



# Learning organization and innovative behavior

Learning organization

## The mediating effect of work engagement

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Received 5 April 2013

Revised 29 July 2013

Accepted 17 September

2013

### Abstract

**Purpose** – The purpose of this study is to investigate the mediating effect of work engagement on the relationship between learning organization and innovative behavior.

**Design/methodology/approach** – This study used surveys as a data collection tool and implemented structural equation modeling for empirically testing the proposed research model.

**Findings** – The study found that learning organization culture makes a direct and indirect impact on employees' innovative work behaviors. Results from hierarchical multiple regressions and structural equation modeling supported that work engagement fully mediates the relationship between the learning organization and innovative work behaviors.

**Practical implications** – HRD practitioners can develop effective interventions to enhance their employees' innovative behavior by devoting efforts to create a workplace that promotes collaborative learning culture and work engagement.

**Originality/value** – This study is valuable to HRD specialists interested in developing effective interventions that encourage employees to engage in innovative behavior.

**Keywords** Organizational culture, Work engagement, Learning organization, Innovative behavior

**Paper type** Research paper

In today's knowledge-driven economy, maximizing the innovative potentials of employees has become a top priority in every organization (Johnston and Bate, 2013). New ideas and initiatives generated by employees offer organizations a competitive advantage through differentiation and enhancement of products or services. With the growing significance of intellectual capital across all business sectors, researchers and practitioners in human resource development (HRD) can thus be expected to develop and provide effective interventions that encourage their employees to engage in innovative behavior. Moreover, considering that innovation requires a cultural change with collaboration, it is not surprising that HRD plays a more critical role in facilitating a culture that supports innovation than ever before (McLean, 2005). Given the current emphasis on innovation in HRD, however, research on determinants that stimulate employees' innovative behavior is still incomplete.



Innovative behavior is influenced by personal resources, such as problem-solving skills or motivation and also by organizational factors including leadership and work group relations (Janssen, 2004; Scott and Bruce, 1994; Young, 2012). In particular, organizational culture that promotes innovation has been considered an important factor because innovation goes beyond individual-level idea generation. Several researchers have attempted to examine the effect of organizational climate on innovative behavior. Young (2012) found that organizational justice promotes innovative behavior through the psychological mechanism of perceived organizational support. Scott and Bruce (1994) indicated that leader role expectations and leader-member exchange affect individual innovative behavior. Pieterse *et al.* (2010) also found that transformational leadership predicts innovative behavior and that this relationship is mediated by psychological empowerment. Also, organizational learning capabilities and knowledge sharing (another innovative effort) have been explored as sources of employees' innovative behaviors because knowledge dissemination serves as initial idea generation (Monica Hu *et al.*, 2009; Wang and Wang, 2012). Together, to enhance employees' innovative behaviors, promoting organizational culture that values continuous learning, knowledge sharing, employee empowerment, and social interactions among its members seems important.

Individual intrinsic motivation and positive emotions are important components of innovation that elicit a deeper engagement with the innovation process. Amabile (1996) has emphasized the role of intrinsic motivation in the innovation process by identifying three dimensions of creativity: motivation, knowledge, and skills. She stated that intrinsic motivation helps individuals become flexible, persistent, and goal-oriented. Numerous studies have also linked motivation to innovation and highlighted that intrinsically motivated people are more likely to deal with obstacles they face and take a proactive attitude to their work (Cadwallader *et al.*, 2009; Dulaimi *et al.*, 2003; Zhang and Bartol, 2010).

Employees' work engagement driven by intrinsic motivation is significantly related to innovation in terms of enhancing personal initiatives. Zhang and Bartol (2010) highlighted that employees' confidence in their personal ability to achieve goals facilitate their creativity by enabling them to devote their time and energy to their work. Hakanen *et al.* (2008) also found that individual work engagement promotes personal initiative, and consequently influences innovation. They state that the energy that engaged employees bring into their work boosts organizational innovation by enabling them to be more proactive and responsible. Moreover, when people are engaged in work, they feel positive emotions that lead to creative and explorative thinking and idea implementation (Fredrickson, 2001). Isen (2001) found that positive affect increased personal resources. These findings indicate that work engagement seems to play a mediating role in the relationship between the learning organization and innovative behavior.

