

Meditation, learning, organizational innovation and performance

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Abstract

Purpose—This study attempts to investigate (1) the effect of meditation experience on employees' self-directed learning (SDL) readiness and organizational innovative (OI) ability as well as organizational performance (OP), and (2) the relationships among SDL, OI, and OP.

Design/methodology/approach—This study conducts an empirical study of 15 technological companies (n = 412) in Taiwan, utilizing the collected survey data to test the relationships among the three dimensions.

Findings—Results show that: (1) The employees' meditation experience significantly and positively influenced employees' SDL readiness, companies' OI capability and OP; (2) The study found that SDL has a direct and significant impact on OI; and OI has direct and significant influences on OP.

Research limitation/implications—The generalization of the present study is constrained by (1) the existence of possible biases of the participants, (2) the variations of length, type and form of meditation demonstrated by the employees in these high tech companies, and (3) the fact that local data collection in Taiwan may present different cultural characteristics which may be quite different from those in other areas or countries. Managerial implications are presented at the end of the work.

Practical implications—The findings indicate that SDL can only impact organizational innovation through employees "openness to a challenge", "inquisitive nature", self-understanding and acceptance of responsibility for learning. Such finding implies better organizational innovative capability under such conditions, thus organizations may encourage employees to take risks or accept new opportunities through various incentives, such as monetary rewards or public recognitions. More specifically, the present study discovers that while administration innovation is the most important element influencing an organization's financial performance, market innovation is the key component in an organization's market performance.

Social implications—The present study discovers that meditation experience positively

affects SDL readiness, and organizational innovative ability and performance. The finding implies spiritual practice improves individual capability (i.e., in learning), as well as organizational capability (i.e., in innovativeness), which consequently enhances the outcomes of organizations.

Originality/value— Existing studies prove the benefits of meditation on both spiritual enlightenment and clinical psychology. Existing research documents that meditation practice helps relief pain, improves physical health, reduces stress, and supports relaxation. No direct evidence shows the effect of meditation on SDL and OI, and only some evidence supporting the influence of meditation on OP. Nevertheless, the finding on the effect of the meditation experience in a work setting adds values to the current literature.

Paper type- Research paper.

Keywords: meditation, self-directed learning, organizational innovation, organizational performance

1. Introduction

With fast developing technology and gradually globalizing market, traditional organizational management is no longer considered an appropriate strategy in this highly competitive business environment. Nowadays, businesses must compete for their survival through continuous improvement and innovation to sustain competitive advantages. That is, businesses need innovation in order to obtain opportunities for survival. As Leavy (1998) points out, resistance to innovation is likely to result in enterprises of decreasing performance. According to Drucker (1993), innovation is not only a process, but also a combination of innovative elements, which includes the inconsistent needs from the environment, needs of production procedure, change of industries and markets, as well as the composition of demographics.

Globalization has opened worldwide trade markets which brings businesses opportunities that have never been seen. Meanwhile, globalization also opens the door to tough competitions in various industries. As a result, enterprises can no longer consider “employees” as “laborers” who only contribute their manpower. As Drucker points out, knowledge workers have become the most vital asset in the knowledge-based society. Therefore, qualified employees are a critical component of business success, and effective strategies for continuously enhancing employees’ competency are in urgent need.

Knowledge is a strategic asset that helps organizations maintain their competitive ability

in a turbulent environment (Jantunen, 2005). The success of organizations consequently is built upon organizations' and individuals' speed in learning. As Jude-York (1991) points out, organizations striving in today's fast changing marketplace are facing the need to have employees who know how to learn and who can quickly retool and be ready for new challenges. Self-directed learners seem to be individuals who are most likely to succeed at this and are becoming an increasing valuable resource within modern organizations (Ho, 2008; Naisbitt and Aburdene, 1985; Senge, 1990).

In addition, the pace of the modern society is placing increasing pressure on people. This is especially the case with working adults who are expected to deal with stress resulting from a multitude of social, professional and family demands. According to Azedo, Divisional Director of Grant Thornton Asia-Pacific, stress levels are rising in Asia as competitive pressures intensify and demands on managers increase. Based on the Grant Thornton's 2006 International Business Owners Survey (IBOS), Taiwan topped the league table of countries to report rising stress levels, with 89% of business owners saying they felt under increased pressure (Thornton, 2006). Stress is the body's natural response to enhance efficiency in coping with demanding and competitive situations. However, over an extended period of time, stress not only negatively affects people's productivity, but also their physical and mental health (Benson, 2005). In the Chinese world, meditation seems to be a response to this phenomenon.

This article presents the results of an empirically based study on the organizational performance (term discussed in later section) of 15 electronic industrial listed and over-the-counter listed technological companies which are located in the northern part of Taiwan. The investigation aims to examine how meditation experience of the top and middle managers from these high tech companies affects their self-directed learning capability and consequently the organizational innovative ability and organizational performance. Furthermore, this study examines the correlation between self-directed learning and organizational innovation, as well as organizational innovation and organizational performance.

This paper consists of five sections. In addition to the introduction section, the following presents literature review, method, results and discussions, and finally conclusion and Implications.

2. Literature Review

This section reviews the literature to identify the relevant practices comprising meditation and its benefits, self-directed learning, organizational innovation, organizational performance, and relationship between dimensions.

2.1 Meditation and its Benefits

The benefits of meditation are noticeable from both spiritual enlightenment (Compton and Becker, 1983) and clinical psychology (Ramel *et al.*, 2004) points of view. Medical researchers highlight the benefits gained from the practice of meditation, such as physical health benefits (e.g., pain relief) (Specia *et al.*, 2000), the ability to reduce mental stress (Dwivedi, 2000), and the ability to increase abstract and differentiated cognitive structures to support relaxation (Smith, 1988). In recent years, meditation has gained much recognition as a means of alleviating and coping with stress among working populations locally (e.g. Lin *et al.*, 2007) and overseas (Michie, 2002; Shapiro *et al.*, 2006). In the present study, meditation experience of the top and middle managers from these high tech companies is examined to explore their influences on managers self-directed learning capability and consequently the organizational innovative ability and organizational performance. The meditation experience may come from any type, form or length of meditation activities to support all kinds of purposes, such as spiritual enlightenment, stress reduction, relaxation and so on.

2.2 Self-directed Learning

Self-directed learning (SDL) as “a process in which learners take the initiative, with or without the help of others, in identifying their learning needs, formulating learning goals, choosing learning resources, employing suitable learning strategies, and assessing learning outcomes” (Knowles, 1975, p. 167). Brockett and Hiemstra (1991) view the term

self-directed learning as an instructional process centering on such activities as assessing needs, securing learning resources, implementing learning activities, and evaluating learning. Guglielmino (1977) claims SDL is an ability that represents an individuals' voluntary, independent and continuous learning habits. In addition, Hiemstra (1994) suggests that the rapidity of change, the continuous creation of new knowledge, and an ever-widening access to information make SDL necessary. In essence, self-directed learning is any form of study in which individuals have the primary responsibility in planning, implementing, and even evaluating their effort on learning.

