| Kim & Marsick (2013) | 4.35 | 4.16 | 4.22 | 4.21 | 4.29 | 4.49 | 4.46 | | | | Korea/ SMEs; 2006 ($N = 334$) |
| Sopheak (2013) | 4.28 | 4.14 | 4.19 | 4.16 | 4.27 | 4.41 | 4.42 | | | | 2008 ($N = 497$) |
| Nurmala (2014) | 3.43 | 3.34 | 3.55 | 3.59 | 3.39 | 3.46 | 3.57 | | | | Cambodia/ bank (168); a five-point scale |
| Pokharel & Choi (2015) | 4.22 | 3.90 | 4.10 | 3.58 | 3.89 | 4.38 | 4.23 | | | | U.S./ public health center in a public university ($N = 172$); 21 items |
| Yu & Chen (2015) | 4.21 | 4.40 | 4.14 | 3.65 | 3.95 | 4.60 | 4.46 | | | | U.S./ public sector ($N = 333$); selected items |
| Little & Swayze (2015) | 3.94 | 3.92 | 3.89 | 3.84 | 3.82 | 3.67 | 3.64 | | | | Taiwan/ university and college library ($N = 478$) |
| Leufvén et al. (2015) | 4.31 | 3.85 | 3.93 | 4.10 | 3.72 | 4.10 | 4.10 | | | | U.S./ community medical center ($N = 500$)/ 21 items |
| | 3.24 | 3.14 | 3.29 | 3.17 | 3.09 | 3.21 | 3.75 | | | | Nepal/ hospital ($N = 135$)/ 21 items |

Table 3 (continued)

| Authors | CL | DI | TL | ES | EP | SC | SL | FP | KP | MP | Sample |
|---------------------------|------|------|-------------|------|-------------|------|-------------|----|----|----|--|
| Laeque & Babar (2015) | 3.71 | 3.72 | 3.95 | 3.78 | 3.56 | 3.62 | 3.90 | | | | Pakistan/hospital (N=257)/ 21 items |
| Jaaron & Backhouse (2016) | 3.88 | 4.11 | 4.04 | 3.56 | 4.25 | 3.79 | 4.42 | | | | U.K./ service sector (N=168)/ 21 items |
| Frequency | CL | DI | TL | ES | EP | SC | SL | FP | KP | MP | |
| Lowest | 7 | 9 | 4 | 23 | 20 | 8 | 2 | | | | |
| % | 20.6 | 26.5 | 11.8 | 67.6 | 58.8 | 23.5 | 5.9 | | | | |
| Highest | 9 | 7 | 6 | 2 | 3 | 19 | 29 | | | | |
| % | 26.5 | 20.6 | 17.6 | 5.9 | 8.8 | 55.9 | 85.3 | | | | |

Note. CL = Continuous Learning; DI = Dialogue and Inquiry; TL = Team Learning; ES = Embedded Systems; EP = Empowered People; SC = System Connection; SL = Strategic Leadership; FP = Financial Performance; KP = Knowledge Performance; MP = Mission Performance; two lowest means were in italic and two highest means are in bold.

Sharifirad, 2011; Sta. Maria, 2000; Zhang, Zhang, & Yang, 2004). After Yang (2003) and Yang, Watkins, and Marsick (2004) supported the construct validity of the abbreviated version of the DLOQ (i.e., *DLOQ-A*), researchers began to use the *DLOQ-A*, including in the above validation studies (Menezes et al., 2011; Song et al., 2009; Zhang et al., 2004). The *DLOQ-A* contains 21 items selected from the original version. The findings of the studies using the *DLOQ* and *DLOQ-A* have shown the excellence of these instruments as tools for studying learning organizations (Kim, Watkins, & Lu, 2016a). Most of the reported coefficient alpha values representing the internal consistency of the *DLOQ* and *DLOQ-A* are higher than .80 (see Table 4), which supports that both instruments are excellent tools, which are applicable universally in terms of reliability (Lance, Butts, & Michels, 2006).

Considering that current organizations live in the knowledge economy, implementing a learning organization contributes to increasing knowledge performance (see Table 7). As Table 5 shows, studies also revealed that implementing a learning organization produces a positive

Table 4
Summary of Reliability Estimates in Validation Studies

| Authors | Context | N | CL | DI | TL | ES | EP | SC | SL |
|----------------------------|----------|-------|-----|-----|-----|-----|-----|-----|-----|
| Watkins et al. (1997) | America | 191 | .82 | .87 | .86 | .85 | .85 | .86 | .83 |
| Sta. Maria (2000) | Malaysia | 628 | .76 | .88 | .86 | .86 | .87 | .90 | .89 |
| Ellinger et al. (2002) | America | 208 | .81 | .86 | .85 | .85 | .84 | .87 | .89 |
| Hernandez & Watkins (2003) | Colombia | 906 | .80 | .81 | .79 | .81 | .81 | .80 | .84 |
| Yang et al. (2004)* | America | 836 | .81 | .87 | .86 | .81 | .84 | .80 | .87 |
| Zhang et al. (2004)* | China | 477 | .80 | .78 | .78 | .82 | .82 | .84 | .85 |
| Lien et al. (2006) | Taiwan | 679 | .72 | .89 | .86 | .71 | .75 | .89 | .91 |
| Basim et al. (2007) | Turkey | 214 | .84 | .87 | .88 | .88 | .90 | .90 | .92 |
| Song et al. (2009)* | Korea | 1,529 | .74 | .80 | .78 | .76 | .78 | .79 | .84 |
| Dirani (2009) | Lebanon | 298 | .79 | .84 | .81 | .84 | .84 | .85 | .89 |
| Sharifirad (2011) | Iran | 625 | .81 | .82 | .76 | .82 | .78 | .87 | .87 |
| Menezes et al. (2011)* | Brazil | 566 | .79 | .81 | .73 | .80 | .76 | .85 | .81 |

Note. Studies using the *DLOQ-A* are marked with an asterisk; see Table 3 for abbreviation.

Table 5
Summary of the DLOQ Studies Related to Knowledge-related Outcomes

| Authors | Variables/ Context (N) | Major Results |
|-----------------------------|--|---|
| Sta. Maria & Watkins (2003) | Use of innovation/ Malaysia (628) | A learning organization is a significant predictor of the use of innovation; $R^2 = .32$. |
| Ismail (2005) | Innovation/ Malaysia (259) | All dimensions are significantly related; the significant predictors are the ES and SC dimensions for local organizations and the TL and SL dimensions for multi-national organizations. |
| Hernandez (2003) | Knowledge transfer/ Colombia (906) | Positive relationships; significant indicators are the CL, ES, EP, SC, and SL dimensions. |
| Song (2008) | Knowledge creation/ Korea (446) | A learning organization explains about 90% of the covariance of the knowledge-creation practice (sharing tacit knowledge, creating concepts, justifying concepts, and building prototypes). |
| Song et al. (2011) | Organizational learning process/ Korea (200) | A learning organization positively affects individuals, groups, and organizational learning processes, which potentially contribute to producing continued knowledge creating organization and market advantage-oriented performance. |
| Kim & Marsick (2013) | Knowledge creation; awareness of learning; learning skill improvement/ Korea (334/497) | Implementing a learning organization contributes to the improvement of knowledge creation, awareness of learning, and learning skills. |

Note. See Table 3 for abbreviation.

impact on knowledge-related outcomes, such as innovation (Ismail, 2005; Sta.Maria & Watkins, 2003), knowledge creation (Kim & Marsick, 2013; Song, 2008), the organizational learning process (Song, Jeung, & Cho, 2011), and knowledge transfer (Hernandez, 2003).

When it comes to organizational behaviors, studies have shown that a learning culture encourages positive behaviors and decreases negative behaviors in organizations in either direct or indirect ways (see Table 6). Such organizational behaviors include job satisfaction, turn over

Table 6
Summary of the DLOQ Studies with Organizational Behaviors

| Authors | Variables/ Context (N) | Major Results |
|--------------------|--|--|
| Egan et al. (2004) | Job satisfaction; motivation to transfer learning; turn over intention/ U.S. (245) | A learning organization positively affects the motivation to transfer learning; and a learning culture negatively affects turnover intention through job satisfaction. |
| Wang (2007) | Job satisfaction; organizational commitment/ China (991) | A learning organization positively affects job satisfaction and organizational commitment; and job satisfaction partially mediates the relationship between a learning organization and organizational commitment. |
| Pool & Pool (2007) | Motivation/ U.S. (208) | A learning organization positively relates with performance-to-outcomes expectancy and organizational learning ($R^2 = .77$). |
| Dirani (2009) | Job satisfaction; organizational commitment/ Lebanon (298) | The DI, EP, SC, and SL dimensions are significant predictors of job satisfaction and organizational commitment. |
| Song & Kim (2009) | Motivation to collaborate; organizational commitment/ Korea (275) | A learning organization partially mediates the relationship between motivation to collaboration and organizational commitment. |
| Song et al. (2009) | Interpersonal trust; organizational commitment/ Korea (321) | Interpersonal trust and a learning organization share 28% of the variance, and a learning organization and organizational commitment share 49% of the variance. |
| Joo & Shim (2010) | Psychological empowerment; organizational commitment/ Korea (294) | A learning organization moderates the relationships between organizational commitment and competency and between organizational commitment and self-determination ($\Delta R^2 = .02$). |
| Park et al. (2014) | Innovative behavior; work engagement/ Korea (305) | A learning organization positively affects innovative behavior through work engagement. |

Note. See Table 3 for abbreviation.

intention, organizational commitment, motivation, interpersonal trust, innovative behavior, and work engagement (Dirani, 2009; Egan et al., 2004; Joo & Shim, 2010; Park et al., 2014; Pool & Pool, 2007; Song & Kim, 2009; Song et al., 2009; Wang, 2007). The fact that these studies were conducted within various cultural contexts allows an organization to expect positive benefits derived from these organizational behaviors when the organization pursues a learning organization regardless of the surrounding culture.

Additionally, a learning organization generates diverse positive effects on an organization. Transformational, transactional, and passive-avoidant leadership are significantly related to a learning organization (Sahaya, 2013; Sopheak, 2013). It also has positive impacts on an individual's subjective career success and protean career (Park, 2009), career resilience (Abu-Tineh, 2011), self-efficacy and career development (Parsa et al., 2014), dynamic capability (Hung et al., 2010), job performance (Dekoulou & Trivellas, 2015), disgruntlement, and job-security concerns (Reardon, 2010). In addition, a learning organization facilitates informal and incidental learning (Nurmala, 2014; Reardon, 2010; Yu & Chen, 2015) and customer satisfaction (Pantouvakis & Bouranta, 2013).

Most importantly, the fact that the *DLOQ* contains items that measure respondents' perceptions of financial and knowledge performance allows abundant studies to have confirmed the strong positive correlations between learning organizations and the above perceived performances (Ellinger et al., 2002; Davis & Daley, 2008; McHargue, 1999; Kumar, 2005; Kumar & Idris, 2006; Rose et al., 2006; Watkins et al., 2009; Wetherington & Deniels, 2013).

Studies also revealed that a learning organization has a significant correlation with not only perceptual performance but also actual business performance (Ellinger et al., 2002; Davis & Daley, 2008). In addition, studies showed higher correlations between the learning organization

Table 7
Correlations between a Learning Organization's Dimensions and Financial and Knowledge Performance

| Authors | FP | | | | | | | KP | | | | | | | |
|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | CL | DI | TL | ES | EP | SC | SL | CL | DI | TL | ES | EP | SC | SL | |
| Hernandez (2000) | .13 | .17 | .24 | .10 | .22 | .12 | .20 | .46 | .40 | .41 | .46 | .54 | .53 | .54 | Colombia (N = 906); $p < .005$ (FP); $p < .0001$ (KP) |
| Yang et al. (2004) | .37 | .35 | .41 | .33 | .36 | .37 | .41 | .29 | .45 | .48 | .44 | .50 | .51 | .51 | U.S. (N = 836); $p < .001$ |
| Zhang et al. (2004) | .22 | .23 | .15 | .20 | .25 | .25 | .32 | .29 | .26 | .22 | .27 | .33 | .37 | .42 | China (N = 477); $p < .01$ |
| Davis & Daley (2008) | .43 | .45 | .45 | .41 | .51 | .49 | .54 | .48 | .46 | .50 | .46 | .57 | .56 | .60 | U.S. (N = 592); $p < .01$ |
| | .12 | .11 | .09 | .09 | .12 | .11 | .12 | | | | | | | | With net income per employee (used as an efficiency measure); $p < .01$ |
| | .10 | .09 | | .09 | .10 | .14 | .10 | | | | | | | | With percent of sales from new products (used as a knowledge capacity indicator); $p < .01$ |
| Watkins et al. (2009) | .54 | .51 | .55 | .59 | .63 | .66 | .63 | .62 | .56 | .61 | .68 | .69 | .69 | .66 | U.S. (N = 675); $p < .01$ |
| Weldy & Gillis (2010) | .55 | .57 | .50 | .55 | .54 | .52 | .61 | .66 | .65 | .63 | .63 | .66 | .62 | .73 | U.S. (N = 143); $p < .01$ |
| Wetherington (2010) | .47 | .49 | .50 | .50 | .51 | .47 | .53 | .51 | .52 | .57 | .62 | .63 | .56 | .64 | U.S. (N = 131); $p < .001$ |
| Ellinger et al. (2002) | | | | | | | | | | | | | | | U.S. (N = 208); financial and knowledge performance; canonical correlations; Wilks' effect size = .28 Wilks' effect size of financial performance with ROE, ROA, Tobin's q, and MVA = .11 |

Table 7 (continued)

| Authors | FP | | | | | | | KP | | | | | | | |
|-----------------------------|------------|------------|-------------------|------------|------------|------------|-------------------|-------------------|------------|-------------------|-------------------|-------------------|------------|-------------------|--|
| | CL | DI | TL | ES | EP | SC | SL | CL | DI | TL | ES | EP | SC | SL | |
| Kurniawan & Istianto (2006) | | | | | | | | | | | | | | | Indonesia ($N = 50$); financial performance and knowledge performance; correlations ranged from .50 to .90 ($p < .05$) for factory and sales departments |
| Lien et al. (2006) | | | | | | | | | | | | | | | Taiwan ($N = 679$); financial and knowledge performance canonical correlations; Wilks' effect size = .24 |
| McHargue (1999) | <i>.13</i> | <i>.13</i> | <i>.14</i> | <i>.24</i> | <i>.15</i> | <i>.19</i> | <i>.18</i> | <i>.19</i> | <i>.12</i> | <i>.14</i> | <i>.22</i> | <i>.14</i> | <i>.18</i> | <i>.18</i> | U.S. ($N = 264$); R^2 |
| Kumar (2005) | <i>.34</i> | <i>.34</i> | <i>.34</i> | <i>.47</i> | <i>.47</i> | <i>.47</i> | <i>.47</i> | <i>.18</i> | <i>.18</i> | <i>.28</i> | <i>.37</i> | <i>.37</i> | <i>.37</i> | <i>.37</i> | Malaysia ($N = 238$); R^2 by the individual/ group/ organization levels; $p < .0001$ |
| Rose et al. (2006) | | | <u><i>.32</i></u> | | | | <u><i>.26</i></u> | <u><i>.21</i></u> | | <u><i>.27</i></u> | | <u><i>.25</i></u> | | <u><i>.24</i></u> | Malaysia ($N = 208$); regression coefficients; $R^2 = .53$ (FP) and $R^2 = .59$ (KP) |
| Kumar & Idris (2006) | | | | | | | | | | <u><i>.31</i></u> | <u><i>.20</i></u> | | | <u><i>.24</i></u> | Malaysia ($N = 238$); regression coefficients; $R^2 = .41$; $p < .05$ |
| Awasthy & Gupta (2011) | <i>.27</i> | <i>.27</i> | <i>.27</i> | <i>.17</i> | <i>.17</i> | <i>.17</i> | <i>.17</i> | <i>.22</i> | <i>.22</i> | <i>.22</i> | <i>.12</i> | <i>.12</i> | <i>.12</i> | <i>.12</i> | India ($N = 235$); R^2 by the people/ organizational levels; $p < .0001$ |
| Noubar et al. (2011) | <i>.27</i> | <i>.27</i> | <i>.27</i> | <i>.27</i> | <i>.27</i> | <i>.27</i> | <i>.27</i> | <i>.34</i> | <i>.34</i> | <i>.34</i> | <i>.34</i> | <i>.34</i> | <i>.34</i> | <i>.34</i> | Malaysia ($N = 218$); $R^2 = .27$ (FP) and $R^2 = .34$ (KP) by the seven dimensions; $p < .01$ |
| Yu & Chen (2015) | | | | | | | | <i>.41</i> | | | <i>.41</i> | | | <i>.41</i> | Taiwan ($N = 478$); $R^2 = .41$ by CL, ES, and SL; $p < .05$ |

Note. Regression coefficients are underlined; R^2 in italic; see Table 3 for abbreviation.

dimensions at the organizational level and the two performance measures. Furthermore, several studies proposed equations with certain dimensions as optimum predictors of performance in a specific context (Kumar, 2005; McHargue, 1999; Rose et al., 2006). Most of these studies applied regression analysis to identify significant dimensions and reported either regression coefficients or variances explained by the dimensions or both, and the results varied. Table 7 summarizes major findings of financial and knowledge performance studies.