Despite the logical connection between engaged employees and their innovative behaviors, few studies have examined this connection. If employees' innovative behaviors are to be systematically encouraged and developed within an organization, a framework that aligns engagement with the organization's leadership, learning, and support system is necessary. Therefore, the purpose of this study is to investigate the mediating effect of work engagement on the relationship between learning organization and innovative behavior. Amidst the current innovation imperative, the results of this study would be beneficial to HRD specialists by providing a better understanding of enhancing employees' innovative behavior.

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## Conceptual framework and model

### *Theoretical foundation*

The study makes connections among the learning organization, work engagement, and innovative behavior by drawing on absorptive capacity theory (Cohen and Levinthal, 1990), broaden-and-build theory (Fredrickson, 2001), and intrinsic motivation theory (Deci and Ryan, 1985). According to Cohen and Levinthal (1990), accumulated previous knowledge is critical to the innovation process in that it enhances the ability to value, assimilate, and apply new knowledge. They point out that prior knowledge and heuristics support individuals in developing problem-solving knowledge, which results in expanding related problem-solving capabilities. In this respect, an organization's learning capabilities and effective communication and knowledge sharing should drive organizational innovation. Later, Zahra and George (2002) strengthened the theory by emphasizing internal and external activation triggers (e.g. changes in the market or technologies) of knowledge acquisition and assimilation, and social integration mechanisms for knowledge sharing and exploitation. They stated that formal and informal social integration mechanisms are necessary for the organization to increase employee interactions and encourage creative actions.

Fredrickson's (2001) broaden-and-build theory suggested that positive emotions such as interest, enthusiasm, and pride broaden people's scope of thought and promotes explorative actions to build personal resources involving intellectual, physical, and psychological resources over time. Previous empirical studies have found that individuals who experience positive emotions tend to be flexible, creative, integrative, and efficient (Fredrickson, 2001). According to Ashby *et al.* (1999), experiencing positive affects increased brain dopamine levels and stimulates cognitive flexibility, and consequently, individuals can accrue their resources through broadening their experiences. In line with this, Isen (2001) revealed that positive affect leads to variety thinking, cognitive elaboration, and interpersonal understanding. Moreover, under the condition of positive emotions, individuals are more likely to go beyond expectations in the assignment or tasks without being asked (Isen, 2001). These studies support that work engagement leads to positive emotions, which is a leading influence on the innovation process.

A substantial body of research has highlighted the significance of intrinsic motivation in innovational behavior (Amabile, 1996; Dulaimi *et al.*, 2003). Intrinsic motivation theory posits that individuals are more motivated by the feeling of competence and satisfaction derived from the task itself rather than external rewards (e.g. money and praise); thus, individuals' need for self-determination drives goal-directed behavior and helps them overcome challenges (Deci and Ryan, 1985). According to Deci and Ryan (1985), intrinsic rewards are more effective than external rewards because people's need for a feeling of competence tends to remain constant after fulfilling it, whereas the need that is rewarded by extrinsic factors, such as monetary awards and others' compliments, dwindle after fulfilling the task. Amabile (1996) considered intrinsic motivation a key component of innovative behavior because positive behavior and strong psychological resilience derived from self-fulfillment are necessary to deal with challenges that arise in the innovation process. Engaged individuals are vigorous, enthusiastic, and absorbed in their work because they enjoy their fulfillment while working.

The research conceptual framework linking learning organization, work engagement, and innovative behavior is presented in Figure 1.