Past research use different instruments to measure SDL. A strand of the SDL research has focused on the role of the learner's readiness for self-directed learning. For instances, Guglielmino's (1977) self-directed learning aptitude (SDLA), which assesses continuous learning behaviors triggered by active self-learning, includes six factors, namely, effective learning, fondness for learning, learning motivation, active learning, independent learning, and creative learning. Furthermore, Self-Directed Learning Readiness Scale (SDLRS), which evaluates individuals' continuous learning behaviors on their own initiative, including eight factors, namely: openness to learning opportunities, self-concept as an effective learner, initiative and independence in learning, informed acceptance of responsibility for one's own learning, love for learning, creativity, positive orientation to the future, and ability to use basic study skill and problem-solving skills (Bonham, 1989). SDLRS is an accurate

instrument which is used in many related researches (Box, 1983).

Furthermore, through confirmatory factor analysis using Lisrel modeling, West and Bentley (1990) propose that SDL readiness can be measured at six levels, including love of learning, self-confidence as a learner, openness to a challenge, inquisitive nature, self-understanding, and acceptance of responsibility for learning. Oddi (1986) and Livneh (1986) suggest that self-directed learners are those individuals who are committed and open to learning, initiators and persisters, creative and resourceful, tolerant of ambiguity, risk and complexity, self confident, understand their own learning needs, and take responsibility for their learning. Local studies (e.g., Chi, 2002; Ting, 1996) characterize SDL into four factors, namely self understanding, fondness for learning, active learning and persistent learning. Based on above literature and characteristics of the research context, the present study adopts West and Bentley's (1990) six factors to measure SDL readiness in target organizations.

2.3 Organizational Innovation

Organizational innovativeness is examined in many disciplines, such as management/strategy, entrepreneurship, political science and marketing. Ries and Trout (1981) perceive innovation as a form of learning. Gopalakrishnan and Damanpour (1997) argue that innovation means "something new" (p.16). Peters and Waterman (1982) suggest innovation is a means through which organizations respond to a variety of environmental

changes. Rogers (2003) and Tushman and Nadler (1986) propose that innovation refers to a new idea, product, method or service adopted in organizations. As a result, while some researchers define innovativeness as the adoption of new ideas, methods, or services (Subramanian and Nilakanta, 1996), other researchers perceive innovativeness differently. For instance, Vigoda-Gadot *et al.* (2005) view innovativeness as a multi-dimensional organizational trait. They define organizational innovativeness as including five dimensions: creativity, risk-taking, openness to change, future orientation, and pro-activeness. Similarly, Dundon (2005) differentiates innovation from creativity and suggests that innovation comprises four elements, namely creativity, strategy, application and profitability.

Existing literature presents different classifications of organizational innovativeness. A number of researchers suggest a dichotomy of innovation. For example, Subramanian and Nilakanta (1996) classify organizational innovation into two categories: (1) technological innovation, including product, services and processes, as well as (2) administrative innovation, including organizational structure, administrative process and programs. Pacharn and Zhang (2006) propose two types of innovation, namely organizational innovation and technological innovation. In fact, researchers, such as Desouza *et al.* (2007) suggest two forms of innovation exist in a corporate environment (i.e., user innovations and organizational innovations).

Furthermore, a number of researchers position organizational innovation into three

categories. For instance, Johne (1998) suggests that innovation comprises of three categories: market innovation, product innovation and administration innovation. Similarly, Popadiuk and Choo (2006) classify organizational innovation into three categories: technological innovation, market innovation, and administrative innovation. In addition, Subramaniam (2005) identifies four classifications of organizational innovation, including organizational innovation, innovation climate, team innovation and individual innovation.

In conclusion, early definitions of organizational innovativeness define innovativeness as a form of social process which leads organizations to go through series of major changes (Carroll, 1995). However, recent literature points out organizational innovations in areas of management practice, administrative processes or formal organizational structure are results of technological advancement (Drejer, 2000; Joahnessen *et al.*, 2001). Based on the above literature and characteristics of the research context, the present study adopts Popadiuk and Choo's (2006) three factors to measure SDL readiness in target organizations.

2.4 Organizational Performance

Specialists in many fields consider organizational performance (OP) as involving strategic planners, operations, finance, legal, and organizational development. OP is an indicator which measures how well an enterprise achieves their objectives (Hamon, 2003).

An organization can assess OP according to the efficiency and effectiveness of goal

achievement (Robbins and Coulter, 2002). Andersen (2006) states that the concept of effectiveness is a ratio, implying that two entities are required when defining and measuring effectiveness (e.g., return on assets). Andersen also regards effectiveness as the degree of goal attainment (i.e., the achievement of profitability goals). In other words, OP comprises the actual output or results of an organization as measured against the intended outputs.

Schermerhorn *et al.* (2002) point out that performance refers to the quality and quantity of individual or group work achievement. Recently, OP, effectiveness and efficiency are synonyms which are interchangeable (Hancott, 2005). Hancott further points out that a number of indicators have been adopted to measure OP since mid 1900, such as profit growth rate, net or total assets growth rate, return on sales, shareholder return, growth in market share, number of new products, return on net assets, etc. In 1990, performance measurement incorporates other new elements, such as return on net assets and return on capital employed.

A number of studies adopt various dimensions to measure OP (e.g., Chung and Lo, 2007; Garnett *et al.*, 2008; Green and Inman, 2007; Schiuma and Lerro 2008; Wong and Wong, 2007). In a study investigating the effect of communities of practice and organizational performance, Lesser and Storck (2001) highlight four areas of organizational performance: (1) decreasing the learning curve of new employees, (2) responding more rapidly to customer needs and inquiries, (3) reducing rework and preventing “reinvention of the wheel” (p. 836), and (4) spawning new ideas for products and services. Furthermore, Steer (1975) reviews 17

models of organizational effectiveness and integrated the contents of these various studies concerning the measurement of OP. After reviewing ten different types of measurement, they generalize the results into three dimensions: financial performance, business performance and organization effectiveness.

In addition, Delaney and Huselid (1996) suggest two ways to assess OP: organizational performance and market performance. The former concerns with product or service quality, product or service innovation, employee attraction, employee retention, customer satisfaction, management/employee relation and employee relation; the latter concerns with organizational marketing ability, total growth in sale, and total profitability. Tippins and Sohi (2003) propose OP measures on four dimensions: relative profitability, return on investment, customer retention, and total sales growth. Padma *et al.* (2008) point out performance indicators of an organization quantitatively represent the various organization- and market-related aspects of its products, services, resources, and productivity. In the present study, we focus on financial performance and market performance, and adopt these two factors for the OP dimension.

2.5 Relationship between Dimensions

Existing literature proves a scarcity of evidence supporting the relationship between individual's self-directed learning ability and organizational innovative ability. However, from a competency-based continuing professional development point of view, Campbell *et al.*

(2010) point out that physicians often go through a dynamic process to continuously develop their professional competencies. Such dynamic process emphasizes self-directed learning processes, enhances the ability to access information for innovations, and promotes the role of assessment as professional expectation. Thus, a self-directed learner must take the learning process as his/her obligation and must hold an innovative thinking in developing new evidence that may be integrated into practice. Moreover, Bary and Rees (2006) suggest self-directed learning skills, among other things, are of prime importance in the success of innovation processes.