Studies have attempted to discern the relationship between the learning organization and performance in non-profit organizations using the nonprofit version of the *DLOQ* (McHargue, 2003; Watkins et al., 2009; Wetherington & Deniels, 2013). One distinguishing point of the nonprofit version of the *DLOQ* is that it contains items that measure the mission performance of organizations. As a non-profit organization, measuring mission performance is an excellent approach, since measuring financial and knowledge performance does not fully reflect its performance.

Lastly, recent *DLOQ* studies provide critiques and suggestions for future research. Kim et al. (2015) reported that several empirical studies that conducted exploratory factor analysis extracted one to eight dimensions of a learning organization. Although they admitted the multidimensional nature of the learning organization framework, they expressed concerns that such studies, which extracted different numbers of dimensions, raised issues of the multicollinearity and discriminant validity of the *DLOQ*, which threatens conformity with its original framework (Kim et al., 2015; Pokharel & Choi, 2015). Since the two performance measures of the *DLOQ* are perceptual measures, which are often more suitable for individuals at the managerial level or above (Marsick & Watkins, 2003), objective performance measures are necessary for supplementing precise performance results (Jamali, Sidani, & Zouein, 2009;

Pokharel & Choi, 2015; Weldy & Jillis, 2010). Focusing on employees is also recommended for future research, such as their perceptions toward the environment or organizational support (Kim et al., 2015). Studies raising issues related to interventions suggested that future research should include identifying factors that accelerate or impede learning cultures together with longitudinal research (Kim et al., 2015; Song et al., 2013; Pokharel & Choi, 2015).

Nevertheless, under the current organizational environment, it is worth paying attention to a learning organization, which is a strategic way to secure organizational performance. This is because learning provides a stable environment for producing performance (March, 1991). However, previous studies with the *DLOQ* lack an examination of the relationships between learning organizations and performance derived from non-financial assets other than knowledge performance, especially in the for-profit organizational context. The remaining part of this chapter focuses on knowledge performance and adaptive performance as measures of the intangible performance that knowledge assets generate, which potentially contribute to promoting financial performance.

Knowledge Performance

This section reviews organizational knowledge performance. First, it introduces various approaches to organizational knowledge. Then, it investigates domains consisting of knowledge assets. It subsequently moves to relationships between organizational knowledge and organizational performance followed by connections to the proposed research hypotheses.

Approaches to Organizational Knowledge

Several different approaches to understanding organizational knowledge exist (Leonard-Barton, 1992; Nonaka, 1994; Tsoukas & Vladimirou, 2001). One approach is focusing on the role of organizational knowledge in creating new products (Leonard-Barton, 1992). According to

Leonard-Barton (1992), individuals in organizations are expected to become excellent and skillful in the techniques and knowledge related to current products, and these individuals offer input into developing new products while providing productive feedback based on the techniques and knowledge they acquire. He regarded organizational knowledge as one of the core capabilities of organizations that enables them to continue developing new products.

Another approach emphasizes the role of organizational knowledge in improving processes (Tsoukas & Vladimirou, 2001). Tsoukas and Vladimirou (2001) also focused on individuals and explained that individuals find ways to accomplish their work in certain situations or contexts. Then, they share understandings and experiences and choose proper and suitable ones iteratively. This iterative collective process creates organizational knowledge.

In addition to the above approaches, Nonaka (1994) emphasized the supportive role of organizations so that individuals are able to create knowledge. Knowledge beyond the processing of information created by individuals forms a knowledge network in an organization, which ultimately becomes organizational knowledge (Nonaka, 1994). Since the major mode of individuals' interactions is informal groups consisting of individuals throughout organizations, organizations should be ready to embrace all possible knowledge led by these interactions (Nonaka, 1994).

Organizational knowledge can be categorized by several characteristics (see Table 8). The most widely applied criterion determining dimensions of organizational knowledge is whether it is explicit or implicit (Bryant, 2003; Nonaka, 1991; Polanyi, 1966). Explicit knowledge is verbally or textually expressed knowledge, such as data bases, work manuals, or information systems in organizations. Implicit knowledge, often referred to as tacit knowledge, is defined as knowledge existing in a non-written form, such as processes, routines, or

organizational culture (Polanyi, 1966). Spender (1996) further segmented explicit and implicit organizational knowledge to individual and social types. Ahn and Chang (2004) also segmented them to product knowledge (technology-related, operation-related, and market-related knowledge) and process-related knowledge (humans and culture and workflow systems).

Kogut and Zander (1993) categorized organizational knowledge into information and know-how, “a description of knowing how to do something” (p. 386) and investigated it at four different levels: individual, group, organization, and network. They viewed organizational knowledge as socially constructed by individuals within organizations. And, creating new social relationships generates new skills and knowledge. Matusik and Hill (1998) differentiated public knowledge from private knowledge. They explained that private knowledge exists uniquely within a specific organization, which consequently creates competitive advantages for the organization while public knowledge is shared publicly (e.g., best practices in industry). These characteristics show the complex nature of organizational knowledge.

Table 8
Various Approaches to Organizational Knowledge

| Authors | Classifications |
|---|--|
| Bryant (2003); Nonaka (1991); Polany (1966) | Explicit knowledge, implicit knowledge |
| Spender (1996) | Individual/ social explicit knowledge, individual/ social implicit knowledge |
| Ahn & Chang (2004) | Product/ process-related explicit knowledge, product/ process-related implicit knowledge |
| Kogut & Zander (1993) | Information, know-how |
| Matusik & Hill (1998) | Public knowledge, private knowledge |

As stated earlier, organizational knowledge involves generating new products, finding the best way to complete tasks, and interacting with individuals within organizations. It can be

classified by several different dimensions: explicit or implicit, formation or know-how, or public or private. It also occurs at different levels in an organization.

Then, why does organizational knowledge matter in organizations? Understanding the major argument of the knowledge-based view can be helpful in answering this question. The knowledge-based view of organizations emerged based on the resource-based view (Bryant, 2003). Barney (1991) demonstrated four criteria that allow an organization to enjoy sustainable competitive advantages: value, rareness, imperfect imitability, and substitutability. Organizational knowledge falls in the value criterion (Edvinsson & Malone, 1997) of gaining sustainable competitive advantages “in the sense that it exploits opportunities and/or neutralizes threats in a firm's environment” (Barney, 1991, p. 105).

Organizational knowledge is an outcome of interactions between individuals and organizations seeking efficient ways to perform tasks, and more importantly, it contributes to producing new products based on experiences and skills that individuals and organizations have acquired thus far. Organizational knowledge occurs within a specific organization and in its connection to its external environment. In other words, every organization has different experiences in terms of organizational learning. Therefore, as one of the resources in organizations, organizational knowledge is valuable to a specific organization, and it creates intangible competitive advantages for the organization (King & Zeithaml, 2003; Wiklund & Shepherd, 2003).

Thus far, this section has reviewed organizational knowledge, types and features, and competitive capacity of organizational knowledge. The following section explores the relationships between organizational knowledge and performance focusing on the intangible nature of organizational knowledge.

Organizational Knowledge and Performance

Organizational performance can be seen as an outcome of organizational activities. Understanding performance is understanding the stories behind the outcomes (e.g., survival or adaptation) of organizations (March & Sutton, 1997). Although organizational performance has been used as a dependent variable in organization studies, it is very difficult to operationalize it because of its inherent complexity (Gregory & Richard, 1984). Empirically, most studies measuring organizational performance focused on financial performance. For example, Richard, Devinney, Yip, and Johnson (2009) thoroughly investigated variables used in organizational performance studies. Among the 722 articles they reviewed, over 80 percent of them tested variables relating to objective financial performance, such as return on assets, return on equity, and return on investment, while the other studies used subjective self-reporting measures that gathered information about organizational performance.

This is probably because these objective financial measures show the immediate financial performance of organizations. However, is immediate financial performance able to guarantee organizational performance over a longer period? Knowledge is also essential for the long-term success of an organization (Wilcox & Zeithaml, 2003). Moreover, in the current organizational environment where everything changes rapidly, securing intangible performance on top of financial performance is necessary for organizations' sustainability (Johnson & Kaplan, 1987).

How people perceive intangibles and what can be included in them differ by where people are situated in organizations (Marr & Chatzkel, 2004). Lev (2001) pointed out that "future benefits that do not have a physical or financial embodiment" (p. 5) are referred to as "intangibles in the accounting literature, knowledge assets by economists, intellectual capital by management, and intellectual property in the legal literature" (p. 5). Indeed, the literature shows

that terms for intangibles vary, and “intangibles, intangible assets, intangible capital, intangible resources, intellectual capital, and intellectual property” (Kaufmann & Schneider, 2004, p. 374) are all included in the intangibles concept.

It is beneficial to know the Balanced Score Card (BSC) Kaplan and Norton (Kaplan & Norton, 1992, 1996, 2004) created, because it is used as a strong measure of intangible assets in human resource management (Chenhall & Langfield-smith, 2007). At the time they created the BSC, there were few performance measures other than financial accounting indices. It did not take a long time for the BSC to become popular because many people agreed that measuring organizational performance while using both intangible and accounting measures was more reliable since “knowledge...creates different advantages or capabilities of the company’s employees to satisfy customer needs” (Kaplan & Norton, 2004, p. 202).

The BSC is a set of comprehensive guidelines that inclusively measures performance from the financial, customer, internal processes, and innovation and learning perspectives (Kaplan & Norton, 1992). According to Kaplan and Norton (1992), the latter three measures ultimately drive financial performance. And, they suggested that the learning and growth (Kaplan and Norton initially used the terms ‘innovation and learning’ in their 1992 article, but they changed this to ‘learning and growth’ in their 1996 article) perspective, consisting of human, information, and organization capital, plays a fundamental role in the function of the other three perspectives. Eventually, it contributes to creating and improving the shareholder value of organizations (Kaplan & Norton, 2000). This means that taking the learning and growth perspective enables organizations to achieve tangible performance from intangible assets.

Kaplan and Norton (2004) emphasized the alignment and integration of the learning and growth perspective into organizations’ strategies. They observed that the most commonly and

consistently found objectives from this perspective are as follows: strategic competencies (human capital), strategic information (information capital), and culture, leadership, alignment of goals and incentives with the organizational level strategy, and teamwork (organization capital). Among them, organization capital requires organizational knowledge to create value for customers and shareholders.

Studies adopting the BSC showed its relationships with various aspects in organizations. Implementation of the BSC promotes higher financial performance (Davis & Albright, 2004). Non-financial measures of customer satisfaction show positive relationships with future financial performance (Banker et al., 2000). Organizations, which have greater proportions of products in the early stages of their life cycles, tend to use the BSC more (Hoque & James, 2000).

Some studies attempted to expand applications of the BSC. Originally, the BSC aimed to measure the performance of organizations in the private sector. An alternative framework, which focuses on mission, donors, and recipients, was proposed for organizations in the public sector (Kaplan, 2001). The four perspectives in the BSC together with environmental and social aspects in organizations are able to explain sustainable management (Figge, Hahn, Schaltegger, & Wagner, 2002).

Although the BSC has been widely used as a tool measuring organizational performance, especially from an organizational strategy perspective (Kaplan & Norton, 2004), there are also limitations. The BSC pays less attention to informal and unwritten processes that also influence its implementation (Mooraj, Oyon, & Hostettler, 1999). The BSC fails to identify a two-way performance measurement that includes stakeholders' perspectives (Atkinson, Waterhouse, & Wells, 1997). Especially, the learning and growth perspective ignores relational capital, which refers to relationships between organizations and all of their key stakeholders (Marr & Adams,

2004). Moreover, the cause-effect relationships among the four perspectives are vague, and the validity of the metrics is not clear, and therefore, further investigation is required (Norreklit, 2000).

Table 9 explains the terms and components of the non-financial assets used in various studies. From Table 9, the four major components of non-financial assets are able to explain organizational knowledge. Organizational knowledge, as a resource generating sustainable competitive advantage, can be viewed as a representative source that generates diverse intangibles for organizations (Hitt, Ireland, & Hoskisson, 1999). Accordingly, topics regarding relationships of organizational knowledge with performance and measures become significant in organization studies (Deeds & Decarolis, 1999; Olavarrieta & Friedmann, 2008).

Organizational knowledge has a strong positive relationship with organizational performance when it flows smoothly from its generation within organizations (Deeds & Decarolis, 1999). In addition, organizational knowledge enables organizations to interpret information properly and to anticipate changes in their market in a timely manner, which yields creation of a new product (Olavarrieta and Friedmann, 2008). Beck (1992) stressed the significant role of knowledge as a future engine of growth in the economy and proposes several measures of organizational knowledge.

Yet, there is not a concrete definition or universal measure of organizational knowledge performance agreed upon across disciplines. That is probably because of the complex nature of organizational performance. In spite of this, when organizational performance is measured by critical internal and external factors for survival (Dess & Robinson, 1984, p. 255), then organizational knowledge performance can be defined by knowledge factors that affect the success of organizations. As stated earlier, if organizational knowledge is intangible assets, then

Table 9
Terms and Components of Non-financial Assets

| Authors | External structure (relationship) | People | Internal structure | Property |
|---------------------------------|---|---|--|--|
| <i>Intellectual capital</i> | | | | |
| Brooking (1996) | Market assets: brands, customer, distribute channel, contracts, etc. | Human-centered assets: collective expertise, problem-solving capability, leadership, etc. | Infrastructure assets: technology, routine, process, etc. | Intellectual property assets: protecting know-how, patent, copyright, etc. |
| Edvinsson & Malone (1997) | Structural capital - customer capital: relationship with key customers | Human capital: individuals' knowledge and skill, organizational value, culture, etc. | Structural capital - organizational capital (innovation capital, process capital): hardware, software, database, etc. | Structural capital - organizational capital: patent |
| Roos & Roos (1997) | Customer and relationship capital: customer, supplier, network partner, and investor | Human capital: knowledge, skill, motivation, and task | Organizational capital (business process capital): information flow, product and service flow, etc. (business renewal and development capital): new concepts, specialization, etc. | |
| Bontis (1999) | Relational capital: customer, supplier, government, and industry association | Human capital: education, experience, attitudes, etc. | Structural capital (technological): day- to-day technical problem solving (architectural): communication, control systems, cultural values, etc. | |
| <i>Knowledge assets</i> | | | | |
| Beck (1992) | | Return on knowledge assets | Investment on research and development and expenditure on technology development | Patent |

Table 9 (continued)

| Authors | External structure (relationship) | People | Internal structure | Property |
|-------------------------------|--|---|---|---|
| Marr, Schiuma, & Neely (2004) | Stakeholder resources (stakeholder relationships): licensing agreements, contracts, etc. Structural resources (brands) | Stakeholder resources (human resources): individuals' skills, competence, motivation, loyalty, etc. | Structural resources (physical infrastructure): database and database network (virtual infrastructure [culture, routine and practices]) | Structural resources (virtual infrastructure [intellectual property]): patent, copyrights, etc. |
| <i>Intangibles</i> | | | | |
| Sveiby (1997) | External structure: brands and relationships with the customer and supplier | Individual competence: experience and education | Internal structure: management, structure, software, etc. | |
| Kaplan & Norton (2004) | | Human capital: skills, know-how, and talent | Information capital: information system, knowledge applications, and infrastructure Organization capital: culture, leadership, alignment, and teamwork | |

Note. Adopted and modified from Bontis (2001) and Marr and Adams (2004).

measuring organizational knowledge performance depends on how to measure utilization of intangible assets and their effect on an organization's sustainability.

In the HRD field, the *DLOQ* provides six items that include customers, new products or services, new ideas, skilled workers, individuals' learning, and spending on technology and information processing, which serve as a measure of perceptual knowledge performance, "creation and enhancement of products and services because of learning and knowledge capacity (lead indicators of intellectual capital)" (Marsick & Watkins, 2003, p. 139). Although the

measure does not contain items falling into the property component in Table 9, it inclusively captures the major components of non-financial assets. By using this measure, many studies have confirmed that a learning organization has a positive relationship with knowledge performance (see Table 7).