*Significance of the study*

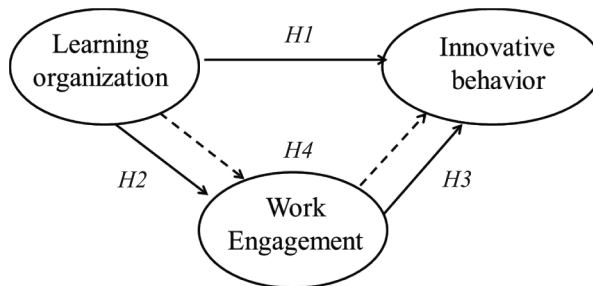
Employees' innovative and proactive behaviors have been largely examined in the organizational and management literature using psychologies of personality and motivation as the foundation. However, Scott and Bruce (1994) pointed out that many empirical studies that framed the organizational climate (consisting of organizational support and resource availability) as a mediator found that the perceived organizational climate had low impacts on employees' innovative behavior; thus, they called for examining alternative constructs to advance the research on innovative behaviors. By examining the influence of the learning organization, which includes core elements of leadership, organizational support, encouragement of learning, and employee development, and further incorporating the concept of engagement (which has been supported by many empirical studies as a core antecedent of numerous employees' organizational behaviors and behavioral intentions), this study will provide important preliminary knowledge about how organizations' learning and employee engagement should be utilized to improve employees' innovative behaviors. Research that examines the impact of learning and development on organizational and individual performance initiatives, such as innovative behaviors, represents the true value of HRD (Torraco, 2000).

**Review of the literature and research hypotheses**

This section reviews the concepts of innovative behavior, learning organization, and work engagement. Relationships between innovative behavior and two antecedents – learning organization and work engagement – are also postulated based on the results of previous research and the adopted theories of absorptive capacity, broad-and-build, and intrinsic motivation.

*Innovative behavior*

Many researchers state that creativity and innovation are two different concepts in that creativity involves generation of new ideas while innovation includes both generation and implementation of new ideas (Amabile, 1996; Pieterse *et al.*, 2010). As a multistage process, innovative behavior is defined as actions that search for, develop, and apply new ideas and solutions in the current situation (Scott and Bruce, 1994). In this regard, studying innovative behavior at both the individual and the organizational levels is important because the former entails changes in organizational structures or processes (Miron *et al.*, 2004). While earlier research on innovative behavior was primarily concerned with individual characteristics (e.g. personality and motivation), recent studies consider the organizational environment variables as more important (e.g. organizational culture and employees' relationship with supervisors).



**Figure 1.**  
Research conceptual  
framework for the current  
study

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Previous research has found that various factors such as organizational encouragement, empowerment, resources, and active communication and relationship between group members affect individual employees' innovative behavior (Amabile, 1996; Martins and Terblanche, 2003; Pieterse *et al.*, 2010). Above all, encouragement and effective communication have been considered the key factors in enhancing innovation (Amabile, 1996; Cohen and Levinthal, 1990). Martins and Terblanche (2003) pointed out that organizational culture that values team's work or idea and interactions between group members through active communication facilitate innovative behavior. New ideas are generated by combining, adapting, or reapplying existing ideas (Cohen and Levinthal, 1990). Accordingly, an organization's ability to learn and share knowledge is critical to organizational innovation in that prior knowledge and experiences of the organization feed into organizational creativity (Cohen and Levinthal, 1990; Hirst *et al.*, 2009).

### *Learning organization*

According to Garvin (1998), organizations achieve quality performance through establishing effective routines by gathering and processing information, linking product and service design with customer experiences, and mobilizing production systems to meet and exceed customer needs. Evolving descriptions of consumers, such as prosumers (who are actively and professionally involved in consumer needs) and rearsumers (who are equipped with and leading trends connected through the internet) highlight that, to compete and grow in the knowledge driven market, organizations must leverage up-to-date market, consumer, and employee intelligence through innovative yet effective ideas, actions, and learning. Organizations' IT systems (e.g. information or business process technology) and learning systems cannot be separated any longer (Ardichvili and Yoon, 2009). Recently, scholars started examining the impact of the learning organization concept on innovation-related outcomes, such as team creativity (Yoon *et al.*, 2010) and organizational learning processes (Song *et al.*, 2011).