Nevertheless, the current literature has numerous studies discussing the relationship between innovation and organizational performance. For instance, Camisón and López (2010) conclude that organizations that pursue manufacturing flexibility should develop innovation capabilities to obtain an improvement in organizational performance. Cheng *et al.* (2010) discover that while process innovation has a greater influence on conflict resolution among employees, product innovation has greater impact on organizational performance. In addition, from a knowledge sharing point of view, Appel-Meulenbroek (2010) argues that knowledge sharing enhances innovation ability, which ultimately facilitate organizations' to reach their goals. Thus a correlation between organizational innovation and performance is evident.

3. Method

3.1 Research and Hypotheses

The study performs two sets of analyses (see Figure 1). Firstly, t-test tests how meditation experience influences the factors within the self-directed learning, organizational innovation and performance. Secondly, Pearson correlation analysis examines the correlation between self-directed learning and organizational innovation, as well as organizational innovation and organizational performance. Finally, multiple stepwise regression analysis determines how self-directed learning affects organizational innovation as well as how organizational innovation affects organizational performance. Stepwise regression analysis helps to establish the predictive power of self-directed learning on organizational innovation, and the predictive power of innovation on performance.

[Take in Figure 1]

Based on above review literature, the study tests the following hypotheses.

H₁: Managers' meditation experience significantly correlates with their self-directed learning capability.

H₂: Managers' meditation experience significantly correlates with organizational innovation.

H₃: Managers' meditation experience significantly correlates with organizational performance.

H₄: Managers' self-directed learning readiness is a predictor of organizational innovation.

H₅: Organizational innovation is a predictor of organizational performance.

3.2 Questionnaire Design

The questionnaire includes four parts: self-directed learning, organizational innovation, organizational performance and personal background, including meditation experience (i.e. with or without meditation experience), gender (male or female), and age (gender and age only collected for demographic data). The questionnaire utilizes a five-point Likert scale.

I. Self-direct learning dimension

Based on West and Bentley's (1990) study, the self-directed learning dimension includes six major constructs, namely love of learning, self-confidence as a learner, openness to a challenge, inquisitive nature, self-understanding, and acceptance of responsibility for learning.

The following explains the operational definition of each factor:

- (a) Love of learning: refers to the extent to which the individual is interested in and desire learning.
- (b) Self-confidence as a learner: refers to the extent to which the individual believes he/she is capable of exploring knowledge independently.
- (c) Openness to a challenge: refers to extent to which the individual is willing to accept and experience new information, knowledge and tasks.
- (d) Inquisitive nature: refers to the extent to which the individual is able to be self-initiated, independent and effective in learning.

(e) Self-understanding: refers to the extent to which the individual understands his/her needs for learning.

(f) Acceptance of responsibility for learning: refers to the extent to which the individual takes ownership in his/her learning.

II. Organizational innovation dimension

The present study adopts Popadiuk and Choo's (2006) three constructs consisting of: technological, market, and administrative innovation, to measure organizational innovativeness. The following explains the operational definition of each factor:

(a) Technological innovation: refers to product, process and service innovation.

(b) Market innovation: refers to price, promotion and place innovation.

(c) Administrative innovation: refers to strategy, structure, systems and culture innovation.

III. Organizational performance dimension

Based on the literature review, the present study examines organizational performance on two aspects: financial performance and market performance. The following explains the operational definition of each factor:

(a) Financial performance: refers to the extent to which the organization performs in relative profitability, return on investment, and total sales growth.

(b) Market performance: refers to the extent to which the organization performs in market share, profit ratio, and customer satisfaction.

3.3 Research Sample

The data are from questionnaire responses from participants in 15 electronic industrial listed and over-the-counter listed technological companies located in northern Taiwan. The criteria of company selection are: (1) the company must be electronic industrial listed and over-the-counter listed technological company; (2) the number of employees must exceed 1,000 employees; (3) the company has strategies that promote learning; (4) the willingness to participate in the study. The study targets particularly the middle and the top management personnel. Each company receives 40 questionnaires to answer. The study circulated a total of 600 survey questionnaires, resulting in 412 valid returns (a valid return rate of 68.67%). The result from non-response analysis ensures the absence of non-response biases. The results show that no difference exists between respondents and non-respondents. Table 1 illustrates the description statistics for the three dimensions.

[Take in Table 1]

3.4 Reliability and Validity Tests

Reliability and validity tests are conducted for each of the constructs with multivariate measures. Cronbach α reliability estimates are used to measure the internal consistency of these multivariate scales (Nunnally, 1978). In this study, the Cronbach α of each construct is

greater than 0.9, which indicates a strong reliability for our survey instrument (Cuieford, 1965). In addition, measures with item-to-total correlations larger than 0.6 are considered to have high criterion validity (Kerlinger, 1999). Since the item-to-total correlations of each measures is at least 0.59 (see Table 2), we consider the criterion validity of each scale in this study to be satisfactory. Meanwhile, to ensure that the instrument has reasonable construct, this study employs validity exploratory factor analyses. The exploratory factor analysis applies the following rules: (1) eigenvalue >1 , (2) applying Varimax rotation and extracting factor with loading $>.6$ (3) compared factor loading variance $>.3$ (4) item-to-total correlation value > 0.6 . The results of exploratory factor analysis are presented in Table 2.

[Take in Table 2]

4. Results and Discussions

In the first section of the analysis, the learners' meditation experience is analyzed against factors within the self-directed learning, organizational innovation, and organizational performance dimensions using t-Test. In the second section, correlations are calculated for each of the dimension pairings, namely self-directed learning to organizational innovation as well as organizational innovation to organizational performance, according to the research structure in Figure 1.

4.1 The Effect of Meditation Experience on Three Dimensions

The results show that the adult workers' meditation experience significantly influences their self-directed learning readiness, which consequently affects organizational innovativeness and performance (see Table 3 for a summary of the effect of meditation experience on the factors in the three dimensions).

[Take in Table 3]

The study discovers that learners' meditation experience results in statistically significant differences in (1) openness to challenge, inquisitive nature and self-understanding factor of the self-directed learning dimension; (2) market and administrative innovation factor of the organizational innovation dimension; and (3) both factors of the organizational performance dimension ($p < .05$). In particular, adult workers who have previous meditation experience appear to have higher self-directed learning readiness, self-perceived organizational innovativeness and performance.

Although no direct evidence supports the effect of meditation practice on self-directed learning readiness, some studies indirectly support our findings. For example, Williams (1993) investigates a unique approach to leadership education in Japan. This particular program offers a five years training with no degrees awarded and tuition required. Most importantly, the school employs a range of methods that include group discussion, lectures, counseling, Zen meditation, kendo, and self-directed learning to develop the leadership capacities of the

students. Such work implies a correlation of meditation and self-directed learning in cultivating administrative ability, which is in line with the findings in the present research.