Thus far, this section has reviewed organizational knowledge, how it becomes a resource generating competitive advantage, and similar concepts. First, there are different approaches to defining organizational knowledge. Organizational knowledge can be understood as a process of individual knowledge becoming organizational knowledge. It can also be seen as organizational learning related to the development of new products. Second, types of organizational knowledge also vary. It can be categorized as explicit and implicit (tacit) knowledge, private and public knowledge, or product and process knowledge. Thirdly, organizational knowledge creates value that secures competitive advantage based on a knowledge-based view that originally emerged from a resource-based view. Lastly, organizational knowledge can be understood in line with intangible assets, intellectual capital, or knowledge assets.

Organizational knowledge generates new understandings or experiences as organizations face challenges by exploiting current organizational knowledge. In addition, since performance is closely related to the survival of organizations, taking an adaptive perspective is necessary for understanding organizational performance. In the following sections, relationships among learning, knowledge, and adaptive performance will be discussed.

Adaptive Performance

The last section examines adaptive performance. First, it explores diverse approaches to adaptation, including adaptive capability. Then, it continues to navigate adaptive performance,

empirical studies of adaptive performance, and relationships with a learning organization. Lastly, it raises possible relationships of adaptive performance with knowledge performance.

Approaches to Adaptive Performance

Adaptive performance originated in organization studies. Initially, studies looked at the adaptive nature of organizations. Cyert and March (1963) viewed an organization as an “adaptively rational system” (p. 117). Galbraith (1973) demonstrated that an organization is continuously responding to environmental complexity and improves its ability to process information in order to cope with complexity.

Fiol and Lyles (1985) defined *organization adaptation* as “the ability to make incremental adjustments as a result of environmental changes, goal structure changes, or other changes” (p. 811). According to Staber and Sydow (2002), “adaptation is seen as the result of adjusting organizational strategies and structures to fit contextual conditions...organizational change is an attempt by management to enhance organizational performance through adaptation to existing contingencies” (p. 410).

The above explanations and examples show that the adaptive nature of organizations relates to organizations’ actions in responding to their environments and adjusting to changes, which they called *adaptation*. In order to adapt properly, organizations need a certain type of ability to do so. In other words, organizations should have the capacity to align their structures or strategies with their environments (Chakravarthy, 1986). Brown and Duguid (2001) regarded it as “the ability to adapt continuously and respond proactively to environmental change” (p. 203). When it comes to a new environment, the ability to respond to the environment and produce positive outcomes is called *adaptive capability* (Wang & Ahmed, 2007).

According to Chakravarthy (1982), the significant determinants of adaptive capability are: (1) organizational capacity that enables organic arrangements of internal as well as external information and (2) material capacity that manages resources, finance, and technology. Such capacity allows organizations to learn faster than changes requiring transformative shifts and to create new routines (Staber & Sydow, 2002). In addition, the multiplexity of relationships provides sufficient requisite knowledge; loose coupling with many weak ties has a higher opportunity to access a wide range of information sources; information redundancy increases its reliability, and at the same time, task redundancy minimizes the effect of one failure to a whole organization; these structural properties are significant in enhancing the organization's capacity (Staber & Sydow, 2002). Adaptive capability that harmonizes tensions within structures, processes, and cultures brings the success of both evolutionary and revolutionary innovations and changes (Tushman & O'Reilly, 2006). Thus, it "helps to facilitate the [organization]'s learning, change, and adaptation" (Wei & Lau, 2010, p. 1490).

Adaptive Capability and Performance

In fact, adaptive capability is one of the most significant abilities for organizations to acquire in terms of sustaining their performance. For example, Gibson and Birkinshaw (2004) revealed that adaptability is positively related to organizational performance. They proposed a concept of organizational ambidexterity, which refers to organizational ability in combination with alignment and adaptation. In order to capture adaptability, they developed a scale that measures the degree to which challenge, flexibility, and changeability of management systems are encouraged. Similarly, Wei and Lau (2010) showed a positive relationship between adaptive capability and an organization's financial performance and innovation.

This positive relationship encourages studies that seek to define adaptive performance as an outcome variable. Adaptive performance has been studied at two levels—individual and organizational levels. Researching adaptive performance at the individual level in the workplace was popularized when Pulakos et al. (2000) proposed eight dimensions of adaptive performance in the workplace. The dimensions are as follows: handling emergencies or crisis situations; handling work stress; solving problems creatively; dealing with uncertain and unpredictable work situations; learning work tasks, technologies, and procedures; demonstrating interpersonal adaptability; demonstrating cultural adaptability; and demonstrating physically oriented adaptability. Based on the above eight dimensions of adaptive performance, many studies have explored various aspects regarding individual adaptive performance in organizations (Charbonnier-Voirin et al., 2010; Chen et al., 2005; Han & Williams, 2008; Pulakos et al., 2002).

In the meantime, Griffin, Neal, and Parker (2007) expanded dimensions of adaptive performance to the team and organizational levels. They attempted to capture organizational adaptivity by examining flexibility in responding to changes, capacity to cope with changes experienced by an organization, and the applicability of skills or information in adjusting to changes by individuals in an organization.

Table 10
Summary of Adaptive Performance Studies

| Authors | Variables/ Context (<i>N</i>) | Major Results |
|-------------------------|--|--|
| Walker & Ruekert (1987) | Literature review | Performance can be measured through a variety of dimensions, including effectiveness (e.g., sales growth), efficiency (e.g., profitability [sales/ return on investment]), and adaptability. |
| Morgan et al. (2003) | Knowledge (experiential, informational), capability (marketing planning, marketing implementation), adaptive performance/ Export manufacturers in the U.K. and China (460) | Marketing implementation (affected by experiential knowledge and marketing planning affected by experiential and informational knowledge) positively affect adaptive performance (path coefficient = .78, $p < .01$). |

Unlike the individual adaptive performance research, adaptive performance studies at an organizational level are scarce. As seen in Table 10, Morgan et al. (2003) examined organizational ability to adapt to changing market environments. They stated that the measure of adaptive performance they adopted was from Walker and Ruekert's (1987) study. Walker and Ruekert (1987) defined adaptability as "the business's success in responding over time to changing conditions and opportunities in the environment" (p. 19). They demonstrated that common measures among the various ways of capturing organizational adaptive performance include examining a new product's success or calculating revenue from new products in a certain time frame.

Relationships between Adaptive Performance and Learning Organizations

The literature shows a possibility of relationships between adaptive performance and learning organizations. For example, a study showed that in organizations exposed to constant organizational, environmental, and technological changes, a skills-based workforce plays a significant role in coping with these changes (Youndt et al., 1996). And, these skills can be obtained through learning, and an organizational learning culture facilitates the workforce in acquiring necessary skills. In addition, as Kotter and Heskett (1992) demonstrated "only cultures that can help organizations anticipate and adapt to environmental change will be associated with superior performance over long periods of time" (p. 44). Thus, it is a feasible assumption that a learning organization positively affects organizational performance related to changes including adaptation. In other words, organizational adaptive performance is likely to be impacted by knowledge from learning and organization development activities.

Table 11 shows the items of operationalizing knowledge and adaptive performance. Interestingly, the items used in the empirical studies share a similar item—new products.

Literature shows that organizational knowledge is at the core of developing new products, and the success of new products is a significant determinant of adaptive performance. In the previous sections, the links between a learning organization that accelerates the creation and utilization of organizational knowledge and its impact on organizational performance have been made. As a way many studies have confirmed, this study supports a positive relationship between knowledge performance and a learning organization. In addition, this study proposes a positive relationship between a learning organization and adaptive performance. These linkages imply a third possible relationship—knowledge performance is expected to have a relationship with adaptive performance.

Table 11

Operations of Knowledge and Adaptive Performance

| Knowledge Performance (the <i>DLOQ</i> , 1997) | Adaptive Performance (Morgan et al., 2003; Walker & Ruekert, 1987) |
|---|---|
| Customer satisfaction | |
| Skilled worker; learning new skills | |
| Number of suggestions implemented; spending on technology and information processing | |
| <i>Number of new products or services</i> | <i>Number of successful new products</i> |
| | Revenue from new products |
| | Time to market for new products |
| | Responding to competitors' product changes |

This section has reviewed adaptive performance. The concept of adaptive performance originates from the adaptation concept in organization studies. The concept of adaptive capability emerged in order to capture an organization's ability to flexibly deal with internal as well as external changes. Positive relationships between adaptive capacity and organizational performance in several studies encourage the understanding of adaptive performance as a

dependent variable. Thus far, there are adaptive performance studies at the individual and organizational levels.

Although there are not many studies investigating organizational adaptive performance as an outcome variable, a linkage has been found between a learning organization and adaptive performance. In addition, possibilities of relationships between knowledge performance and adaptive performance exist.

Summary

This chapter has reviewed the literature on learning organizations together with organizational learning and empirical studies adopting the *DLOQ*. This was followed by a review of knowledge and adaptive performance. Various aspects of each performance variable and its relationships with learning organizations were also revealed in reviewing the performance variables.

From the review of the literature in this chapter, the following salient points are apparent: (1) a learning organization is positively related to financial and knowledge performance; (2) empirical studies adopting the *DLOQ* lack investigation of the relationships between learning organizations and intangible performances with the *DLOQ*, other than in knowledge performance; (3) a learning organization is likely to be positively related to adaptive performance; (4) intangible performance, such as knowledge and adaptive performance, is likely to be future financial performance; and (5) adaptive performance is likely to be related to knowledge performance.

In order to address the gaps in the literature regarding a learning organization, knowledge performance, and adaptation performance, this study proposes the following research hypotheses:

1. A learning organization has a positive effect on knowledge performance.
2. A learning organization has a positive effect on adaptive performance.
3. A learning organization has a positive effect on financial performance.
4. Knowledge performance has a positive effect on financial performance.
5. Adaptive performance has a positive effect on financial performance.
6. Knowledge performance mediates the positive relationship between a learning organization and financial performance.
7. Adaptive performance mediates the positive relationship between a learning organization and financial performance.
8. Knowledge performance is correlated with adaptive performance.

CHAPTER 3

METHODOLOGY

This chapter describes the quantitative methodology that was used to test the research hypotheses posited in the previous chapters. This chapter includes the measurement framework, design of the study, instrument, target population, data collection, data analysis, and limitations of this study.

Measurement Framework

The purpose of this study was to: (1) examine a learning organization's effects on knowledge performance, adaptive performance, financial performance, and the relationships among them and (2) identify correlations in measures of knowledge performance and adaptive performance; and thus seek to validate the knowledge performance and adaptive performance constructs (Benson, 1998; Nunnally & Bernstein, 1994). The following eight research hypotheses were analyzed in this study:

1. A learning organization has a positive effect on knowledge performance.
2. A learning organization has a positive effect on adaptive performance.
3. A learning organization has a positive effect on financial performance.
4. Knowledge performance has a positive effect on financial performance.
5. Adaptive performance has a positive effect on financial performance.
6. Knowledge performance mediates the positive relationship between a learning organization and financial performance.

7. Adaptive performance mediates the positive relationship between a learning organization and financial performance.

8. Knowledge performance is correlated with adaptive performance.

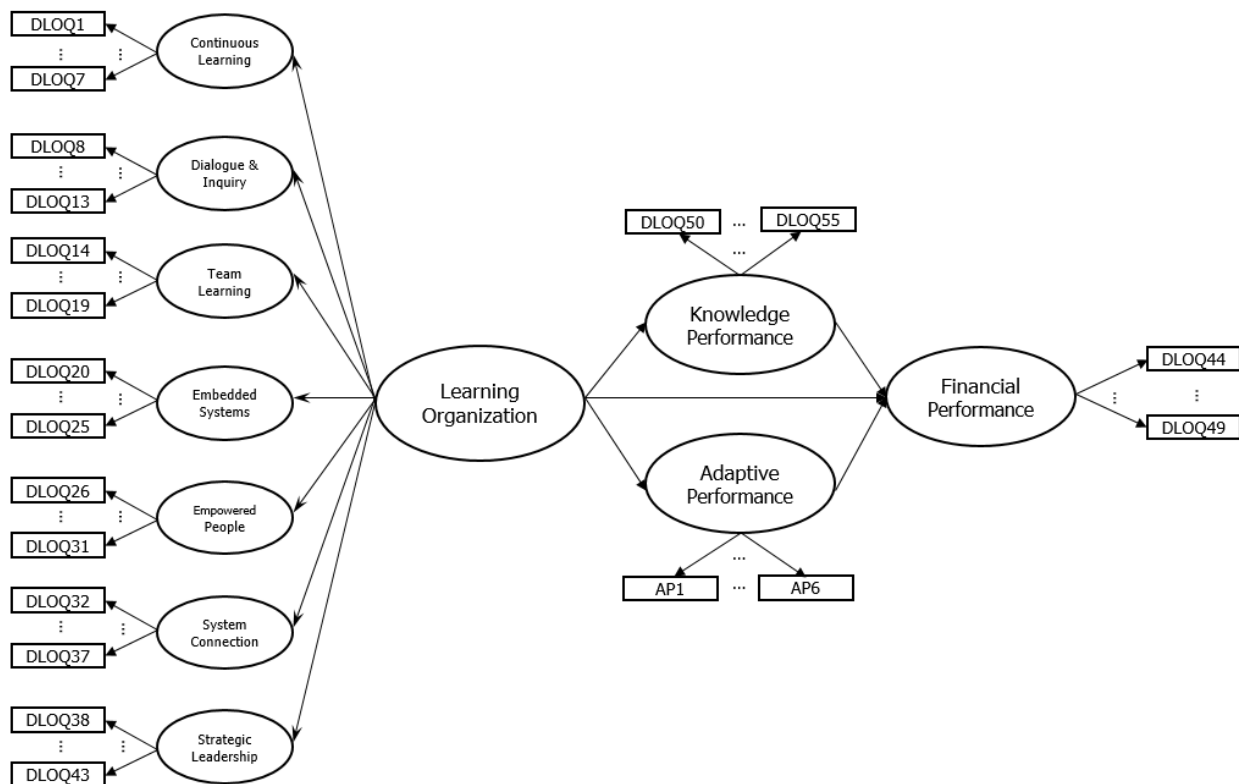


Figure 3. Measurement framework.

Figure 3 illustrates the measurement framework of this study. The independent variable is a learning organization, which is guided by Watkins and Marsick's (2003) learning organization theory. A learning organization as a higher-order latent construct consists of the following seven dimensions, which are first-order latent sub-constructs captured by the observed 43 items: continuous learning, dialogue and inquiry, team learning, embedded systems to capture and share learning, empowered people, system connection, and strategic leadership for learning. The three performance dimensions—knowledge performance, adaptive performance, and financial

performance—are first-order latent constructs that are directly measured by each of the observed six items. Additionally, in the measurement framework, the latent variables are presented in ellipses; the observed variables are in rectangles; regression paths (or expected causal paths) are presented as solid single-headed arrow lines (Ho, Stark, & Chernyshenko, 2012).

Design of the Study

This study used a quantitative research approach to test the research hypotheses listed in the previous section. Quantitative research has evolved in a way to understand several factors simultaneously in order to uncover the complex nature of behavioral science (Merriam & Simpson, 1995). Thus, one advantage of employing a quantitative approach is that it reveals underlying rules or laws of behavior through analyses. Researchers apply it when they identify constructs or test hypotheses (Creswell, 2009). In this vein, the quantitative approach is appropriate to use for this study, because this study attempted to reveal the underlying relationships among the four latent constructs, a learning organization, knowledge performance, adaptive performance, and financial performance. Specifically, this study employed a survey, which enables researchers to capture perceptions or attitudes of a sample population and generalize them in an objective manner (Creswell, 2009).

The survey items that were used for this study were developed based on existing measures, which will be described in detail in the next section. Respondents were Amazon Mechanical Turk (Mturk) workers who define themselves as employees in organizations having more than 50 employees. Mturk is a crowdsourcing marketplace operated by Amazon (see p. 73 data collection). They were recruited in compliance with human subject research protocols. All data were collected from April 26th to May 2nd, 2016 through Mturk. Qualtrics, software

developed for Internet surveys, was used to collect the data. Data were analyzed mainly through the statistical software, Mplus. SPSS was used for convenience.

Instrument

The instrument of this study consisted of 61 items measuring the constructs of a learning organization, financial performance, knowledge performance, and adaptive performance and 7 items of demographic information. The instrument can be separately explained in terms of the constructs and corresponding measures: the instrument fully adopted 55 items measuring the learning organization, financial performance, and knowledge performance constructs from the *DLOQ* based on their substantial validity and/or reliability in previous studies; and the instrument adapted 6 items measuring the adaptive performance construct from existing items used in empirical studies of adaptive performance and relevant topics, such as adaptivity or adaptability. All items used a six-point Likert scale (1 = almost never, 6 = almost always), except for items regarding demographic information.