Slater and Narver (1995) defined learning organization as an organization that continuously and proactively acquires, processes, and disseminates value-adding knowledge about markets, products, technologies, and business processes. More recently, Jensen (2005) emphasized the importance of a learning organization's knowledge creation capability by encouraging employees to transform information into new knowledge and insights. Marsick and Watkins (2003) further conceptualized the learning organization as consisting of two dimensions (people, structure). They further identified seven measurable scales of:

- (1) continuous learning;
- (2) inquiry and dialogue;
- (3) collaboration and team learning;
- (4) people empowerment for the people dimension;
- (5) environmental connection;
- (6) embedded systems; and
- (7) strategic leadership for the structure dimension.

Extending Senge's (1990) learning organization concept to practical managerial and organizational concerns, Garvin *et al.* (2008) stated that three building blocks of the learning organization are critical dimensions of learning organizations:

- (1) a supportive learning environment;
- (2) concrete learning processes and practices; and
- (3) leadership behaviors.

Positive influences of the learning organization concept, as well as conceptual connections, on innovation and employee engagement have been reported by several empirical studies. Learning organization culture was found to be a significant predictor of many Korean firms' innovative culture, product and service (technical) innovations, and process (administrative) innovations (Škerlavaj *et al.*, 2010). Research has also shown a significant positive relationship between team creativity and the organization's knowledge creation practices (Yoon *et al.*, 2010). Additionally, Tseng (2011) and Atak (2011) found that learning organization culture made a positive impact on employees' commitment to the organization. Engaged employees were found to display more proactive behaviors (Sonnetag, 2003) and discretionary efforts (Nimon *et al.*, 2011). Numerous studies of employee engagement found the significant influence of organizational support and resources on employees' work engagement (Saks, 2006). One survey study from the American Society for Training and Development (ASTD) found that a supportive learning culture, providing quality training, and assisting leaders and managers with skills in coaching employees, allocating resources, and improving relationships were essential to enhancing employee engagement.

Conceptually, the learning organization not only subsumes core organizational variables examined in the innovation literature, such as job resources and leadership (through environmental connection, knowledge capturing systems, and strategic leadership), but it also adds promising and essential dimensions of learning and collaboration to improve employees' skills and engagement. Amabile (1996) emphasized the significance of organizational resources in innovation such as people with necessary skills or knowledge, funds allocation, effective systems or processes, and relevant training. Drawing on Amabile's (1996) componential theory of creativity, Hirst *et al.* (2009) reported a positive relationship between team learning behavior and employee creativity. Based on these results, the following hypotheses can be drawn:

- H1.* Learning organization positively influences employees' innovative behavior.
- H2.* Learning organization positively influences employees' work engagement.

#### *Work engagement*

Work engagement has been defined as "a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli *et al.*, 2002, p. 74). It is thus conceptually distinct from job involvement and organizational commitment in that the two concepts signify psychological identification with the work or to the organization, whereas work engagement implies the energetic state of involvement with the work itself (Saks, 2006; Schaufeli and Bakker, 2010). Work engagement has been assessed as a multidimensional construct with vigor (high levels of energy and mental resilience), dedication (strong involvement with the work), and absorption (complete engrossment in the work; Schaufeli *et al.*, 2002).

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Numerous studies have reported empirical support for the positive impact of work engagement on organizational outcomes including personal initiative (Hakanen *et al.*, 2008; Salanova and Schaufeli, 2008), extra-role performance (Bakker *et al.*, 2004), organizational commitment (Saks, 2006), and job performance (Bakker and Bal, 2010). Hakanen *et al.* (2008) have found that engaged employees increase their personal initiative, which results in enhancing work-unit innovativeness. Engaged people work at their full capacity and take a proactive approach to problem solving. People experience positive emotions when they are engaged in their work (Bakker and Demerouti, 2008) and this facilitates people to explore, assimilate new information and experiences, and apply them (Fredrickson, 2001). According to Isen (2001), positive affect influences problem solving, flexibility, and innovation because people in positive affect are induced to have a diverse set of cognition and action as well as increased energy for action. Such experience allows people to have a broader view of their problems, which helps them produce a wide range of possible solutions. Based on this perspective, the following hypothesis has been proposed:

*H3.* Employees' work engagement positively influences employees' innovative behavior.