In addition, existing literature demonstrates that meditation is a useful means in helping individuals to cope with inevitable life-related challenges (Pruett *et al.*, 2007). Gomez (2007) explores the effect of meditation using an exploratory research and finds that meditation affects individual self-awareness, non-attachment, receptivity, focus, and the practice of inquiry, which are partly parallel to our findings. Similarly, Sikorski (2007) concludes the value of mindfulness meditation can be classified in two categories: effectiveness and challenges. She proposes ten themes emerged as a result of meditation: connecting to self, increased understanding, acceptance, letting go, compassion, empowerment, peacefulness, personal growth, and initial and ongoing challenges.

Moreover, an unspoken phenomenon is resurfacing in the workplace today, which is spirituality. The president and CEO, William Guillory, of the Innovations International Inc. consulting firm suggests that employees can take a 10 minutes meditation everyday which will facilitate attaining mental stability and self-empowerment (Bryant, 1998). Although existing literature lacks evidence supporting correlation between meditation and organizational innovativeness, a number of studies suggest a linkage between meditation and creativity (e.g., Kates and Maria, 2002; Scope, 1998). In particularly, Sarath (2006) discovers that meditation practice in an academic setting helps to develop new notions of rigor and

interdisciplinary learning that can help to develop qualities such as mental clarity, inner calm, insight, compassion and creativity.

In addition, Bergen *et al.* (1997) observes that a number of training techniques and procedures were developed over the years that are not part of the mainstream but are believed by some to have the utility for organizations trying to enhance human performance. The alternative techniques which are most widely used in a corporate setting are: subliminal self-help, mental imagery and practice, meditation, and Neurolinguistic Programming. They argue that a paucity of data supports the significant effect of these alternative techniques on enhancing individual or organizational effectiveness. Lin *et al.* (2007) further advise that the meditation experience can affect the learning motivation and learning outcome, especially on professional development, emotion management, and spiritual enlightenment aspects of an adult's life.

4.2 Correlation between Self-directed Learning, Organizational Innovation and Performance

The Pearson analysis is able to identify a statistically significant correlation between self-directed learning and organizational innovation as well as organizational innovation and performance ($r=.209-.701$, $p<.01$ two-tailed). In addition, multiple regression analysis tests the hypothesis H_4 and H_5 .

First of all, the factors of organizational innovation are the dependent variables (i.e., Y_1 ,

Y_2 and Y_3 denoting “technological innovation”, “market innovation”, and “administration innovation”, respectively) and factors of self-directed learning (i.e., denoting by X_1 , X_2 , X_3 , X_4 , X_5 and X_6) are the independent variables in the linear regressions. The resulting linear regression and their corresponding adjusted R^2 with standardization β are shown in Table 4.

[Take in Table 4]

In the “technological innovation” factor of organizational innovation, only two factors of self-directed learning are significant in the regression model: “openness to a challenge” (X_3) and “self-understanding” (X_5), the latter being marginal significant ($R^2=0.022$) and the former more significant ($R^2=0.339$). This implies that “openness to a challenge” is one with the greatest impact on “technological innovation” among six types of innovation.

For the “market innovation”, three factors of self-directed learning are significant in regression: “openness to a challenge” (X_3), “self-understanding” (X_5), and “inquisitive nature” (X_4). The most significant factor for “market innovation” is “openness to a challenge” with a $R^2=0.255$. Finally, for “administration innovation”, statistical results discover four regressions that include “openness to a challenge” (X_3 , $R^2=0.192$), “self-understanding” (X_5), “inquisitive nature” (X_4), and “acceptance of responsibility for learning” (X_6). Two factors (i.e., “love of learning”, X_1 , and “self-confidence as a learner”, X_2) in the self-directed learning dimension have no significant effects on the organizational innovation dimension: The resulting regression equations for these three types of organizational innovation are

Equation (1), (2) and (3).

Existing studies demonstrate evidence showing that a correlation exists between self-directed learning readiness and innovation processes (e.g., Gardner, 1989; Miller, 1995). For example, Bary and Rees (2006) point out that amongst other things, self-directed learning skills are of prime importance in the success of innovation processes. In her research, Conway (2000) suggests instructors could successfully adopt new technology in teaching through self-directed learning in a personal vision of change and a commitment to excellence. By investigating the relationship between work environment and self-directed learning readiness, Gardner (1989) concludes that self-directed learning readiness and work environment involvement, work pressure, as well as innovation are significantly correlated. Those findings are in line with the results of our study.

With multiple stepwise regression analysis, we explore the effects of organizational innovation (the independent variables) for each type of organizational performance (the dependent variables). The resulting regression equations for the two types of performance outcome are presented as Equation (5) and (6), and the corresponding adjusted- R^2 with standardized β present in Table 5. Equation (5) and (6) show that “administration innovation” (X_3) and “market innovation” (X_2) are two critical factors on both types of organizational performance. While the most influencing factor for “financial performance” (Y_1) is “administration innovation” (X_3) with a $R^2=0.361$, the most significant factor for “market

performance” (Y_2) is “market innovation” (X_2) with a $R^2=0.439$.

[Take in Table 5]

Past studies demonstrate strong evidence showing a meaningful correlation between organizational innovation and performance. According to Aragón-Correa *et al.* (2007), a number of studies successfully identified that organizational innovation has significant and positive effect on organizational performance. Kim and Mauborgne (1997) suggest that organizational innovativeness accelerates a firm’s values which differentiates it from its market competitors, and consequently increases organizational performance. In their study, Damanpour and Evan (1984) discover that the performance of organizations which apply administration and technological innovations is significantly higher than those which do not apply any. Yamin *et al.* (1999) surveyed 237 outstanding manufacturing companies, exploring the relationship between organizational innovation (including administration, technological and product innovation) and organizational performance (including return on investment, return on assets, market share, and performance ratio). They conclude that organizational innovation has positive influence on performance.

In addition, García-Morales *et al.* (2006) observe that internal administrative policies oftentimes contribute to effective organizational learning, organizational innovative ability, and consequently organizational performance. A result of technological advancement, people in academia and business strive for exploring the relationship between organizational

innovative capability and competitive-ability. Guan *et al.* (2006) surveyed 182 industrial organizations in China and discover that direct and positive relationship exists between an organization's technological innovative capability and its organizational performance. These findings are supportive of the results of the current study.

5. Conclusion and Implications

Existing literature has consistently showed that SDL among middle and top managers is a critical component in sustaining competitiveness of organizations since 1990s (e.g., Calder and McCollumn, 1998; Robinson and Arthy, 1999). Smith *et al.* (2007) suggest that self-directedness of managers is worth pursuing by organizations which wish to achieve professional development in a competitive fast changing industrial context. The study particularly targets middle and top management personnel from electronic industrial listed and over-the-counter listed technological companies in Taiwan. The study explores the condition of current SDL and OI implementation and their effect on OP, thereby proposing a theoretical model which is analyzed using t-test, Pearson correlation analysis and multiples stepwise regression method. Similar models have been largely unexplored by prior researchers.