First, a learning organization was measured by the *DLOQ*, which has 43 items that captured the seven learning organization dimensions: continuous learning, dialogue and inquiry, team learning, embedded systems, empowered people, system connection, and strategic leadership. Only the first dimension was measured using seven items, whereas the rest of the dimensions were measured with six items. The instrument fully used items for a learning organization from the *DLOQ* for the following reasons. There are few empirical studies analyzing a learning organization when excluding studies using the *DLOQ* (Chang & Lee, 2007; Kiedrowski, 2006; Thomsen & Hoest, 2001). In other words, the *DLOQ* has been applied to most empirical learning organization studies, and over 120 studies support its validity by providing results of exploratory or confirmatory factor analysis, correlation matrix analysis, or

mean comparisons (Kim et al., 2015). In addition, as seen in Table 3, the *DLOQ* has shown its strong reliability across various organizational contexts, even across different cultural contexts. The reported Cronbach α coefficients were mostly greater than .80 (Lance et al., 2006).

Second, financial performance and knowledge performance were measured by the six items on the *DLOQ*, respectively. The instrument also fully adopted the all performance items on the *DLOQ*. As seen in Table 12, the reported Cronbach α coefficients ranged from .74 to .90, and they were mostly greater than .80. These coefficients support a stable reliability of the measure (Lance et al., 2006).

Table 12
Reliability Estimates of Financial and Knowledge Performance

| Study | Reliability | |
|----------------------------|-----------------------|-----------------------|
| | Financial performance | Knowledge performance |
| Watkins et al. (1997) | .77 | .78 |
| McHargue (1999) | .81 | .82 |
| Ellinger et al. (2002) | .75 | .80 |
| Hernandez & Watkins (2003) | - | .82 |
| Yang et al. (2004) | .74 | .77 |
| Zhang et al. (2004) | .80 | .81 |
| Lien et al. (2006) | .89 | .87 |
| Davis & Daley (2008) | .79 | .81 |
| Watkins et al. (2009) | .84 | .88 |
| Weldy & Gillis (2010) | .88 | .90 |

Note. Reliability = Cronbach's alpha coefficient.

Lastly, adaptive performance was measured by six items, which had been adapted from existing empirical studies of adaptive performance and relevant topics. As described earlier in Chapter 2, there were not many empirical studies regarding adaptive performance at the organizational level. Although two empirical studies provided their measures (Morgan et al., 2003; Walker & Ruekert, 1987), their measures were not ideal for this study because some items were not appropriate for operating the construct of adaptive performance as this study defined. In

addition, their measures contained four items, which potentially causes an issue when some items show insufficient factor loadings at a later stage of analysis. Thus, this study developed an adaptive performance measure mostly based on the modification of existing items in several empirical studies, which were originally used in various response formats and scales (Griffin, Neal, & Parker, 2007; Karadzic, Antunes, & Grin, 2013; Morgan et al., 2003; Angle & Perry, 1981; Prajogo & Ahmed, 2006). The following section describes item development procedures in detail.

Development of an Adaptive Performance Measure

According to Spector (1992), the major steps for developing a measure are: defining the construct, designing the scale and items, conducting a pilot test, administrating, and validating. Considering that the latter three steps involve samples, item development largely focused on the former two steps: defining the construct and designing the items.

In order to develop a measure that captures an organizational adaptive performance, first, this study defined the construct of adaptive performance as “an [organization]’s success in responding over time to changing conditions and opportunities in the [external] environment” (Walker & Ruekert, 1987, p. 19). This definition was adapted from two empirical adaptive performance studies (Morgan et al., 2003; Walker & Ruekert, 1987). In fact, Morgan et al. (2003) referred to Walker and Rueker’s (1987) study, and the wordings of the original definition has been changed slightly. First, ‘business’ was changed to ‘organization,’ because the former could lean towards the financial side of success. Second, ‘the environment’ was specified as ‘the external environment’, which this study focuses on, thus helping to clarify the construct.

Second, in order to refine the adaptive performance items that would be appropriate for this study, an adaptive performance item pool of 47 items was created by reviewing and

searching the existing measures in the empirical studies, including organizational adaptive performance and relevant topics, such as adaptivity, adaptability, or product/process-related innovation (Alpkan, Bulut, Gunday, Ulusoy, & Kilic, 2010; Chen, Lin, & Chang, 2009; Chen, & Huang, 2007; Gloet & Terziovski, 2004; Griffin et al., 2007; Jung, Chow, & Wu, 2003; Karadzic, Antunes, & Grin, 2013; Morgan et al., 2003; Angle & Perry, 1981; Prajogo & Ahmed, 2006; Thompson, & Heron, 2006). Then, the major advisor for this study and three doctoral students in the HRD program collectively and iteratively reviewed and refined the items in the pool. At this stage, the primary focus was on whether items were able to represent or be rewritten to capture the construct of adaptive performance as defined in this study. In addition, they further brainstormed ways of rewriting items to adequately capture the construct. They also provided feedback on items that overlapped themselves as well as with the items in the learning organization and knowledge performance measures. Moreover, they discerned items that were not suitable to operationalize the construct in a way that this study defined. “Organizational level adaptive performance” and “an external environment” served as main criteria during their discussions. Taking their feedback and comments into consideration, the researcher excluded overlapping and irrelevant items from the item pool. A first draft of the adaptive performance measure with the final six items was formulated after holding two sorting sessions with them.

Lastly, the major advisor and five doctoral students in the HRD program, including the previous three doctoral students, held a session indexing items for knowledge and adaptive performance and critiquing the refined six adaptive performance items. During this session, the attendees were first asked to classify the 12 performance items into either knowledge performance or adaptive performance, or both, based on the given definitions. Then, they were asked to investigate each item in the adaptive performance measure. They gave productive

feedback on items including unclear expressions, vague terms, and ambiguous meanings. In addition, two items were detected that could have the possibility of loading onto the knowledge performance construct, and they were: “In my organization, response to competitors’ product or service changes is faster than last year,” and “In my organization, new technology is adopted more rapidly than last year.” After editing based on the comments and feedback from the session, the revised and finalized six adaptive performance items are seen in Table 13.

As seen in Table 13, all of the adaptive performance items were adapted from several existing studies. Specifically, Item 50 applied the idea that changes in boundaries or identities are one of the factors influencing organizational adaptivity (Karadzic et al., 2013). Borrowing this idea, the current language was created based on the above mentioned discussions and sessions. Regarding Item 51, Griffin et al. (2007) used an item measuring organization member adaptivity, and the word ‘organization’ in the original item was changed to ‘industry.’ Morgan et al. (2003) paid attention to the quality of response to competitors’ product changes with a scale ranging from much worse to much better. Item 52 has the word ‘faster’ instead of ‘better’ in the original item based on the consideration that this study concerns speed more than quality. Items that focused on anticipating problems and dealing with emergency situations (Angle & Perry, 1981) were replaced with seizing opportunities and handling unexpected situations for Items 53 and 54, respectively. Item 55 adapted an item used in Prajogo and Ahmed’s (2006) study and revised to the current language, because the original item targeted measuring the improvement of the internal operation process. Additional revisions have been made accordingly in order to align these changes with items and maintain consistency among items. Copyright of the items was cleared based upon the researcher’s request to copyright holders.

Table 13
Survey Items for Measuring the Constructs

| Construct | N. | Item |
|----------------------|----|--|
| Continuous learning | 7 | 1. In my organization, people openly discuss mistakes in order to learn from them. |
| | | 2. In my organization, people identify skills they need for future work tasks. |
| | | 3. In my organization, people help each other learn. |
| | | 4. In my organization, people can get money and other resources to support their learning. |
| | | 5. In my organization, people are given time to support learning. |
| | | 6. In my organization, people view problems in their work as an opportunity to learn. |
| | | 7. In my organization, people are rewarded for learning. |
| Dialogue and inquiry | 6 | 8. In my organization, people give open and honest feedback to each other. |
| | | 9. In my organization, people listen to others' views before speaking. |
| | | 10. In my organization, people are encouraged to ask "why" regardless of rank. |
| | | 11. In my organization, whenever people state their view, they also ask what others think. |
| | | 12. In my organization, people treat each other with respect. |
| | | 13. In my organization, people spend time building trust with each other. |
| Team learning | 6 | 14. In my organization, teams/groups have the freedom to adapt their goals as needed. |
| | | 15. In my organization, teams/groups treat members as equals, regardless of rank, culture, or other differences. |
| | | 16. In my organization, teams/groups focus both on the group's task and on how well the group is working. |
| | | 17. In my organization, teams/groups revise their thinking as a result of group discussions or information collected. |
| | | 18. In my organization, teams/groups are rewarded for their achievements as a team/group. |
| | | 19. In my organization, teams/groups are confident that the organization will act on their recommendations. |
| Embedded systems | 6 | 20. My organization uses two-way communication on a regular basis, such as suggestion systems, electronic bulletin boards, or town hall/open meetings. |
| | | 21. My organization enables people to get needed information at any time quickly and easily. |
| | | 22. My organization maintains an up-to-date data base of employee skills. |
| | | 23. My organization creates systems to measure gaps between current and expected performance. |
| | | 24. My organization makes its lessons learned available to all employees. |
| | | 25. My organization measures the results of the time and resources spent on training. |

Table 13 (continued)

| Construct | N. | Item |
|-----------------------|----|--|
| Empowered people | 6 | 26. My organization recognizes people for taking initiative. |
| | | 27. My organization gives people choices in their work assignments. |
| | | 28. My organization invites people to contribute to the organization's vision. |
| | | 29. My organization gives people control over the resources they need to accomplish their work. |
| | | 30. My organization supports employees who take calculated risks. |
| | | 31. My organization builds alignment of visions across different levels and work groups. |
| System connection | 6 | 32. My organization helps employees balance work and family. |
| | | 33. My organization encourages people to think from a global perspective. |
| | | 34. My organization encourages everyone to bring the customers' views into the decision making process. |
| | | 35. My organization considers the impact of decisions on employee morale. |
| | | 36. My organization works together with the outside community to meet mutual needs. |
| | | 37. My organization encourages people to get answers from across the organization when solving problems. |
| Strategic leadership | 6 | 38. In my organization, leaders generally support requests for learning opportunities and training. |
| | | 39. In my organization, leaders share up to date information with employees about competitors, industry trends, and organizational directions. |
| | | 40. In my organization, leaders empower others to help carry out the organization's vision. |
| | | 41. In my organization, leaders mentor and coach those they lead. |
| | | 42. In my organization, leaders continually look for opportunities to learn. |
| | | 43. In my organization, leaders ensure that the organization's actions are consistent with its values. |
| Construct | N. | Item |
| Financial performance | 6 | 44. In my organization, return on investment is greater than last year. |
| | | 45. In my organization, average productivity per employee is greater than last year. |
| | | 46. In my organization, time to market for products and services is less than last year. |
| | | 47. In my organization, response time for customer complaints is better than last year. |
| | | 48. In my organization, market share is greater than last year. |
| | | 49. In my organization, the cost per business transaction is less than last year. |

Table 13 (continued)

| Construct | N. | Item | Adapted from |
|-----------------------|----|---|------------------------|
| Knowledge performance | 6 | 50. In my organization, customer satisfaction is greater than last year. | |
| | | 51. In my organization, the number of suggestions implemented is greater than last year. | |
| | | 52. In my organization, the number of new products or services is greater than last year. | |
| | | 53. In my organization, the percentage of skilled workers compared to the total workforce is greater than last year. | |
| | | 54. In my organization, the percentage of total spending devoted to technology and information processing is greater than last year. | |
| | | 55. In my organization, the number of individuals learning new skills is greater than last year. | |
| Adaptive performance | 6 | 56. In my organization, changes in organizational scope, such as market share, mergers, geographic distribution, or size, are absorbed better than last year. | Karadzic et al. (2013) |
| | | 57. In my organization, response to overall changes in our industry is better than last year. | Griffin et al. (2007) |
| | | 58. In my organization, response to competitors' product or service changes is faster than last year. | Morgan et al. (2003) |
| | | 59. In my organization, new business opportunities are seized better than last year. | Angle & Perry (1981) |
| | | 60. In my organization, unexpected situations are handled better than last year. | Angle & Perry (1981) |
| | | 61. In my organization, new technology is adopted more rapidly than last year. | Prajogo & Ahmed (2006) |

Target Population

The population of this study was defined as employees in organizations which have more than 50 employees. Although there is not an established opinion regarding the relationship between a learning organization and the size of the organization, Garavan (1997) pointed out that the size of an organization may have a certain role, and stated that “small size may have distinct advantages in terms of building a learning organization” (p. 22). Based on the common criteria by the member countries of the Organization for Economic Cooperation and Development

(2016), organizations where their employees number less than 50 were regarded as small-sized organizations, and employees in these organizations were excluded from the target population.

In order to generalize the results from a sample to the whole population, random sampling is the ideal sampling method to ensure the representativeness of the population (Keppel, 1991). Here, random refers to when “each individual has an equal probability of being selected from the population” (Cresswell, 2009, p. 155). While ideal, the random sampling method is not always possible for researchers to use in organization studies, because it takes time and may assume high costs (Merriam & Simpson, 1995). Thus, this study used the non-random convenient sampling method, which enables researchers to select accessible groups or individuals as the sample (Sproull, 2002). Although it may potentially result in bias in representing the population, the convenient sampling is more feasible, especially in terms of accessibility.

Data Collection

The researcher undertook the required procedures to obtain Institutional Review Board (IRB) approval for data collection. At the request of the researcher, the IRB and Human Subjects Office at the University of Georgia approved the collection of data for this study (STUDY00002758) on February 8th, 2016.

To collect data, this study recruited participants through Amazon Mechanical Turk (Mturk, www.mturk.com). Mturk is an online market place, where requesters openly recruit workers for diverse tasks called Human Intelligence Tasks (HITs), which include surveys and offer them compensations. Mturk was selected based on the following reasons.

First, in order to collect data, the researcher of this study contacted several organizations to gauge the organizations’ interests in participating in this study. Despite expending tremendous

effort to find research sites over approximately 6 months, not one single organization showed an interest in participating in this study. The researcher suspected that this could probably be due to the fact that, currently, organizations tend to administer their own internal surveys. The researcher of this study, thus, sought alternative ways for collecting data to overcome the challenge in recruiting research sites.

Second, Mturk has emerged as a promising way of collecting data when conducting survey studies (Goodman, Cryder, & Cheema, 2013). Recently studies revealed that data obtained via Mturk are reliable compared to traditional methods; especially, Mturk could be beneficial in terms of the risk of multiple responses by one person and non-response errors (Paolacci, Chandler, & Ipeirotis, 2010). Moreover, researchers could secure the quality of data if they provide a reasonable amount of compensation (Buhrmester, Kwang, & Gosling, 2011).

As described earlier, Mturk is an online marketplace for HITs operated by Amazon. Anyone who is older than 18 years old is eligible to register as a worker, and Amazon verifies the eligibility by their dates of birth and social security numbers. It takes up to 48 hours for Amazon to authorize individuals' requests to become workers. After receiving confirmation, a worker needs to open an account in order to receive compensation. Workers can transfer their earnings to their Amazon payments accounts (then to their bank accounts) or into Amazon.com gift cards.

Requesters who want to recruit Mturk workers post their HITs with the corresponding compensation. They should provide detailed instructions regarding their HITs which is as clear as possible. When requesters create their HITs, they can decide the number and qualifications of the participants, duration of the HITs, and the amount together with the criteria for getting compensation to the workers. In order to assess the quality of responses, first, requesters create

an identification code for their HITs, and requesters are able to reject the final product from workers when the quality does not meet the standards they set and informed the workers to follow.

As a requester, the researcher paid attention to secure ways of recruiting a valid target population for this study. First, the researcher linked Qualtrics, software for collecting data that is free to students at the University of Georgia, to Amazon to create a HIT for this study. Then, the researcher worked on generating a random code ranging from 1 to 9999999 in Qualtrics, which was given to each participant at the end of survey. Each participant was asked to enter the random code to receive compensation, a total of \$1.10 compensation—\$.10 for their participation and \$1.00 for completion of the survey. The researcher included two screening questions before the survey to identify that a participant falls into the target population, “Are you currently hired?” and “How many employees are in your organization?” If a participant answered either “no” for the first question or “under 50” for the second question, the survey automatically closed. Additionally, the HIT set options for the qualification of participants to address this quality issue. Participants whose total approved HIT numbers were greater than 1,000 and approval rates were greater than 95% were able to access and participate in the survey. This study recruited a total of 700 participants from April 26th to May 2nd, 2016. It took approximately 12 minutes to complete the survey.

Data Preparation

Data Screening, Testing, and Coding

After completing the data collection, the data preparation followed in order to analyze the data in a precise and accurate manner. SPSS 18.0 was used for data screening relating to missing

values, outliers, multicollinearity, and bivariate normality; the R MVN package was used for inspecting multivariate normality.