In addition, the mediating effect of work engagement on the relationship between organizational factors and outcomes has been demonstrated in several studies. Bakker and Bal (2010) found that work engagement fully mediated the relationship between autonomy and job performance. Salanova *et al.* (2005) showed that work engagement mediated the impact of organizational resources on service climate. In addition, Salanova and Schaufeli (2008) found that work engagement fully mediates the relationship between job resources (job control, feedback, and variety) and proactive behavior at work. Saks (2006) also revealed that employee engagement partially mediates the relationship between the antecedents of employee engagement (job characteristics, perceived organizational support, perceived supervisor support, rewards and recognition, procedural justice, and distributive justice) and consequences of employee engagement (job satisfaction, organizational commitment, intention to quit, organizational citizenship behavior).

Vinarski-Peretz and Carmeli's (2011) study demonstrated that positive psychological conditions, such as work engagement, promote innovative behavior. Binnewies *et al.* (2007) reported that personal initiative is positively related to idea creativity. According to those authors, personal initiative and idea-related communication contribute to creative process and idea creativity by enabling people to make continuous efforts to all stages of the creative process and sharing knowledge and expertise with others. That is, work engagement plays a key role in the innovation process in terms of generating energy for taking the initiative.

As sources of knowledge, organizational support, and member collaboration, the learning organization is connected to the innovation process and this relationship can be amplified by high levels of work engagement. Engaged individuals are more persistent and proactive in their work because they derive fulfillment from the work itself as well as the processes, systems, and support that the organization provides, which creates positive attitudes and perceptions toward learning (Salanova *et al.*, 2010). Innovation concerns generation and implementation of new ideas, and it requires individuals to update relevant skills and knowledge continually, which involves

considerable energy, effort, and encouragement. Accordingly, individuals with high levels of work engagement are expected to seek out learning opportunities and develop their expertise. The innovation process also requires collective engagement in reflective discussion, decision-making, and feedback (Amabile, 1996). Leiter and Bakker (2010) asserted that work engagement is affected by social dynamics among individuals and organizational culture and at the same time influences others' experience of engagement through interactions with others. Consequently, organizations committed to engaging employees promote strong collaborative relationships for innovation, which in turn enhances innovation capacity in the organization:

- H4. Employees' work engagement mediates the relationship between learning organization and innovative behavior.

### **Method**

This study used survey as a data collection tool and implemented structural equation modeling for empirically testing the proposed research model (Kline, 2005). SPSS 19.0 and LISREL 8 were used for data analyses (Byrne, 1998).

#### *Sampling and data collection*

A total of 326 responses were collected from several Korean business organizations in different industry settings. The traditional paper-and-pencil (PP) data collection process was used to maintain high levels of response rates and data reliability (Hays and McCallum, 2005). Specifically, approximately 400 potential survey participants were randomly selected from around 1,000 participants who were in various training and development workshops. The industrial types of research population included manufacturing, construction, IT, and electronic. Among those, a total of 326 participants participated in the survey. Furthermore, due to the self-reported data collection approach, potential common method variance (CMV) issue was considered. Empirically, the correlation coefficient estimates in the ranges of moderate level and well developed construct validity of the research constructs support minimal chance of CMV issue (Conway and Lance, 2010; Podsakoff *et al.*, 2003).

Through the general data screening processes, 21 cases were found to be incomplete responses, leaving a total of 305 responses for data analysis. With regard to sample demographic distribution, approximately 78 percent were male and 22 percent were female; about 55 percent had less than 5 years of work experience and approximately 6 percent had more than ten years of work experience. With regard to the size of the organization, around 76 percent of the participants worked in an organization with fewer than 500 employees, and around 15 percent worked for an organization with more than 1,000 employees.