The findings indicate that SDL can only impact organizational innovation through managers' openness to a challenge, inquisitive nature, self-understanding, and acceptance of

responsibility for learning. In particular, managers' openness to a challenge is the most influential personal characteristic which contributes to technological, market and administrative innovation. Such finding implies that in order to maximize organizational innovative capability, organizations may encourage managers to take risks or accept new opportunities through various incentives, such as monetary rewards or public recognitions. As Pedler, Burgoyne, and Boydell (1997) point out, organizations may promote SDL through the following: (1) encourage all employees to learn and share what they have learned with other employees, (2) establish systems in areas of the organization that require learning, (3) value and reward learning in the organization, and (4) continuously evolve the organization with learning. The members of the organization should be given more authority and responsibility over their everyday task, self-development and job-related training to enhance their self-directedness (James-Gordon and Bal, 2003). In addition, a proper culture which nurtures SDL is necessary to trigger the members of the organization to become self-directed learners (Jude-York, 1991), increasing their potential to participate in effective organizational learning activities (Dolezalek, 2004; James-Gordon and Bal, 2003), which consequently adds value to the firm (Kandarian, 2004).

The findings also indicate that OI significantly affects OP, which are parallel with a number of prior researches (e.g., Aragón-Correa *et al.*, 2007; García-Morales *et al.*, 2006; Guan *et al.*, 2006; Orfila-Sintes and Mattsson, 2009). More specifically, the present study

discovers that while administration innovation is the most important element influencing an organization's financial performance, market innovation is the key component in an organization's market performance. Both identifications can also find supporting evidence in existing studies, such as Chen and Lee (2008), Chow *et al.* (2008), Demirbag *et al.* (2006), Deshpande *et al.* (1993), Nwokah (2008), as well as Radford *et al.* (2007). The findings imply that the most effective way to increase an organization's financial performance is through appropriate administrative planning and implementation. For instance, a firm may increase cash flow by careful and efficient investment, decrease personnel expenditure by well-designed job structures, or cut down facility investment by appropriate plant design.

Finally, the present study discovers that meditation experience positively affects SDL readiness, and organizational innovative ability and performance. Existing studies prove the benefits of meditation on both spiritual enlightenment and clinical psychology (e.g., Ramel *et al.*, 2004). Meditation practice helps pain relief and physical health (Specia *et al.*, 2000), reduces stress (Dwivedi, 2000), and supports relaxation (Smith, 1988). No direct evidence shows the effect of meditation on SDL and OI, and only a few evidences support the influence of meditation on OP. Nevertheless, the finding on the effect of the meditation experience in a work setting adds values to the current literature. The finding implies spiritual practice improves individual capability (i.e., in learning), as well as organizational capability (i.e., in innovativeness), which consequently enhances the outcomes of organizations.

Even though the empirical results of this study largely support the proposed research model, at least three limitations should be carefully considered. First, since individual informants provide the empirical data, possible biases or preferences (e.g., learning styles, communication methods, and social preferences) may exist due to different personal experiences, family or educational backgrounds. Secondly, this study uses a dichotomy method to differentiate managers' meditation experience (i.e. whether the managers have or have no prior meditation experience). Thus, the variations of length, type and form of meditation demonstrated by the managers in these high tech companies may influence the generalize-ability of the present study. Finally, since the data collection takes place in Taiwan, the characteristics of these participating firms may be quite different from those in other areas or countries. Hence, additional investigation may be worthwhile to discover the applicability of the present results in representing the general case. At the same time, the results for this report may provide a fundamental reference for the firms in other industries or countries whose environments are similar to those in Taiwan.

References

- Andersen, J.A. (2006), "Leadership, personality and effectiveness", *Journal of Socio-Economics*, Vol. 35 No. 6, pp. 1078-1091.
- Appel-Meulenbroek, R. (2010), "Knowledge sharing through co-presence: added value of facilities", *Facilities*, Vol. 28 No. 3/4, pp. 189-205.
- Aragón-Correa, J.A., García-Morales, V.J. and Cordón-Pozo, E. (2007), "Leadership and organizational learning's role on innovation and performance: Lessons from Spain", *Industrial Marketing Management*, Vol. 36 No. 3, pp. 349-359.
- Bary, R. and Rees, M. (2006), "Is (self-directed) learning the key skill for tomorrow's engineers?", *European Journal of Engineering Education*, Vol. 31 No. 1, pp. 73-81.
- Benson, H. (2005), "Are you working too hard? A conversation with Herbert Benson, M.D.", *Harvard Business Review*, Vol. 83 No. 11, pp. 53-58.
- Bergen, C.W.V., Soper, B., Rosenthal, G.T and Wilkinson, L.V. (1997), "Selected alternative training techniques in HRD", *Human Resource Development Quarterly*, Vol. 8 No. 4, pp. 281-294.
- Bonham, L.A., 1989. Self-directed learning: Emerging theory & practice. In H. Long, ed., *Self-directed Orientation toward Learning: A Learning Style*. Norman OK: Oklahoma Research Center for Continuing Professional and Higher Education, University of Oklahoma, pp. 55-68.
- Box, B.J. (1983), "Self-directed learning readiness of students and graduates of an associate degree nursing program", Doctoral dissertation, Oklahoma State University. *Dissertation Abstracts International*, Vol. 44, pp. 679.
- Brockett, R.G. and Hiemstra, R (1991), *Self-direction in Learning: Perspectives in Theory, Research, and Practice*, Routledge, London, UK.
- Bryant, J.S. (1998), "October. Faith at work", *Black Enterprise*, Vol. 29 No. 3, pp. 161.
- Calder, J. and McCollum, A. (1998), *Open and Flexible Learning in Vocational Education and Training*, Kogan Page, London, UK.
- Camisón, C. and López, A. V. (2010), "An examination of the relationship between

- manufacturing flexibility and firm performance: The mediating role of innovation”, *International Journal of Operations & Production Management*, Vol. 30 No. 8, pp. 853-878.
- Campbell, C., Silver, I., Sherbino, J., Ten Cate, O., and Holmboe, E. (2010), “Competency-based continuing professional development”, *Medical Teacher*, Vol. 32 No. 8, pp. 657-662.
- Carroll, J. (1995), “Rearticulating identify exploring corporate images, employee identification”, *Management Learning*, Vol. 26 No. 4, pp. 463-482.
- Chen, B. and Lee, C.-Y. (2008), “Logistics scheduling with batching and transportation”, *European Journal of Operational Research*, Vol. 189 No. 3, pp. 871.
- Cheng, C., Lai, M., and Wu, W. (2010), “Exploring the impact of innovation strategy on R&D employees' job satisfaction: A mathematical model and empirical research”, *Technovation*, Vol. 30 No. 7/8), pp. 459-470..
- Chi, S.-Y. (2002), *The relation between self-directed learning readiness and knowledge sharing willingness for business employees*, unpublished masters thesis at National Chi-Nan University, Taiwan.
- Chow, W.S, Madu, C.N., Kuei, C.-H., Lu, M.H., Lin, C. and Tseng, H. (2008), “Supply chain management in the US and Taiwan: An empirical study”, *Omega*, Vol. 36 No. 5, pp. 665.
- Chung, R.-G. and Lo, C.-L. (2007), “The relationship between leadership behavior and organizational performance in non-profit organizations, using social welfare charity foundations as an example”, *Journal of American Academy of Business- Cambridge*, Vol. 12 No. 1, pp. 83-87.
- Compton, W.C. and Becker, G.M. (1983), “Self-actualizations and experience with Zen meditation: Is a learning period necessary for meditation?”, *Journal of Clinical Psychology*, Vol. 39 No. 6, pp. 925-926.
- Conway, M.T. (2000), *Personal factors in the success of early adopters of a major technology: Faculty experiences with interactive video teaching*, Ed.D. dissertation, University of Illinois at Urbana-Champaign, Illinois, United States.
- Cuieford, J.P. (1965), *Fundamental Statistics in Psychology and Education*, McGraw-Hill, New York, NY.
- Damanpour, F. and Evan, W.M. (1984), “Organizational innovation and performance: The