First, missing values were examined, as responses having missing values more than 10 percent could yield biased results (Bennett, 2001). The instrument for this study has 61 items excluding demographic information. Thus, responses having values missing more than six items were eliminated from the data set. Complete cases were used for descriptive statistics, including correlations; observations without missing values were used for factor and model analyses. Additionally, non-engaging responses, such as repeatedly responding to the same point, were removed from the data set.

Then, outliers were detected by the steps proposed by Johnson and Wichern (2007), which include examining standardized values and generalized squared distances. In order to inspect the outliers, standardized values were calculated; then, the values were assessed and deleted if their absolute value were greater than 3.0, a reference value determining bivariate outliers (Johnson & Wichern, 2007). The Mahalanobis distances and their associated probabilities of chi-square values were calculated, and observations whose probabilities were less than .001 were excluded from the data set (Johnson & Wichern, 2007; Kline, 1998).

Lastly, multicollinearity was examined by tolerance and variance inflation factor (VIF) values. If there are highly linearly related variables, it causes multicollinearity; then, one or more eigenvalues are close to zero, which causes that inverse matrix to be unstable or to not exist. This situation produces a large estimated variance of coefficients; thus, it hinders an accurate inference of the significance of the coefficients (Johnson & Wichern, 2007). In general cases, tolerance values less than .10 or VIF values greater than 10 could highly yield multicollinearity. Thus, further inspections are required (Pedhazur, 1997). Tolerance and VIF values of the

learning organization dimensions, knowledge and adaptive performance items ranged from .27 to .59 and from 1.67 to 3.69, respectively. Therefore, there is a lower chance of multicollinearity occurring.

Then, bivariate and multivariate normality was assessed, which is a fundamental assumption of multivariate data analysis. Bivariate normality was tested using Kolmogorov-Smirnov and Shapiro-Wilk tests. The test results rejected the null hypothesis of these test, which is normal distribution. Multivariate normality was assessed by Henze-Zirkler's Multivariate Normality Test, which is available in the R MVN package. The result also revealed non-multivariate normality. As evidence supporting normal distribution was not found, a robust estimation method was used for the factor analysis and structural equation modeling analysis (estimator= WLSMV).

Finally, 10 additional variables were created by computing the means of the items measuring the seven learning organization dimensions and three performance dimensions. These variables were mainly used for examining patterns of the dimensions and understanding differences between the demographic groups.

Data Profile

A total of 560 responses were used for this study. Table 14 shows the demographic information of the final sample. For organizations, most of respondents were employees in U.S. organizations ($n=486$, 86.8%); when it comes to type, the largest population came from profit organizations ($n=439$, 78.4%); and regarding the size and revenue, the highest frequency was founded employees from 51 to 500 ($n=230$, 41.1%) and revenue from \$2 million to \$25 million ($n=227$, 40.5%). For individuals, nearly two thirds of the respondents had non-management roles

($n=386$, 68.9%); respondents held Bachelor's degrees ($n=290$, 51.8%) or above ($n=230$, 21.4%); and the average number of years in a current or similar role was 5.17 years.

Table 14
Demographic Information

| Variable | n (%) | Variable | n (%) |
|--------------------|------------|----------------------------------|------------|
| Location | | Role | |
| U.S. | 486 (86.8) | Management | 174 (31.1) |
| Non-U.S. | 72 (12.9) | Non-Management | 386 (68.9) |
| Type | | Education | |
| Profit | 439 (78.4) | High school graduate | 73 (13.0) |
| Non-profit | 119 (21.3) | Certificate or Associates degree | 63 (11.3) |
| Size | | Bachelor's degree | 290 (51.8) |
| 51-500 | 230 (41.1) | Master's degree | 120 (21.4) |
| 501-1,000 | 103 (18.8) | Doctorate | 12 (2.1) |
| 1,001-10,000 | 119 (21.3) | Other | 2 (.4) |
| 10,001-50,000 | 57 (10.2) | <i>M</i> | <i>SD</i> |
| Over 50,000 | 49 (8.8) | Year | 5.17 |
| Revenue | | | 4.956 |
| Under \$2 million | 94 (16.8) | | |
| \$2-25 million | 227 (40.5) | | |
| \$26-99 million | 104 (18.6) | | |
| Over \$100 million | 132 (23.6) | | |

Data Analysis

In Chapter 2, eight hypotheses were proposed to address the relationships between a learning organization and financial, knowledge, and adaptive performance. This section explains the analytic methods and procedures this study took. It starts with the factor analysis of the three performance measures followed by the descriptive statistics analysis and structural equation modeling analysis of the proposed measurement framework.

Factor Analysis for the Three Performance Measures

Considering that the six items measuring adaptive performance were newly adapted for this study, exploratory factor analysis (EFA) regarding the three performance—financial,

knowledge, and adaptive—factors was performed first. The primary purpose of exploratory factor analysis is to identify hypothetical constructs (i.e. factors) formed by a linearly independent set of variables in which the constructs consist of common factors and unique factors that are assumed to be uncorrelated with each other (Mulaik, 2010).

As evidence of violating normality was found, Mplus was used for all analyses except for the descriptive statistics analysis. Mplus was selected, since it provides an algorithm for overcoming the non-normality of Likert-type scales, and parameters were estimated through a robust method (estimator = “WLSMV”, robust weighted least squares) in this study. The number of factors and variables explaining the factors were determined by examining eigenvalues. After the number of factors was decided, factors were rotated using an oblique method (rotation = “GEOMIN”, a default rotation method in Mplus) to find the optimum corresponding items to each performance factor. The oblique rotation method was selected based on the existence of correlations between the performance factors.

After determining the number of factors and corresponding items, then, confirmatory factor analysis (CFA) was performed to examine the fitness of data to the factor structure suggested by the exploratory factor analysis. For the analyses including EFA, CFA, and later structural equation modeling (SEM), fit indices were applied to assess the results as follows. For an acceptable model fit, a model is recommended to show a relative chi-square value of less than 5 (the chi-square is divided by the degrees of freedom) (Bollen, 1989); a Comparative Fit Index (CFI) value above .95 (Hu & Bentler, 1999); a Tucker and Lewis Index (TLI) value above .95 (Hu & Bentler, 1999); a Root Mean Square Error Approximation (RMSEA) value less than .08 (Browne & Cudeck, 1993); or a Standardized Root Mean square Residual (SRMR) value less than .08 (Hu & Bentler, 1999).

Table 15
Cut-off Criteria in Evaluating Model Fit

| Criteria | Cut-off | |
|---|---------|------------------------|
| Relative chi-square | <.05 | Bollen (1989) |
| Comparative Fit Index (CFI) | >.95 | Hu & Bentler (1999) |
| Tucker and Lewis Index (TLI) | >.95 | Hu & Bentler (1999) |
| Root Mean Square Error Approximation (RMSEA) | <.08 | Browne & Cudeck (1993) |
| Standardized Root Mean square Residual (SRMR) | <.08 | Hu & Bentler (1999) |

Factor Analysis for the Learning Organization

This study conducted the second-order CFA of a learning organization, which is based on the strong theoretical framework developed by Watkins and Marsick (1993). Many of the *DLOQ* studies reviewed in the previous sections have confirmed the theoretical framework by either EFA or CFA. Other empirical studies also showed positive correlations between the dimensions. In addition, there are more than three dimensions in the framework, and each dimension is measured by six or seven items; this satisfies the requirements for conducting second-order CFA (Kline, 1998). Second-order CFA was appealing when testing the hypothesis that a learning organization is a higher-order factor constructed by the seven dimensions including continuous learning, dialogue and inquiry, team learning, embedded systems, empowered people, system connection, and leadership.

Descriptive Statistics

As performance factors identified, descriptive statistics were analyzed. Means, standard deviations, and correlation coefficients were calculated by using mathematical means of the dimensions. The reliability of the instrument, including the newly developed adaptive performance measure, was assessed by Cronbach's alpha coefficients. Reliability of the constructs was calculated according to the formula presented in Fornell and Larcker (1981):

$$\text{Reliability} = \frac{(\sum \lambda)^2}{[(\sum \lambda)^2 + \sum \epsilon]}$$

where λ is standardized factor loading and ε is residual variance. A reference value of .70 was applied to evaluate the level of reliability of the instrument (Lance et al., 2006). The validity of the instrument was assessed by the average variance extracted (AVE) calculated by the formula presented in Fornell and Larcker (1981):

$$AVE = \frac{\sum \lambda^2}{\sum \lambda^2 + \sum \varepsilon}$$

The AVE values above .50 can support convergent validity. The second-order construct, a learning organization, was investigated according to the methods proposed by Mackenzie, Podsakoff, and Podsakoff (2011), which treat the unique proportion of variance of the first-order constructs the same as that of the items. Discriminant validity was evaluated by the heterotrait-monotrait (HTMT) ratio, “a ratio of the average correlations between constructs to the geometric mean of the average correlations within items of the same constructs” (Voorhees, Brady, Calantone, & Ramirez, 2016, p. 124), which was calculated according to the equation suggested in Henseler, Ringle, and Sarstedt’s (2015) study. The HTMT ratios less than .85 or .90 can support discriminant validity (Henseler et al., 2015).

Additionally, characteristics of Mturk respondents were analyzed by using t-test, which is used for comparing means between two groups. The comparison groups were from the Watkins and Dirani’s (2013) meta-analysis data set. Similar to descriptive statistics, means of the dimensions was used to compare different groups in the sample. All analyses were performed using SPSS 18.0.

Hypotheses Testing

In order to examine the research hypotheses, this study used structural equation modeling (SEM) based on the results obtained from the above EFA and CFA. The SEM can examine and

infer simultaneous regression (or causal) paths among latent variables, from a learning organization to knowledge, adaptive, and financial performance and from knowledge and adaptive performances to financial performance including their partial mediation effects from a learning organization to financial performance. By performing SEM, it is possible to investigate the hypothesized directions of relationships among various constructs together. In fact, the *DLOQ* studies reviewed in Chapter 2 examine the effect of a learning organization on performance primarily focusing on the correlations between them. Even though their correlations are strong, this does not guarantee their regression (or causal) relationships (Mulaik, 2010). Therefore, SEM was the most adequate analytic approach for taking a look at how a learning organization affects knowledge, adaptive, and financial performances including their direct and indirect relationships at the same time.

When the SEM fit indices reached to an acceptable level, meaning the model fits the data well, then, the research hypotheses were tested by examining the significance of the following statistics in the model: a regression coefficient from a learning organization to knowledge performance explained the effect of a learning organization on knowledge performance; a regression coefficient from a learning organization to adaptive performance explained the effect of a learning organization on adaptive performance; a regression coefficient from a learning organization to financial performance explained the effect of a learning organization on financial performance; a regression coefficient from knowledge performance to financial performance explained the effect of knowledge performance and financial performance; a regression coefficient from adaptive performance to financial performance explained the effect of knowledge performance to financial performance; indirect effects explained the partial mediation effects of knowledge and adaptive performance; correlation coefficients between knowledge and

adaptive performance at the item level and construct levels explained their relationships. Note that answering the research hypotheses was closely related to the construct validation of knowledge performance. Accepting proposed hypotheses was inferred to as the success of construct validation.

Table 16

Research Hypotheses and Data Analysis

| Research hypotheses | Analytic methods | Statistics |
|--|------------------|--------------------------|
| 1. A learning organization has a positive effect on knowledge performance. | SEM | Regression coefficient |
| 2. A learning organization has a positive effect on adaptive performance. | SEM | Regression coefficient |
| 3. A learning organization has a positive effect on financial performance. | SEM | Regression coefficient |
| 4. Knowledge performance has a positive effect on financial performance. | SEM | Regression coefficient |
| 5. Adaptive performance has a positive effect on financial performance. | SEM | Regression coefficient |
| 6. Knowledge performance mediates the positive relationship between a learning organization and financial performance. | SEM | Indirect effect |
| 7. Adaptive performance mediates the positive relationship between a learning organization and financial performance. | SEM | Indirect effect |
| 8. Knowledge performance is correlated with adaptive performance. | Correlations | Correlation coefficients |

Limitations of the Study

This study admitted the following limitations. First, this study couldn't control diverse contextual factors of the sample that may impact the results. Organizational factors, such as types of industry or years of business, could affect respondents in evaluating their perceptions regarding their organizations. However, this study recruited respondents who are employees in unspecified organizations; thus, it was not able to predict and constrain such significant factors in advance.

In the same vein, since the unit of analysis of this study was an organization, this study didn't take variances among individuals within organizations into account. As stated earlier, the respondents came from diverse organizations. On one hand, having a diverse population may overcome the weakness of the convenient sampling method regarding generalizability. On the other hand, since the chances of having respondents in the same organization is low, this limits the understanding of individual differences in perceiving a learning culture or organizational performance in the same organization.

Lastly, since this study used Mturk, the attitude towards survey research may differ from that of conventional recruiting methods. Although many studies have supported the reliability of using a Mturk population (Buhrmester, Kwang, & Gosling, 2011; Goodman, Cryder, & Cheema, 2013; Paolacci, Chandler, & Ipeirotis, 2010), one may raise concerns, such as the level of engagement of the respondents. In addition, in spite of having screening questions, respondents could answer the survey items falsely. However, this is not only limited to this study, but also to many other studies using Mturk populations, which needs a collective solution for facing this challenge.

Summary

This chapter reviewed the quantitative methodology that will be used for this study. This chapter covered the measurement framework, design of the study, instrument, target population, data collection, data analysis, and limitations of this study.

CHAPTER 4

RESULTS

This chapter presents the results of the statistical analysis. This chapter, firstly, describes the results obtained from the factor analysis of the 18 performance items. It then moves to the descriptive statistical analysis followed by the structural equation modeling analysis, which tests the research hypotheses of the study.

Factor Analysis

Prior to testing the hypotheses of this study, factor analysis was performed to identify an optimum factor structure for the 18 performance items. This was primarily due to the fact that the six items measuring adaptive performance were newly adapted from existing studies; thus, it was necessary to determine the factor structure of the performance constructs before proceeding with the hypotheses testing—the relationships between learning organizations and organizational performance.

The Performance Measures

Exploratory factor analysis. In order to navigate the factor structure, exploratory factor analysis was performed. First, eigenvalues were examined to select the number of factors that are able to be retained from the data. As Table 17 shows, two factors could be extracted according to the Kaiser-Guttman rule, which retains factors whose eigenvalue is greater than one. However, the eigenvalue of the third factor was close to one, and the third factor could be considered as one factor when applying Jolliffe's rule, which retains factors whose eigenvalue is greater than .7 (Jolliffe, 1972, 1986). Considering that exploratory factor analysis provides an initial guideline for selecting the number of factors and corresponding items, factors were further rotated to see

the factor structure that resulted from the 2-factor and 3-factor solutions and to evaluate their interpretability.

Table 17
Initial Eigenvalues

| | Factor1 | Factor2 | Factor3 |
|------------|---------|---------|---------|
| Eigenvalue | 9.822 | 1.189 | .823 |

An oblique rotation method was employed, GEOMIN, a default oblique rotation method in Mplus was used (see Table 18). The oblique rotation method was determined, because the factors were significantly correlated with each other. The results indicated that the 2-factor solution showed that the correlation between the two factors was .78. As Table 18 shows, for the 2-factor solution, Factor 1 consisted of items 44-49, and their factor loadings ranged from .41 to .81; Factor 2 contained items 50-61, and their factor loadings ranged from .52 to .95. All of the factor loadings were significant and greater than .35 (Brown, 2015). The 2-factor solution showed that Factor 1 included the financial performance items while Factor 2 had the knowledge and adaptive performance items. These results suggested that the 18 performance items can be classified into financial and non-financial performance.

For the 3-factor solution, the correlations among the three factors ranged from .60 to .80. Factor 1 was comprised of items 44-49, and their factor loadings ranged from .39 to .70; Factor 2 included items 50-55, and their factor loadings ranged from .41-.90; and Factor 3 contained items 56-61, and their factor loadings ranged from .53 to .80. The 3-factor solution showed that Factor 1 included the financial performance items, while Factor 2 and Factor 3 consisted of the knowledge and adaptive performance items, respectively. These results indicated that the 18 performance items can be factorized as financial, knowledge, and adaptive performance as expected in this study.