- problem of organizational lag”, *Administrative Science Quarterly*, Vol. 29, 392-409.
- Delaney, J.T. and Huselid, M.A. (1996), “The impact of human resource management practices on perceptions of organizational performance”, *Academy of Management Journal*, Vol. 39 No. 4, pp. 949-969.
- Demirbag, M., Tatoglu, E., Tekinkus, M. and Zaim, S. (2006), “An analysis of the relationship between TQM implementation and organizational performance: Evidence from Turkish SMEs”, *Journal of Manufacturing Technology Management*, Vol. 17 No. 6, pp. 829-847.
- Deshpande, R., Farley, J.U., and Webster, F.E. Jr. (1993), “Corporate culture, customer orientation, and innovativeness”, *Journal of Marketing*, Vol. 57 No. 1, pp. 23.
- Desouza, K.C., Awazu, Y. and Ramaprasad, A. (2007), Modifications and innovations to technology artifacts”, *Technovation*, Vol. 27 No. 4, pp. 204-220.
- Dolezalek, H. (2004), “Building Better Learners”, *Training*, Vol. 41 No. 1, pp. 30-34.
- Drejer, A. (2000), “Organizational learning and competence development”, *The Learning Organization*, Vol. 7, pp. 206-220.
- Drucker, B. (1993), *Post Capitalist Society*, Harper Business, New York, NY.
- Dundon, E. (2005), “Innovation triangle”, *Leadership Excellence*, Vol. 22 No. 3, pp. 16.
- Dwivedi, K.N. (2000), *Mindfulness in mental health*. Retrieved July 18 2006 from: Psychiatry Online. <http://www.priory.com/psych/mindfulness.htm>.
- García-Morales, V.J., Llorens-Montes, F.J. and Verdú-Jover, A.J. (2006), “Antecedents and consequences of organizational innovation and organizational learning in entrepreneurship”, *Industrial Management & Data Systems*, Vol. 106 No. 1/2, pp. 21-43.
- Gardner, B. S. (1989), *A study of the relationship between self-directed learning readiness and work environment among various state government employees*. Ph.D. dissertation, University of Missouri - Columbia, United States
- Garnett, J.L., Marlowe, J., and Pandey, S.K. (2008), “Penetrating the performance predicament: Communication as a mediator or moderator of organizational culture's impact on public organizational performance”, *Public Administration Review*, Vol. 68

No. 2, pp. 266-281.

Gomez, A. (2007), *Meditation and self-as-instrument skills among organization change practitioners*. Ed.D. dissertation, Pepperdine University, United States -- California.

Gopalakrishnan, S. and Damanpour, F. (1997), "A review of innovation research in economics, sociology and technology management", *Omega, International Journal of Management Science*, Vol. 25 No. 1, pp. 15-29.

Grant Thornton (2006), *Grant thornton international business owners survey 2006*, Grant Thornton International.

Green, K.W. and Inman, R.A. (2007), "The impact of JIT-II-selling on organizational performance", *Industrial Management & Data Systems*, Vol. 107 No. 7, pp. 1018-1035.

Guan, J. C., Yam, R. C. M., Mok, C. K. and Ma, N. (2006), "A study of the relationship between competitiveness and technological innovation capability based on DEA models", *European Journal of Operational Research*, Vol. 170 No. 3, pp. 971-986.

Guglielmino, L. (1977), "Development of self-directed learning readiness scale", *Doctoral Dissertation Abstracts International*, Vol. 38, 6467A.

Hamon, T.T. (2003), *Organizational effectiveness as explained by social structure in a faith-based business network organization*, unpublished doctoral dissertation at Regent University, Virginia Beach, Virginia.

Hancott, D.E. (2005), *The relationship between transformational leadership and organizational performance in the largest public companies in Canada*, unpublished doctoral dissertation at Capella University, Minnesota.

Hiemstra, R. (1994), "Self-directed learning", In T. Husen & T. N. Postlethwaite, eds., *The International Encyclopedia of Education*, Pergamon Press, Oxford.

Ho, L.-A. (2008), "What affects organizational performance? The linking of learning and knowledge management", *Industrial Management & Data Systems*, Vol. 108 No. 9, pp. 1234-1254.

James-Gordon, Y. and Bal, J. (2003), "The emerging self-directed learning methods for design engineers", *The Learning Organization*, Vol. 10 No. 1, pp. 63-69.

Jantunen, A. (2005), "Knowledge-processing capabilities and innovative performance: an

- empirical study”, *European Journal of Innovation Management*, Vol. 8 No. 3, pp. 336-349.
- Joahnessen, J.A., Olsen, B. and Lumpkin, G.T. (2001), “Innovation as newness: What is new, how new, and new to whom”, *European Journal of Innovation Management*, Vol. 4, pp. 20-31.
- Johne, A. (1998), “Using mark vision to steer innovation”, *Technovation*, Vol. 19, 203-207.
- Jude-York, D.A. (1991), *Organizational learning climate, self-directed learners, and performance at work*, unpublished doctoral dissertation at The Fielding Institute, California.
- Kandarian, F. (2004), *Executive learning related to high performance in two companies*, unpublished Ed.D. dissertation at Columbia University Teachers College, New York.
- Kates, C. and Maria, I. (2002), *Awakening creativity and spiritual intelligence: The soul work of holistic educators*, Ed.D. dissertation, University of Toronto (Canada), Canada.
- Kerlinger, F.N. (1999), *Foundations of Behavior Research*, A Harcourt College Publishing, Fort Worth, TX.
- Kim, W.C. and Mauborgne, R.A. (1997), “Fair process: Managing in the knowledge economy”, *Harvard Business Review*, Vol. 75 No. 4, pp. 65-75.
- Knowles, M. (1975), *Self-directed Learning as a Guide for Learners and Teachers*, Adult Education Company, Cambridge, MA.
- Leavy, B. (1998), “The concept of learning in the strategy field: Review and outlook”, *Management Learning*, Vol. 29 No. 4, pp. 447-466.
- Lesser, E.L. and Storck, J. (2001), “Communities of practice and organizational performance”, *IBM Systems Journal*, Vol. 40 No. 4, pp. 831-841.
- Lin, C.-Y., Kuo, T.-H., Kuo Y.-K., Kuo, Y.-L., Ho, L.-A. and Lin, C.-T. (2007), “Practice makes better? A study of meditation learners in a classroom environment”, *Educational Studies*, Vol. 33 No. 1, pp. 65 - 80.
- Michie, S. (2002), “Causes and management of stress at work”, *Occupational and Environmental Medicine*, Vol. 59, pp. 67-72.
- Miller, D.W. (1995), *Professional development and the diffusion of innovations in school*

library media centers, Ed.D. dissertation, University of Missouri - Saint Louis, United States

Naisbitt, J. and Aburdene, P. (1985), *Re-inventing the Corporation.*, Warner Books , New York, NY.