Table 18
Factor Rotations

| Item | 2 Factors | | 3 Factors | | |
|----------------------------|--------------|--------------|--------------|--------------|--------------|
| | Factor1 | Factor2 | Factor1 | Factor2 | Factor3 |
| <i>Factor loadings</i> | | | | | |
| 44 (FP1) | .809* | .002 | .700* | -.012 | .164* |
| 45 (FP2) | .649* | .117 | .605* | .211* | .003 |
| 46 (FP3) | .586* | -.038 | .521* | .088 | -.028 |
| 47 (FP4) | .409* | .328* | .393* | .282* | .114 |
| 48 (FP5) | .653* | .165* | .566* | .007 | .287* |
| 49 (FP6) | .614* | .007 | .552* | .118 | -.010 |
| 50 (KP1) | .288* | .517* | .306* | .407* | .153 |
| 51 (KP2) | .073 | .705* | .132* | .483* | .225* |
| 52 (KP3) | .121* | .585* | .165* | .408* | .189* |
| 53 (KP4) | .006 | .761* | .132* | .709* | .002 |
| 54 (KP5) | -.166* | .862* | -.008 | .904* | -.120 |
| 55 (KP6) | -.116* | .877* | .024 | .821* | -.005 |
| 56 (AP1) | .188* | .638* | .161* | .105 | .602* |
| 57 (AP2) | .000 | .841* | -.018 | .105 | .790* |
| 58 (AP3) | .107* | .724* | .070 | -.005 | .799* |
| 59 (AP4) | .120* | .700* | .084 | -.028 | .796* |
| 60 (AP5) | .023 | .752* | .017 | .132 | .666* |
| 61 (AP6) | -.218* | .949* | -.155* | .408* | .531* |
| <i>Factor correlations</i> | | | | | |
| Factor1 | 1.000 | | 1.000 | | |
| Factor2 | .779* | 1.000 | .597* | 1.000 | |
| Factor3 | | | .660* | .798* | 1.000 |

Note. * $p < .05$. The highest loadings were in bold; FP=Financial Performance; KP=Knowledge Performance; AP=Adaptive Performance.

Confirmatory factor analysis. In fact, both the exploratory 2-factor and 3-factor solutions provided substantive interpretability of the factors—financial and non-financial performance (two factors) and financial, knowledge, and adaptive performance (three factors). In order to further examine which solution fit the data better, confirmatory factor analysis was continued. The cut-off criteria in Table 15 were applied to evaluate the results. For the 2-factor model, the alternative chi-square value was 5.47; the RMSEA value was .09; and the CFI and TLI values were .96 and .95, respectively. For the 3-factor model, the alternative chi-square

value was 4.41; the RMSEA value was .08; and the CFI and TLI values were .97 and .96, respectively. Overall, the fit indices of the 3-factor model were better than those of the 2-factor model. Although the CFI and TLI values for both models were greater than .95, the 3-factor model produced an alternative chi-square value less than 5 and an RMSEA value less than .08. On the other hand, the 2-factor model revealed an alternative chi-square value greater than 5 and an RMSEA value greater than .08, which exceeded the cut-off values. Based on these results, it can be concluded that the 3-factor model performed better in this study. In other words, three performance factors can be identified from the data.

Table 19
Comparisons between 2-Factor and 3-Factor Structure

| | EFA | | CFA | |
|-----------------------|-------------|-------------|-------------|-------------|
| | 2 Factors | 3 Factors | 2 Factors | 3 Factors |
| Chi-square | 681.74*** | 433.06*** | 748.03*** | 582.74*** |
| <i>df</i> | 118 | 102 | 134 | 132 |
| Chi-square/ <i>df</i> | 5.78 | 4.25 | 5.47 | 4.41 |
| RMSEA | .092 | .076 | .090 | .078 |
| | [.086-.099] | [.069-.084] | [.084-.096] | [.072-.085] |
| CFI | .960 | .977 | .957 | .968 |
| TLI | .949 | .965 | .951 | .963 |
| SRMR | .038 | .029 | - | - |

Note. *** $p < .001$.

Thus, this study proceeded to conduct hypotheses testing using the three performance factors—financial, knowledge, and adaptive performance, according to the following rationale. First, Jolliffe’s rule retains factors which have eigenvalues greater than .70, and the first three factors met this criterion. Second, when considering the most significant and strongest factor loadings, the 3-factor solution clearly showed an expected factor structure, even though it showed some cross-loading items. Third, considering that exploratory factor analysis is a method for determining the most “interpretable” factor structure in a reasonable manner, the 3-factor solution allowed factors to be interpreted as financial, knowledge, and adaptive performance as

this study designed. Lastly, the results of the CFA of the 3-factor model were superior to those of the 2-factor solution.

The Learning Organization Measure

The learning organization measure was examined by using the second-order CFA. As seen in Table 20, the model fit reached a good level; the alternative chi-square value was 2.75; the RMSEA value was .06; and the CFI and TLI values were .97 and .96, respectively.

Table 20
Model Fit Indices

| | Learning Organization |
|-----------------------|-----------------------|
| Chi-square | 2345.74*** |
| <i>df</i> | 853 |
| Chi-square/ <i>df</i> | 2.75 |
| RMSEA | .056 |
| | [.053-.059] |
| CFI | .965 |
| TLI | .963 |

Note. *** $p < .001$.

Descriptive Statistics

Table 21 presents descriptive statistics, including means, standards deviations, and correlations between the means of the dimensions. Here, the means were the averages of corresponding items of the seven dimensions. The *Dialogue and Inquiry* and *Team Learning* dimensions showed the highest means, whereas the *Embedded Systems* and *Empowered People* dimensions showed the lowest means. As seen in the table, the learning organization dimensions are highly and positively intercorrelated. Some correlations exceeding .80 called for attention in terms of multicollinearity; however, this study performed analyses by using individual items, not the means of the dimensions. The bivariate correlations between individual items were significant, positive, and less than .8. In addition, the tolerance and VIF values were less than the reference values—.10 and 10, respectively (see p. 76). Therefore, these higher correlations

between the means of the dimensions would not cause a multicollinearity issue with the remaining analyses.

Table 21
Correlations between Item Means of the Dimensions

| | <i>M</i> | <i>SD</i> | α | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|--------|----------|-----------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| 1. CL | 4.19 | 0.87 | .84 | .87 | | | | | | | | | |
| 2. DI | 4.19 | 0.91 | .87 | .79** | .89 | | | | | | | | |
| 3. TL | 4.19 | 0.94 | .88 | .79** | .84** | .90 | | | | | | | |
| 4. ES | 3.97 | 1.04 | .87 | .72** | .65** | .70** | .90 | | | | | | |
| 5. EP | 3.94 | 1.08 | .91 | .78** | .78** | .83** | .75** | .92 | | | | | |
| 6. SC | 4.05 | 0.97 | .84 | .74** | .74** | .79** | .71** | .80** | .86 | | | | |
| 7. SL | 4.17 | 1.08 | .92 | .79** | .76** | .82** | .75** | .84** | .85** | .93 | | | |
| 8. FP | 4.00 | 0.83 | .82 | .52** | .47** | .49** | .52** | .55** | .57** | .56** | .85 | | |
| 9. KP | 4.05 | 0.94 | .87 | .65** | .60** | .63** | .63** | .70** | .70** | .71** | .71** | .89 | |
| 10. AP | 4.08 | 0.97 | .90 | .60** | .56** | .59** | .61** | .64** | .65** | .65** | .71** | .80** | .92 |

Note. ** $p < 0.01$ (2-tailed). CL=Continuous Learning; DI=Dialogue and Inquiry; TL=Team Learning; ES=Embedded System; EP=Empowered People; SC=System Connection; SL=Strategic Leadership; FP=Financial Performance; KP=Knowledge Performance; AP=Adaptive Performance; α =Cronbach's alpha values; reliability values of latent factors are in diagonal.

The three performance dimensions were also positively correlated with the learning organization dimensions. The knowledge performance dimension showed the strongest correlations with the seven learning organization dimensions, ranging from .60 to .71. The next strongest correlations were found in the adaptive performance dimension, ranging from .56 to .65. The financial performance dimension revealed relatively weaker correlations compared to the other performance dimensions, ranging from .47 to .57. Often, *DLOQ* empirical studies presented the strongest correlation between performance dimensions and the *Strategic Leadership* dimension (Marsick & Watkins, 2003; Watkins & Kim, 2015). This study showed minimal difference. In this study, the knowledge and adaptive performance dimensions displayed the strongest correlation with the *Strategic Leadership* dimension, whereas the financial performance dimension showed the strongest correlation with the *System Connection* dimension.

Figure 4 depicts the pattern of the dimensions. Overall, the pattern of the learning organization dimensions resembled that of published studies in Watkins and Driani's (2013) meta-analysis study although the means of this study were slightly higher. Unlike the results of published studies in the Watkins and Dirani's (2013) study, the results of this study revealed that the lowest mean score came from the *Empowered People* dimension while the published studies displayed the lowest mean score in the *Embedded System* dimension. This finding could possibly be explained by cultural differences. A majority of the respondents of this study came from U.S. organizations, while the published studies included respondents from diverse countries, such as Australia, China, Colombia, Lebanon, or Malaysia. Cultural contexts might yield different patterns in the above two dimensions (Watkins & Dirani, 2013).

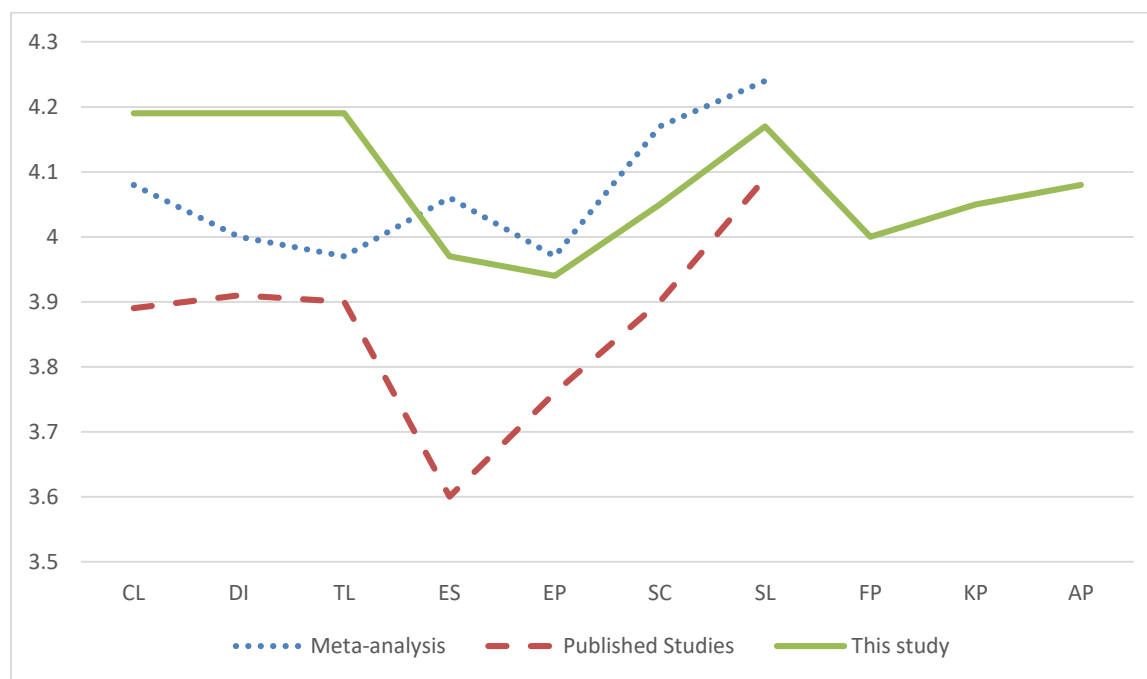


Figure 4. Pattern of the means of the dimensions in this study. Overall means of published studies compared to overall means in combined data set in Watkins and Dirani (2013) were presented together. Adapted and modified from “A meta-analysis of the dimensions of a learning organization questionnaire looking across cultures, ranks, and industries” by K. E. Watkins and K. M. Dirani, K. M, 2013, *Advances in Developing Human Resources*, 15(2), p. 155. Copyright 2013 by SAGE publication. Reprinted with permission.

Reliability and Validity

Reliability was assessed by the Cronbach's alpha values, which represent the internal consistency of an instrument (see Table 21). The Cronbach's alpha values ranged from .82 to .91. Additionally, the reliability of the latent factors was calculated by using factor loadings and residual variances. The reliability of latent factors was slightly higher than the Cronbach's alpha values, which ranged from .85 to .92. All of these values were higher than .80, which supported the substantive level of reliability regarding the instrument used this study (Lance et al., 2006).

As discussed in earlier sections, the fit indices of the confirmatory factor analysis showed a sufficient level of fitness of the measurement model to the data. These results supported the validity of the instrument when taking a structural approach. When applying a classical approach, convergent validity can be evaluated by AVE values. The AVE value of learning organizations was .88; financial performance was .50; knowledge performance was .59; and adaptive performance was .67. Although the AVE value of financial performance was marginal, all values were greater than .50, which showed adequate convergent validity (Fornell & Larcker, 1981). The HTMT values between the learning organization dimensions and the performance dimensions ranged from .58 to .89. These values were less than .90, a generous threshold when evaluating discriminant validity (Henseler et al., 2015). These results met discriminant validity.

Structural Equation Modeling

Finally, structural equation modeling analysis was conducted to test the research hypotheses of this study. First, the model fit was assessed to examine whether the data fits well with the model. As seen in Table 22, although the results showed a significant chi-square value, the other fit indices supported the conclusion that the model fit reaches a good level: the

alternative chi-square value was 2.01; the RMSEA value was .042; the CFI value was .966; and the TLI value was .965. Thus, these results allowed this study to interpret parameters and test the research hypotheses.

Table 22
SEM Model Fit Indices

| | SEM Model |
|-----------------------|-------------|
| Chi-square | 3531.80*** |
| <i>df</i> | 1756 |
| Chi-square/ <i>df</i> | 2.01 |
| RMSEA | .042 |
| | [.040-.045] |
| CFI | .966 |
| TLI | .965 |

Note. *** $p < .001$.

The first five research hypotheses were examined by regression coefficients of SEM. Note that this study used a robust estimation method that employs a probit regression model; all coefficients referred to changes in z-scores of the cumulative probability under a standard normal distribution. The regression coefficient from a learning organization to knowledge performance was .811, which was significant ($p < .001$); one unit increases in a learning organization, and the z-score for a learning organization to affect knowledge performance increases by .811. Thus, Hypothesis 1, a learning organization has a positive effect on knowledge performance, was supported. The regression coefficient from a learning organization to adaptive performance was .737, which was significant ($p < .001$); the z-score for a learning organization to affect adaptive performance increased by .737. Thus, Hypothesis 2, a learning organization has a positive effect on adaptive performance, was supported. The regression coefficient from a learning organization to financial performance was -.078, which was not significant; thus, Hypothesis 3, a learning organization has a positive effect on financial performance, was not supported. The regression coefficient from knowledge performance to financial performance

was .585, which was significant ($p < .001$); the z-score for knowledge performance to affect financial performance increased by .585. Thus, Hypothesis 4, knowledge performance has a positive effect on financial performance, was supported. The regression coefficient from adaptive performance to financial performance was .358, which was significant ($p < .001$); the z-score for adaptive performance to affect financial performance increased by .358. Thus, hypothesis 5, adaptive performance has a positive effect on financial performance, was supported.

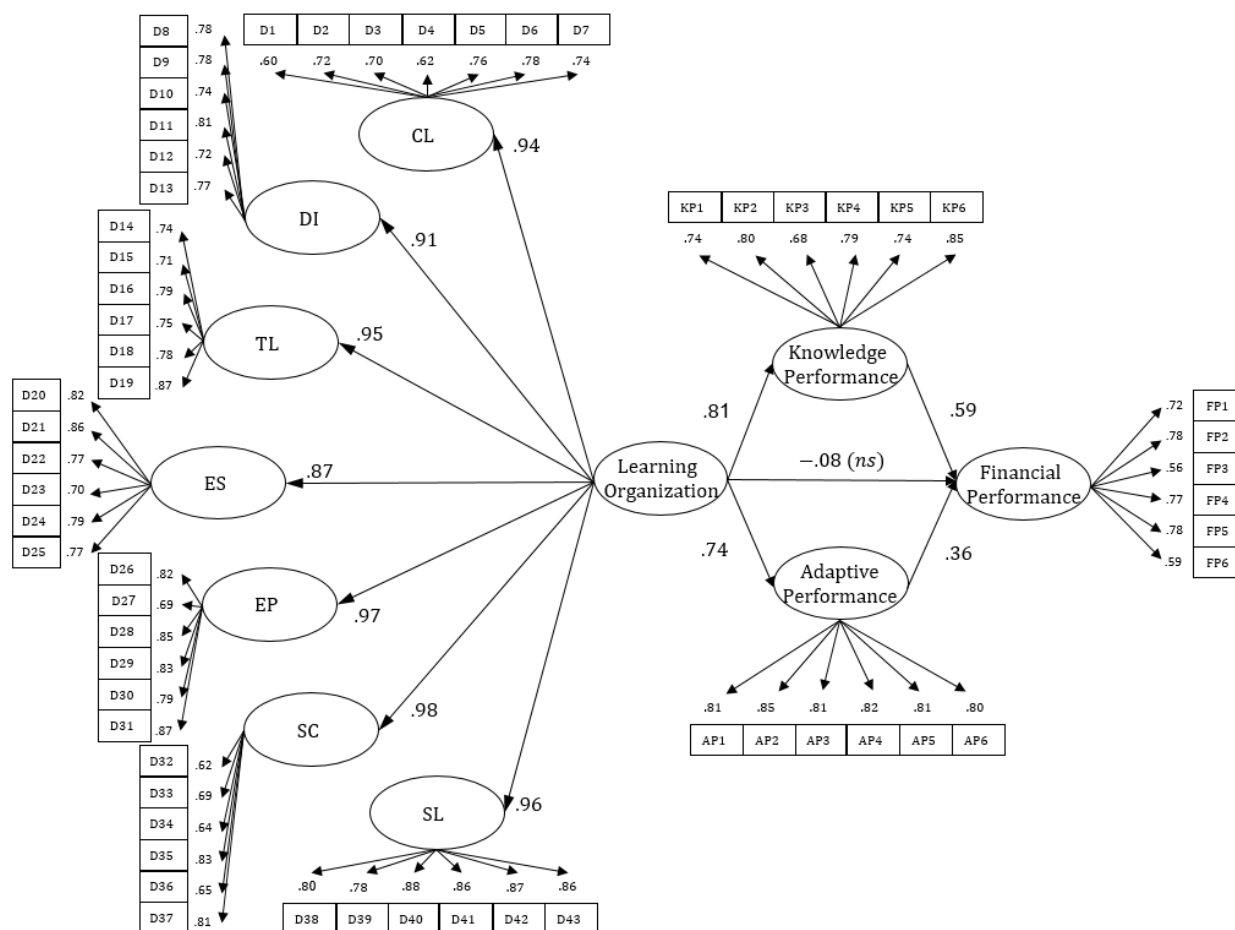


Figure 5. Results. $p < .001$; ns=non-significant.

Hypotheses 6 and 7 were assessed by the indirect effects of SEM. The indirect effect from a learning organization to financial performance via knowledge performance was .474, which was significant ($p < .001$); the z-score increased by .474. Thus, Hypothesis 6, knowledge

performance mediates the positive relationship between a learning organization and financial performance, was supported. The indirect effect from a learning organization to financial performance via adaptive performance was .264, which was significant ($p < .001$); the z-score increased by .264. Thus, Hypothesis 7, adaptive performance mediates the positive relationship between a learning organization and financial performance, was supported.

Finally, the strong relationship between knowledge and adaptive performance was revealed throughout the data analyses. The correlation among the item means was .79; the correlation between the two factors was .80. Thus, Hypothesis 8, knowledge performance is correlated with adaptive performance was supported.

Table 23
Summary of the Hypotheses Tests

| Research hypotheses | Analytic methods | Results |
|--|------------------|---------------|
| 1. A learning organization has a positive effect on knowledge performance. | SEM | Supported |
| 2. A learning organization has a positive effect on adaptive performance. | SEM | Supported |
| 3. A learning organization has a positive effect on financial performance. | SEM | Not supported |
| 4. Knowledge performance has a positive effect on financial performance. | SEM | Supported |
| 5. Adaptive performance has a positive effect on financial performance. | SEM | Supported |
| 6. Knowledge performance mediates the positive relationship between a learning organization and financial performance. | SEM | Supported |
| 7. Adaptive performance mediates the positive relationship between a learning organization and financial performance. | SEM | Supported |
| 8. Knowledge performance is correlated with adaptive performance. | Correlations | Supported |

Summary

This chapter described the results of the factor analysis and structural equation modeling analysis together with descriptive statistics. The analysis results supported the positive relationships between a learning organization, knowledge and adaptive performance as well as the mediating effects of knowledge and adaptive performance between a learning organization and financial performance. Lastly, the results supported the correlation between knowledge and adaptive performance.

CHAPTER 5

CONCLUSION

This chapter summarizes the major findings of this study and includes a discussion of the findings, the theoretical and practical implications of the study, the limitations of the study, and suggestions for future research.

Summary of the Findings

The purpose of this study was to (1) examine a learning organization's effects on knowledge performance, adaptive performance, and financial performance and the relationships among them and (2) identify correlations in measures of knowledge performance and adaptive performance; and thus seek to validate the knowledge performance and adaptive performance constructs. The following hypotheses were proposed:

1. A learning organization has a positive effect on knowledge performance.
2. A learning organization has a positive effect on adaptive performance.
3. A learning organization has a positive effect on financial performance.
4. Knowledge performance has a positive effect on financial performance.
5. Adaptive performance has a positive effect on financial performance.
6. Knowledge performance mediates the positive relationship between a learning organization and financial performance.
7. Adaptive performance mediates the positive relationship between a learning organization and financial performance.
8. Knowledge performance is correlated with adaptive performance.

This study mainly used the *DLOQ* (Watkins & Marsick, 1997) and adapted the adaptive performance measure based on existing items in the literature to test these hypotheses. As expected, the results of the EFA showed that the 18 performance items were loaded onto the corresponding factors—the 12 *DLOQ* items were bound as two factors, namely financial and knowledge performance; the proposed six items were bound as one factor, namely adaptive performance. The results of the CFA also revealed fit indices that reached an acceptable level. These results allowed this study to test the proposed research hypotheses using SEM.

The results of SEM supported the research hypotheses, except for Hypothesis 3, “A learning organization has a positive effect on financial performance.” Based on the results that supported the rest of the hypotheses, it can be concluded that a learning organization has a positive effect on knowledge performance; a learning organization has a positive effect on adaptive performance; knowledge performance has a significant effect on financial performance; adaptive performance has a significant effect on financial performance; knowledge performance and adaptive performance fully mediates the relationship between a learning organization and financial performance; and knowledge performance and adaptive performance are highly correlated with each other.

Discussion of the Findings

Construct Validation of Knowledge Performance

Besides identifying the relationships between a learning organization, financial, knowledge, and adaptive performance, this study also attempted to validate the knowledge performance construct by testing eight hypotheses. In order to validate the performance construct, this study navigated the following stages for the validating construct proposed by Benson (1998): (1) a substantive stage, (2) a structural stage, and (3) an external stage. First,

theoretical domains and corresponding empirical domains of a construct evolve from previous research, traits of the construct, and researchers' observations in the substantive stage (Benson, 1998). At the structural stage, researchers investigate internal relationships among the observed variables by using statistical methods, including intercorrelations and exploratory or confirmatory factor analysis (Benson, 1998). Lastly, the external stage focuses on relationships among constructs; a multitrait-multimethod matrix, group differentiations, construct-level correlations, and structural equation modeling are proposed ways of identifying the relationships at the construct level (Benson, 1998).

In this vein, testing the proposed research hypotheses enabled this study to establish the construct validity of knowledge performance by applying correlations and structural equation modeling as proposed by Benson (1998) as well as Nunnally and Bernstein (1994). First, the *DLOQ* lent this study its theoretical and corresponding empirical domains of knowledge performance. Second, as a part of the testing of the research hypotheses, correlations of the knowledge performance with adaptive performance constructs were evaluated both at the item and factor levels. Lastly, relationships between the constructs of knowledge performance and adaptive performance were identified while conducting structural equation modeling analysis.

Structural equation modeling is especially significant in construct validation, because it allows this study to set a nomological network, which relates "(a) observable properties or quantities to each other; or (b) theoretical constructs to observables; or (c) different theoretical constructs to one another" (Cronbach & Meehl, 1955, p. 290). As Benson (1998) mentioned, the two types of SEM models provide ways to confirm a nomological network. One of the SEM models is the measurement model. This measurement model is able to assist in evaluations of the former two relationships in a network, because it deals with latent constructs and observed

variables. The other is the structural model. The structural model estimates the relationships of latent constructs, which enables it to test the latter relationship. Thus, the fact that the proposed model set by the hypotheses showed reasonable model fit indices supported the notion that “the measure fit lawfully into a network of expected relationships” (Nunnally & Bernstein, 1994, p. 91). Thus, the results of this study contributed to establishing the construct validity of knowledge performance.

Direct Effect of a Learning Organization on Financial Performance Depends on How you Measure it

The results of this study revealed that the direct effect of a learning organization on financial performance was not significant. However, the direct effect of a learning organization on each performance variable was significant when it was measured separately. As Table 24 shows, the learning organization’s direct effect on financial performance was .66 ($p < .001$), its effect on knowledge performance was .81 ($p < .001$), and its effect on adaptive performance was .74 ($p < .001$). Moreover, the model fit indices reached a good level for all of the separate models: the alternative chi-square values were less than 3, the RMSEA values were less than .05, and the CFI and TLI values were greater than .95.

Table 24
Direct Effect of a Learning Organization on Performance

| | Estimates(se) | Chi-square | df | Chi-square/df | RMSEA | CFI | TLI |
|-------|---------------|------------|------|---------------|---------------------|------|------|
| LO-FP | .660***(.027) | 2074.00*** | 1119 | 1.85 | .050 [.048-.053] | .965 | .964 |
| LO-KP | .811***(.017) | 2676.82*** | 1119 | 2.39 | .050 [.047-.052] | .967 | .965 |
| LO-AP | .737***(.023) | 2609.53*** | 1119 | 2.33 | .049 [.046-.051] | .968 | .966 |

Note. *** $p < .001$.

This finding was consistent with the recent study by Kim, Watkins, and Lu (2016b). Their study using U.S. organizations found that a learning organization significantly and positively impacts knowledge performance, and that knowledge performance significantly and positively affects financial performance. Their study also could not find a significant direct effect of a learning organization on financial performance in their research model; they concluded that knowledge performance fully mediates the relationship between a learning organization and financial performance.

The results supported the idea that intangible performance based on organizational knowledge, either presented as knowledge or adaptive performance, is a significant latent predictor of financial performance. In addition, these intangible performances based on learning become stronger when they are treated as predictors of financial performance as the model showed. The Balanced Score Card (BSC) also implies the power of intangible assets, because financial performance could be derived from them if they are managed appropriately (Banker et al., 2000; Hoque & James, 2000; Kaplan & Norton, 1992). Davis and Albright (2004) supported this. They empirically proved how people's skills and knowledge affect financial performance through customer service by comparing the financial performances of BSC and non-BSC organizations. Therefore, a learning organization which facilitates learning and organization development activities serves as a driving force in the production of such organizational knowledge, which is one of the critical sources for achieving financial performance (Olavarrieta & Friedmann, 2008).

Adaptive Performance

In this study, a decision was made to extract three performance factors from the 18 performance items and to consider the third performance dimension adaptive performance.

However, several points related to the results may require further discussion. First, there might be a different opinion about the optimal number of factors when examining the initial eigenvalues. The initial eigenvalues were 9.82, 1.89, and .82 (see Table 17). Some researchers could raise concerns that the eigenvalue of the third factor might not be sufficient to be treated as an independent factor. This is reasonable, since researchers retain factors having eigenvalues greater than one when applying the Kaiser-Guttman rule.

Second, although it is plausible to extract three factors, some researchers could also express concerns about cross-loadings. In order to assess factor structures as accurately as possible, this study chose an oblique rotation method, so that items would be heavily loaded onto one factor while they were loaded close to zero onto other factors. However, some items significantly cross-loaded onto more than two factors. For example, Item 47, “In my organization, response time for customer complaints is better than last year,” showed similar factor loadings in the 2-factor solution—.41 ($p < .05$) for Factor 1 and .33 ($p < .05$) for Factor 2. When it comes to the 3-factor solution, Items 50 and 51, “In my organization, the number of suggestions implemented is greater than last year” and “In my organization, the number of products or services is greater than last year,” displayed significant factor loadings for the all three factors although they showed the strongest factor loadings at Factor 2. Item 61, “In my organization, new technology is adopted more rapidly than last year,” loaded more onto Factor 3 (.53, $p < .05$) than Factor 2 (.41, $p < .05$), but both factor loadings were significant.

Lastly, some researchers might be concerned about the strong correlations between Factors 2 and 3 when selecting the 3-factor solution, which decreases distinctions between the two factors (Brown, 2015; Johnson, & Wichern; 2007). In fact, the results of the EFA showed that the performance factors—both the 2- and 3-factor solutions—were highly correlated with

each other. The factor correlation was .78 ($p < .05$) for the 2-factor solution. For the 3-factor solution, the correlation between Factors 1 and 2 was .60 ($p < .05$); between Factors 1 and 3, it was .66 ($p < .05$); and between Factors 2 and 3, it was .80 ($p < .05$). This may be the result of inter-correlations among performance. This study considered that organizational performance derived from learning and organization development activities plays a foundational role for other types of performance—financial performance. Therefore, the three performance measures are naturally correlated with each other. Or, this might simply be due to sampling. Respondents from multiple organizations might yield significant and high correlations among the performance factors. For example, Kim et al. (2016b) also showed that the correlation between financial and knowledge performance reached .77 ($p < .01$).

Mturk: Comparisons to the Meta-data set

This study used a multi-organization sample from anonymous Mturk workers. Thus far, many studies have confirmed the substantive reliability and validity of using Mturk as a data collection method (Buhrmester et al., 2011; Goodman et al., 2013; Paolacci et al., 2010). Then, how is this Mturk sample different from or similar to previous *DLOQ* data?

In order to answer this question, this study further compared the means of the data of this study to those of the *DLOQ* meta-data set, which the major professor of this study owns. The meta-data set was the same data set that was used in a study that investigated differences in the learning organization dimensions between countries, organizations, and positions (Watkins & Dirani, 2013).

Two datasets contained for-profit organizations in the U.S. were compared, which cover the largest proportion in each data set. Table 25 show the results. The t-tests of all dimensions were significant at a $p = .000$ level. The largest mean difference was .63 (the *Team Learning* and

Embedded System dimensions). The results indicated that the Mturk data of this study revealed significantly higher means than those of the meta-data set in terms of U.S. for-profit organizations.

Table 25
Meta-data set vs. Mturk (U.S. For-Profit Organizations)

| | Meta-data (a) n = 3266 | | Mturk (b) n = 404 | | (b)-(a) | <i>t</i> | <i>df</i> | <i>p</i> |
|----|---------------------------|-----------|----------------------|-----------|---------|----------|-----------|----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | | | |
| CL | 3.65 | .98 | 4.11 | .88 | .46 | -9.76 | 535 | .000 |
| DI | 3.61 | 1.04 | 4.13 | .95 | .52 | -10.38 | 531 | .000 |
| TL | 3.53 | 1.06 | 4.16 | .97 | .63 | -12.11 | 530 | .000 |
| ES | 3.30 | 1.18 | 3.93 | 1.07 | .63 | -11.14 | 533 | .000 |
| EP | 3.34 | 1.17 | 3.87 | 1.11 | .53 | -8.60 | 3668 | .000 |
| SC | 3.56 | 1.15 | 3.96 | 1.00 | .40 | -7.59 | 544 | .000 |
| SL | 3.65 | 1.25 | 4.09 | 1.12 | .44 | -7.34 | 535 | .000 |

Implications

Theoretical Implications

Adaptive Performance. How can knowledge performance be defined? Watkins and Marsick (2003) defined it as “creation and enhancement of products and services because of learning and knowledge capacity (lead indicators of intellectual capital)” (p. 139). They developed six items to measure—customer satisfaction, suggestions implemented, new products or services, skilled workers, spending on technology and information processing, and individuals learning new skills.

Knowledge performance is critical for organizations to obtain competitiveness in their environments (King & Zeithaml, 2003; Wiklund & Shepherd, 2003). Other than knowledge performance, obtaining superior ability in adaptation which allows organizations to respond to changes faster than other competitors assists the organizations in positioning themselves better in their environments (Gibson & Birkinshaw, 2004; Morgan et al., 2003; Wei & Lau, 2010). In

order to obtain such ability, an organizational learning culture is needed to create an environment where the workforce is able to acquire these abilities by utilizing organizational knowledge (Kotter & Heskett, 1992). Therefore, there might be other consequences of learning and knowledge other than the six aspects that Watkins and Marsick (2003) proposed.

In addition to knowledge performance, therefore, this study proposed that there could be another performance dimension focusing more on responding to changes that can be derived from learning and knowledge capacity in organizations. This study called it adaptive performance, which is defined as “an organization’s success in responding over time to changing conditions and opportunities in the external environment” (Walker & Ruekert, 1987). In order to examine this idea, this study suggested that adaptive performance can be measured by the degree of absorbing changes, responding to changes, seizing new opportunities, handling unexpected situations, and adopting new technologies. This study developed a measure that is able to capture these actions and empirically proved its reliability and validity.