Nunnally, J.C. (1978), *Psychometric Theory*, McGraw-Hill, New York, NY.

Nwokah, N.G. (2008), “Marketing in governance: leader-managerial practices for efficiency in competency-based administration and transformational marketing model”, *Corporate Governance*, Vol. 8 No. 1, pp. 18-27.

Oddi, L.F. (1986), “Development and validation of an instrument to identify self-directed continuing learners”, *Adult Education Quarterly*, Vol. 36 No. 2, pp. 97-107.

Orfila-Sintes, F. and Mattsson, J. (2009), “Innovation behavior in the hotel industry”, *Omega*, Vol. 37 No. 2, pp. 380.

Pacharn, P. and Zhang, L. (2006), “Accounting, innovation, and incentives”, *Journal of Engineering and Technology Management*, Vol. 23 No. 1/2, pp. 114-129.

Padma, P., Ganesh, L.S. and Rajendran, C. (2008), “An exploratory study of the impact of the capability maturity model on the organizational performance of Indian software firms”, *The Quality Management Journal*, Vol. 15 No. 2, pp. 20-34.

Pedler, M., Burgoyne, J. and Boydell, T. (1997), *The Learning Company*, McGraw-Hill Publishing Company, London, UK.

Peters, T. and Waterman, R. (1982), *In search of excellence*, Harper and Row, New York, NY.

Popadiuk, S. and Choo, C.W. (2006), “Innovation and knowledge creation: How are these concepts related?”, *International Journal of Information Management*, Vol. 26, pp. 302-312.

Pruett, J.M., Nishimura, N.J. and Priest, R. (2007), “The role of meditation in addiction recovery”, *Counseling and Values*, Vol. 52 No. 1, pp. 71-84.

Radford, A., Pink, G., Ricketts, T. and Spade, J. (2007), “A comparative performance scorecard for federally funded community health centers in north Carolina”, *Journal of Healthcare Management*, Vol. 52 No. 1, pp. 20-31,

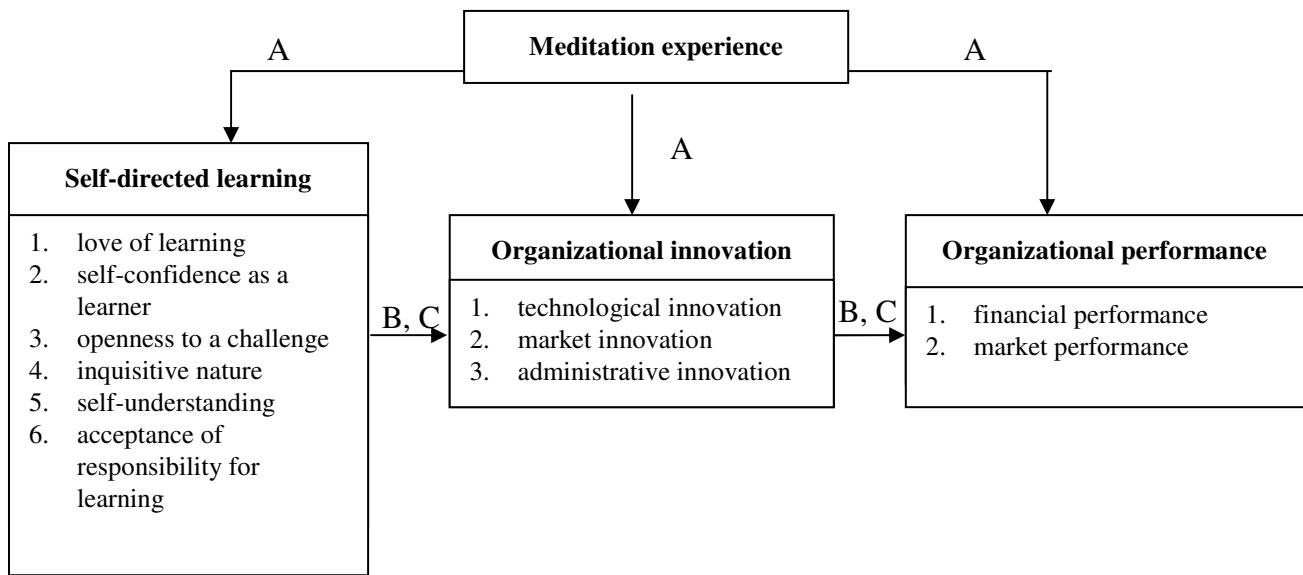
Ramel, W., Goldin, P.R., Carmona, P.E. and McQuaid, J.R. (2004), “The effects of

- mindfulness meditation on cognitive processes and affect in patients with past depression”, *Cognitive Therapy and Research*, Vol. 28 No. 4, pp. 433-455.
- Ries, K. and Trout, N. (1981), “Dimensions of innovation in the hospitality industry”, *International Journal of Contemporary Hospitality Management*, Vol. 9 No. 7, pp. 273-286.
- Robbins, P.S. and Coulter, M. (2002), *Management*, Prentice-Hall, New Jersey.
- Robinson, C. and Arthy, K. (1999), *Lifelong Learning: Developing a Training Culture*, National Centre for Vocational Education Research, Adelaide.
- Rogers, E.M. (2003), *Diffusion of innovations*, The Free Press, New York, NY.
- Sarath, Ed (2006), “Meditation, creativity, and consciousness: Charting future terrain within higher education”, *Teachers College Record*, Vol. 108 No. 9, pp. 1816-1841.
- Schermerhorn, J.R., Jr., Hunt, J.M., and Osborn, R.N. (2002), *Organizational Behavior*, John Wiley and Sons, New York, NY.
- Schiuma, G. and Lerro, A. (2008), “Intellectual capital and company's performance improvement”, *Measuring Business Excellence*, Vol. 12 No. 2, pp. 3-9.
- Scope, E.E. (1998), *A meta-analysis of research on creativity: The effects of instructional variables*. Ph.D. dissertation, Fordham University, United States
- Senge, P.M. (1990), *The Fifth Discipline: The Art and Practice of the Learning Organization*, Doubleday Currency, New York, NY.
- Shapiro, S.L., Carlson, L.E., Astin, J.A. and Freedman, B. (2006), “Mechanisms of mindfulness”, *Journal of Clinical Psychology*, Vol. 62 No. 3, pp. 373-386.
- Sikorski, S.V. (2007), *The value of mindfulness meditation for female survivors of intimate partner abuse*, M.Sc. dissertation, University of Calgary Canada, Canada.
- Smith, J.C. (1988), “Steps toward a cognitive-behavioral model of relaxation”, *Applied Psychophysiology and Biofeedback*, Vol. 13 No. 4, pp. 307-329.
- Smith, P.J., Sadler-Smith, E., Robertson, I. and Wakefield, L. (2007), “Leadership and learning: Facilitating self-directed learning in enterprises”, *Journal of European Industrial Training*, Vol. 31 No. 5, pp. 324-335.