Intangible Performance. This study proposed a potential performance dimension, which is adaptive performance. This is part of an effort to understand intangible performance. The literature suggested that learning in organizations enhances organizational capacity in accumulating organizational knowledge and dealing with changes (Kotter and Heskett, 1992; Youndt et al, 1996). Despite the significance of learning, measuring the outcomes of learning has not been well developed compared to measuring tangible outcomes (Richard et al., 2009). Tangible outcomes, financial performance in other words, can be measured by various concrete ways, such as return on investment or return of assets. The results of financial performance are immediate and objective. Thus, many studies use these hard measures when examining organizational performance (Richard et al., 2009).

In fact, many studies have highlighted the importance of intangible assets and tried to understand what they are and how they accelerate organizational performance (Kaplan & Norton, 1992, 1994, 2004; Wilcox & Zeithaml, 2003). The findings of this study indicated that organizational intangible performance can be anticipated by the degrees of the seven learning organization dimensions—continuous learning, dialogue and inquiry, team learning, embedded system, empowered people, systems connection, and leadership. Also, the findings of this study reveal that intangible performance, knowledge performance together with adaptive performance, is a significant mediator of financial performance. In other words, learning and organization development activities invisibly promote not only creation and enhancement of products or services but also the success of responding to changes, which is eventually realized as financial performance, a critical outcome for continuous survival of organizations.

Construct Validation. The *DLOQ* has been validated in terms of the reliability of its translated versions. Thus far, abundant studies have translated the *DLOQ* into local languages and confirmed substantive reliability by examining Cronbach's alpha values, which indicate the internal consistency of an instrument (Basim et al., 2007; Dirani, 2009; Hernandez & Watkins, 2003; Lien et al., 2006; Menezes et al., 2011; Song et al., 2009; Sharifirad, 2011; Sta. Maria, 2000; Zhang et al., 2004). The stable reliability of these studies revealed that the *DLOQ* is a reliable instrument regardless of cultural differences (see Table 4).

Regarding the validity of the seven dimensions of the *DLOQ*, Yang et al. (2004) revealed its construct validity by confirming a nomological network using SEM. In addition, a recent study also confirmed its convergent and discriminant validity by using factor loadings and residual variances (Kim et al., 2016b). Another recent study found the cross cultural construct validity of the seven dimensions of the *DLOQ* by using multigroup CFA (Kim et al., 2016a).

In addition to these validity studies, this study supported the construct validity of the two performance measures of the *DLOQ* and the newly developed adaptive performance measure by taking both structural and conventional perspectives. The good fit indices of the CFA results proved that the measure of this study captures the three performance constructs well in a structural manner. Also, the AVE values greater than .50 and the HTMT values less than .90 (although this is a generous cut-off value) provided convincing evidence that the measure met convergent and discriminant validity from a conventional perspective. Most importantly, the good fit indices of the SEM results verified its nomological network, which is the final stage of testing construct validity (Benson, 1998). Thus, this study took a step forward in solidifying the construct validity of the *DLOQ* performance dimensions.

Practical Implications

Restressing the Significance of a Learning Organization. Practically, the findings of this study highlight the importance of becoming a learning organization, especially in terms of promoting organizational performance. As stated earlier, abundant studies have emphasized that a learning organization has strong correlations not only to financial performance, but also to knowledge performance and mission performance (Awasthy & Gupta, 2011; Davis & Daley, 2008; Ellinger et al., 2002; Kumar, 2005; Kumar & Idris, 2006; McHargue, 2003; Noubar et al., 2011; Rose et al., 2006; Watkins et al., 2009; Wetherington & Deniels, 2013; Yu & Chen, 2015, also see Table 7). In other words, learning and organization development activities in organizations are significant contributors to variance in organizational performance.

In addition to previous findings, this study proved that a learning organization facilitates organizational adaptive performance, which further enhances financial performance. Intangible performance, knowledge and adaptive performance in this study, can be expected when

organizations promote learning and organization development activities (Youndt et al. 1996).

This study also supported that intangible performance fully mediates the relationship between a learning organization and financial performance.

Just as the results of numerous studies have shown (see Tables 3-7), the findings of this study emphasize the value of a learning organization. This study advises human resource developers to take a close look at how learning and organization development activities improve organizational performance. This study implies that organizations can expect enhanced performance when the organizations are able to align learning and organization development activities with and integrate them into their strategic vision (Kaplan & Norton, 2004). In this regard, this study emphasizes that the role of human resource developers is significant in order to ensure the sustainability of organizations.

In this vein, the findings of this study allow organizations to use the *DLOQ* and the six adaptive performance items to evaluate the current status of learning and estimate how learning affects their knowledge, adaptive, and financial performance. Furthermore, the *DLOQ* is able to assist in the diagnosis of their strengths and weaknesses from a learning organization perspective and to identify where they need supplements to promote more fruitful outcomes through people and learning (Marsick & Watkins, 2003; Watkins & O'Neil, 2013).

Use of Mturk. This study used Mturk as a data collection method. Mturk has emerged as an alternative method of data collection for many disciplines, including the social sciences (Buhrmester et al, 2011; Goodman et al, 2013). Mturk is an online market place, where researchers openly recruit participants for their studies with compensation. The researchers are able to set screening questions to judge whether the participants belong to their target populations and to prepare verification methods to identify whether the participants actually

participate in their research. One drawback could be the fact that researchers might be unable to get any other information except for that obtained from their screening and survey questions. Despite its innate anonymity, Mturk has met the test of reliability in recent studies, especially when conducting survey studies (Buhrmester et al, 2011; Paolacci et al., 2010).

This study attempted to use Mturk for a survey study in the field of HRD for almost the first time. Often, researchers in this field admit that collecting data from a single organization or limited numbers of organizations may limit the generalization of their findings (Lien et al., 2006; Song et al., 2009; Sta. Maria & Watkins, 2003; Weldy & Gillis, 2010). Mturk allowed this study to lessen this limitation by providing proxy respondents from multiple organizations. This is particularly important to this study, since one of the purposes of this study was to validate the knowledge and adaptive performance constructs (Scandura & Williams, 2000).

The results of this study show that the Mturk data revealed substantive reliability and validity. In addition, the findings of the study are consistent with a recent Kim et al. (2016b) study that used respondents in anonymous U.S. organizations. Thus, this study also provides a reference for using Mturk as a valid method of data collection in survey studies in HRD. In particular, this study introduced a detailed procedure for using Mturk, from creating an account to giving compensation to participants. The procedures described in this study could be of significant help to researchers or practitioners hoping to use Mturk.

Significance to HRD

This study sought to understand organizational performance and develop “discipline-specific measures that address the relationship between organizational practices and organizational performance” (Richard et al, 2009, p. 743). Significant relationships between a learning organization and organizational performance, as shown in *DLOQ* studies, call for

“elaborating and validating the measures and dimensions of organizational performance” (Watkins & Kim, 2015, p. 14) from an HRD perspective.

As part of the effort to dimensionalize organizational performance, this study proposed the adaptive performance dimension in addition to the financial, knowledge, and mission performance dimensions that the *DLOQ* identified. This study applied a newly created measure that captures an organization’s performance in responding to external changes. As expected, this study found that the seven learning organization dimensions are correlated to this measure of adaptive performance.

Thus, this study addresses the following significant points for HRD. First, this study uncovered another performance dimension that is strongly impacted by learning and organization development activities in organizations. Next, the findings of this study supported the claim that HRD has strong potential to induce variance in intangible performance, which is ultimately realized as an improvement in tangible financial performance. HRD enables organizations to perform more effectively by promoting performance facilitated by learning that grows into a capacity for knowledge creation and adaptation.

Limitations and Future Directions of Research

This study yielded the following limitations. First, the data set of this study contained respondents from organizations that have employees numbering more than 50. Accordingly, this study excluded participants from small organizations that have less than 50 employees. Initially, there were 1,236 potential participants for this study. The screening question filtered 700 responses out of the 1,236 total responses; 536 responses from small organizations were unable to continue to participate in the study. The fact that this study ruled out smaller organizations from the data set might impede the generalizability of the findings of this study. The findings of

this study should be further examined by analyzing data that includes samples from small organizations, as well (Song et al. 2009).

Second, this study drew from the Mturk population. In other disciplines, such as psychology, Mturk has emerged as a promising method for data collection (Buhrmester et al, 2011; Goodman et al, 2013): it decreases researchers' efforts to find organizational sites; it also shortens time. However, the findings of this study showed relatively higher correlations among the means of the dimensions compared to other empirical studies. So far, higher correlations greater than .80 were found in only a few studies, such as Watkins et al. (2009). Although the results of this study did not challenge the hypotheses testing proposed in this study, these higher correlations could originate from the data collection method, which can be regarded as a drawback of using Mturk. Future research should be conducted to further examine and extend the findings of this study with data collected through the use of other sampling methods.

Third, many studies adopted perceptual measures to measure or compare organizational performance due to the fact that examining organizational performance is challenging because of its complexity (Deeds & Decarolis, 1999; Morgan et al., 2003; Youndt et al., 1996). This study also implemented perceptual measures. However, the findings of this study may not fully explain what is happening in the real world, since these were perceptual results. This suggests that developing objective measures of intangible performance that are generally accepted is a topic for the future research. In addition, future research could investigate the findings of this study with such actual performance measures.

Fourth, this study obtained data from a self-reported questionnaire. Such a questionnaire might lead to common method bias that affects overall questionnaire response processes from comprehension to response selection, which eventually influences the results (Podsakoff,

MacKenzie, Lee, & Podsakoff, 2003). Although the reliability and construct validity presented in this study diminish concerns about the occurrence of such effects (Conway & Lance, 2010), this study encourages researchers to take appropriate procedural or statistical approaches in the design or analysis stages of their studies to control common method bias in the future (Podsakoff et al., 2003).

Lastly, considering the fact that the adaptive performance measure consisting of six items was newly adapted in this study, more empirical studies are required to determine that the measure produces stable results. Although the results of this study showed that the adaptive performance measure is reliable and valid from a statistical perspective, this study admitted the need for further investigation on this measure. For example, the higher correlation between knowledge and adaptive performance raises the question of whether they are indeed separate constructs. In addition, the results of exploratory factor analysis indicated that knowledge and adaptive performance could be combined together as one factor. The boundaries of these two performances could be vague depending on which criteria researchers take.

What becomes really important, then, is that the organizational outcome that successfully responds to the external environment is worth considering as another performance dimension. Although this study named it as adaptive performance, future research requires a close look at related concepts used in different disciplines and an evaluation of whether they share certain components. For example, organizational ability that produces such an outcome can be viewed as organizational agility, which is “a core competence for organizations operating in a dynamic external environment” (Dyer & Shafer, 1998). Organizational agility is related to quality, speed, and cost; people are a critical factor in obtaining this ability (Crocitto & Youssef, 2003). These similarities between adaptive performance and organizational agility call for researchers’

attention to explore organizational agility from definitions to operations. As a beginning step, future research can evaluate the current adaptive performance items or rewrite the current items or develop new items based on their studies on organizational agility.

Conclusion

This study examined the relationship between organizational performance and the seven dimensions of a learning organization—continuous learning, dialogue and inquiry, team learning, embedded system, empowered people, system connection, and leadership. The results revealed that learning and organization development activities in organizations represented by the seven learning organization dimensions enhance knowledge and adaptive performance, which eventually contribute to improved financial performance. In other words, the seven dimensions indirectly affect financial performance through knowledge and adaptive performance, which means that the two performances fully mediate the relationship between the learning organization dimensions and financial performance.

Based on these findings, firstly, this study discussed the construct validity of performance, the direct effect of a learning organization on performance, adaptive performance as a newly proposed performance dimension, and comparisons between the data set of this study to the cumulative meta-data set. Secondly, from a theoretical perspective, this study proposed adaptive performance as a potential performance dimension facilitated by learning and organization development activities in organizations. This study also stressed the importance of intangible performance in promoting financial performance. Furthermore, this study provided evidence of the construct validity of the *DLOQ*, particularly the performance measure of this instrument. From a practical perspective, this study reiterated the strategic use of learning and organization development activities in enhancing organizational performance. This study also

introduced Mturk as a new approach to collecting data in conducting a survey study. Thirdly, this study explained possible limitations of this study, which included exclusion of small-sized organizations, the drawback of using Mturk, and the use of perceptual measure. Finally, this study recommended that researchers develop objective measures of intangible performance, conduct more empirical studies of adaptive performance, and control common method bias in the future.

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APPENDIX A
QUESTIONNAIRE

Q1. Are you currently employed?

Yes

No

Q2. How many employees are in your organization?

1-50

51-500

501-1,000

1,001-10,000

10,001-50,000

Over 50,000

Human Subjects Permission

Your involvement in the study is completely voluntary, and you may choose not to participate or to stop at any time without penalty or loss of benefits to which you are otherwise entitled. If you decide to stop or withdraw from the study, the information/data collected from or about you up to the point of your withdrawal will be kept as part of the study and may continue to be analyzed. Information collected will be identifiable only by confidential identification numbers created by the researcher for an analysis purpose. Your responses will be collected and analyzed using Qualtrics and Mplus software, respectively. Because this survey will ask questions about your organization, it will be safest to complete it at home on a personal computer. Internet communications are insecure and there is a limit to the confidentiality that can be guaranteed due to the nature of the technology involved. However, once the materials are received by the researcher, standard confidentiality procedures will be employed. All data will be saved in a secure and private place, accessible only by your organization and the researcher. The results of the research study may be published, but your name or any identifying information will not be used. In fact, the published results will be presented in summary form only.

The findings from this study may provide information regarding creating a better work place for employees by cultivating and facilitating an organizational learning culture. There are no known risks or discomforts associated with this research.

If you have any questions about the survey, please feel free to send an e-mail to kskim08@uga.edu or call me 706-308-8385 (or Dr. Karen E. Watkins, the Principal Investigator, kwatkins@uga.edu or 706-542-4355). Questions and concerns about your rights as a research participant should be directed to The Chairperson, University of Georgia Institutional Review Board, telephone (706) 542-3199; email address irb@uga.edu.

By checking yes below, I agree that my responses may be used as part of a cumulative database of responses for ongoing research by the researcher.

Yes

No

DIMENSIONS OF THE LEARNING ORGANIZATION QUESTIONNAIRE¹ WITH ADAPTIVE PERFORMANCE

A learning organization is one that learns continuously and transforms itself . . . Learning is a continuous, strategically used process — integrated with and running parallel to work.

In the last decade, organizations have experienced wave after wave of rapid transformation as global markets and external political and economic changes make it impossible for any business or service—whether private, public, or nonprofit—to cling to past ways of doing work. A learning organization arises from the total change strategies that institutions of all types are using to help navigate these challenges. Learning organizations proactively use learning in an integrated way to support and catalyze growth for individual workers, teams and other groups, entire organizations, and (at times) the institutions and communities with which they are linked.

In this questionnaire, you are asked to think about how your organization supports and uses learning at an individual, team and organizational level. From this data, you and your organization will be able to identify the strengths you can continue to build upon and the areas of greatest strategic leverage for development toward becoming a learning organization.

Please respond to each of the following items. For each item, determine the degree to which this is something that is or is not true of your organization. If the item refers to a practice which rarely or never occurs, score it a one [1]. If it is almost always true of your department or work group, score the item a six [6]. Fill in your response by marking the appropriate number on the answer sheet provided.

Example: In this example, if you believe that leaders often look for opportunities to learn, you might score this as a four [4] by filling in the 4 on the answer sheet provided.

| Statement | Almost Never | | | | | | Almost Always |
|--|-----------------|---|---|-----|---|---|------------------|
| In my organization, leaders continually look for opportunities to learn. | 1 | 2 | 3 | [4] | 5 | 6 | |

There are no right or wrong answers. We are interested in your perception of where things are at this time.

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Organizational Adaptive Performance²

| Please respond to the following statements. | Almost Never | | | | Almost Always | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| 56. In my organization, changes in organizational scope, such as market share, mergers, geographic distribution, or size, are absorbed better than last year. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 57. In my organization, response to overall changes in our industry is better than last year. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 58. In my organization, response to competitors' product or service changes is faster than last year. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 59. In my organization, new business opportunities are seized better than last year. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 60. In my organization, unexpected situations are handled better than last year. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| 61. In my organization, new technology is adopted more rapidly than last year. | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

² Scale developed by Kyoungshin Kim, The University of Georgia, 2016.

Demographic and Organizational Information

Please answer the following questions that best describe you or your organization.

62. Your organization's location?

U.S.

Non-U.S.

63. Your organization's type?

Profit

Non-profit (including government)

64. Your organization's annual revenue?

Under \$2 million

\$2-25 million

\$26-99 million

Over \$100 million

65. What is your role?

Management

Non-Management

66. How many years have you been in your current or a similar role? Please type the number only.

67. What is the highest level of education completed?

High school graduate

Certificate or associates degree

Bachelor's degree

Master's degree

Doctorate

Other

Thank you for your participation!