- Specca, M., Carlson, L. E., Goodey, E. and Angen, M. (2000), "A randomized, wait-list controlled clinical trial: The effect of a mindfulness meditation-based stress reduction program on mood and symptoms of stress in cancer outpatients", *Psychosomatic Medicine*, Vol. 62, pp. 613-622.
- Steer, R.M. (1975), "Problems in the measurement of organizational effectiveness", *Administrative Science Quarterly*, Vol. 20 No. 4, pp. 546-558.
- Subramanian, A. and Nilakanta, S. (1996), "Organizational innovativeness: Exploring the relationship between organizational determinant of innovation, types of innovations, and measures of organizational performance", *Omega, International Journal of Management Science*, Vol. 24 No. 6, pp. 631-647.
- Subramaniam, R. (2005), *A multivariate study of the relationship between organizational learning, organizational innovation and organizational climate in the Australian hotel industry*, A doctoral dissertation at Swinburne University of Technology.
- Ting, D.-M. (1996), *The interrelationships between self-directed learning readiness, computer attitude and achievement in the students of National Open University*, unpublished masters thesis at National Chung Cheng University, Taiwan
- Tippins, M.J. and Sohi, R.S. (2003), "It competency and firm performance: Is organizational learning a missing link", *Strategic Management Journal*, Vol. 24, 745-761.
- Tushman, M. and Nadler, D. (1986), "Organizing for innovation", *California Management Review*, Vol. 28 No. 3, pp. 74-92.
- Vigoda-Gadot, E., Shoham, A., Ruvio, A. and Schwabsky, N. (2005), *Innovation in the public sector*. The University of Haifa and NIFU STEP, Oslo.
- West, R.F. and Bentley, E.L. (1990), "Structural analysis of the self-directed learning readiness scale: A confirmatory factor analysis using Lisrel modeling", In H. B. Long and Associates, *Advances in research and practice in self-directed learning*, Oklahoma Research Center for Continuing Professional and Higher Education of the University of Oklahoma.
- Williams, D. (1993), *Learning to lead in Japan: The Matsushita approach to leadership development*, Ed.D. dissertation, Harvard University, United States -- Massachusetts.
- Wong, W.P. and Wong, K.Y. (2007), "Supply chain performance measurement system using DEA modeling", *Industrial Management & Data Systems*, Vol. 107 No. 3, pp.

361-381.

Yamin, S., Gunasekaran, A. and Mavondo, F. T. (1999), "Innovation index and its implications on organizational performance: A study of Australian manufacturing companies", *International Journal of Technology Management*, Vol. 17 No. 5, pp. 495-503.



Note: A: t-test; B: Pearson correlation analysis; C: Multiple stepwise regression analysis

Figure 1. Research design diagram

Table 1. Survey structure and description statistics for dimension

Dimension	Number of items per dimension	Mean	Std. Dev.	Order	Cronbach's α
Self-directed learning	35	3.4	0.55	3	0.96
Organizational innovation	34	3.6	0.44	2	0.97
Organizational performance	7	3.6	0.58	1	0.92

Table 2. Factor analysis and internal consistency values for the questionnaire

Dimension	Factor	% of Variance	Cumulative %	Item-to-Total Correlations	Cronbach's α
Self-directed learning	Love of learning	42.38	42.38	0.64	0.92
	Self-confidence as a learner	7.62	50.00	0.81	0.95
	Openness to a challenge	6.03	56.03	0.70	0.91
	Inquisitive nature	5.39	61.42	0.72	0.90
	Self-understanding	4.70	66.12	0.59	0.88
	Acceptance of responsibility for learning	3.48	69.50	0.68	0.87
Organizational innovation	Technological	47.55	47.55	0.74	0.97
	Market	14.08	61.63	0.76	0.96
	Administration	7.10	68.73	0.74	0.94
Organizational performance	Market performance	68.44	68.44	0.78	0.93
	Financial performance	16.01	84.45	0.81	0.92

Table 3. A summary table for the effect of meditation experience on factors

Dimension	Factors	Meditation experience
Self-directed learning	Love of learning	N.S.
	Self-confidence as a learner	N.S.
	Openness to a challenge	Y>N
	Inquisitive nature	Y>N
	Self-understanding	Y>N
	Acceptance of responsibility for learning	N.S.
Organizational innovation	Technological	N.S.
	Market	Y>N
	Administration	Y>N
Organizational performance	Financial performance	Y>N
	Market performance	Y>N

Note. Existence of meditation experience: Y= Yes, N= No; N.S. = Not statistically significant

Table 4. Regression analysis for “organizational innovation” with respect to “self-directed learning”

	Dependent variables: Organizational innovation					
	Technological innovation (Y ₁)		Market innovation (Y ₂)		Administration innovation (Y ₃)	
	Adjusted R ²	Std. Coef. β	Adjusted R ²	Std. Coef. β	Adjusted R ²	Std. Coef. β
Self-directed learning						
Love of learning (X ₁)						
Self-confidence as a learner (X ₂)						
Openness to a challenge (X ₃)	0.115	0.228***	0.255	0.228***	0.492	0.426***
Inquisitive nature (X ₄)			0.023	0.208***	0.011	0.126***
Self-understanding (X ₅)	0.022	0.185***	0.059	0.239***	0.051	0.224***
Acceptance of responsibility for learning (X ₆)					0.008	0.11***

***p<0.001

$$Y_1 = 2.601 + 0.159 X_3 + 0.14 X_5 \dots\dots\dots(1)$$

$$Y_2 = 1.731 + 0.192 X_3 + 0.186 X_5 + 0.162 X_4 \dots\dots\dots(2)$$

$$Y_3 = 0.832 + 0.382 X_3 + 0.186 X_5 + 0.104 X_4 + 0.09 X_6 \dots\dots(3)$$

Table 5. Regression analysis for “organizational performance” with respect to “organizational innovation”

Organizational innovation	Organizational performance			
	Financial performance (Y ₁)		Market performance (Y ₂)	
	Adjusted R ²	Std. Coef. β	Adjusted R ²	Std. Coef. β
Technological innovation (X ₁)	0.083	0.278***		
Market innovation (X ₂)	0.016	0.171***	0.439	0.469***
Administration innovation (X ₃)	0.361	0.366***	0.061	0.315***

***p<0.001,

$$Y_1 = 0.21 + 0.406 X_3 + 0.366 X_1 + 0.201 X_2 \dots\dots\dots(5)$$

$$Y_2 = 0.614 + 0.478 X_2 + 0.34 X_3 \dots\dots\dots(6)$$