#### *Instruments*

According to the research objectives, three variables were used in the current study including the cultural aspects of the learning organization as an exogenous variable and the level of employees' work engagement and the perception of employees' innovative behaviors as endogenous variables. In addition, the level of the employees' work engagement was examined as the mediating variable to explain the relationship between the learning organization culture and the employees' innovative behaviors. In



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order to measure these three research variables, widely used and previously-validated instruments were used. All three research constructs were measured with the perceptual self-report approach using the five-point Likert scale (1 = not at all accurate to 5 = completely accurate).

To measure the cultural aspects of the learning organization, the dimensions of the learning organization questionnaire (DLOQ) was used. Developed by Marsick and Watkins (2003), the DLOQ has been validated in several different research settings in terms of cultural applicability, item reliability, and construct validity (e.g. Song *et al.*, 2009). The DLOQ measured the seven critical dimensions of the learning organization at both levels of people and structure in the workplace including:

- (1) continued learning opportunities;
- (2) dynamic inquiry and dialogue;
- (3) team-based learning;
- (4) empowering people;
- (5) environmental connections;
- (6) knowledge capturing systems; and
- (7) strategic leadership.

The cultural aspects of the learning organization were measured by 21 items, the short version of the DLOQ that has been validated as the better than the full version of the 43 item-based DLOQ in terms of item reliability and construct validity (Yang *et al.*, 2004).

The short version of the work engagement measure, which was developed by Schaufeli *et al.* (2006), was used to capture the level of perceived work engagement of the employees. The short version of the Utrecht Work Engagement Scale (UWES-9) has three sub-dimensions of the characteristics of the work engagement, namely vigor (three items), dedication (three items), and absorption (three items). Briefly, vigor refers to the levels of positive energy and the voluntary willingness to invest their efforts for their tasks. Dedication examines the level of enthusiasm and proudness about their tasks as well as positive feelings inspired and challenged by the tasks. The absorption assesses the levels of the general happiness with their work. Several related studies confirmed that the short version of the UWES showed acceptable applicability in terms of item internal consistency and construct factor structure (e.g. Seppala *et al.*, 2009).

Innovative behavior was assessed using the six-item scale innovative behavior measure developed by Scott and Bruce (1994). They developed the questionnaire drawing on Kanter's (1988) study on innovation stages and their interviews with the directors and vice president of the R&D center. They found the Cronbach's alpha for their questionnaire to be 0.89. High-level internal consistency and construct validity have been reported in several studies (e.g. Carmeli and Spreitzer, 2009; Ho *et al.*, 2011).

### *Data analysis*

Primarily, structural equation modeling (SEM) analysis was used to examine the four developed research hypotheses along with a model comparison for assessing the mediating effect of work engagement to explain the relationship between cultural aspects of the learning organization and employees' innovative behaviors. In SEM analysis, the *t*-value criterion (*t*-value > |1.96|) was used to decide the significant effect among the paths (Byrne, 1998; Kline, 2005; Schumacker and Lomax, 2010). In addition, standardized

path coefficient (SPC) estimates were considered to measure the magnitudes of the path effect size (Kaplan, 2009). Furthermore, the model comparison between the full research model and the controlled research model was performed to examine the mediating effect of work engagement based on the pattern changes of the chi-square and model-data fit indices of each model (Bae, 2006; Schumacker and Lomax, 2010).

Prior to the SEM analysis, hierarchical multiple regression analysis was performed to check the initial relationships among the variables (Hair *et al.*, 2008). In doing so, several basic assumptions of multivariate analysis were examined including normal distribution of the data and the multicollinearity of the variables (Hair *et al.*, 2008). In the regression analysis, regression coefficient estimates were used to examine the general relationships among the variables, and the pattern changes of the R-square and beta values were examined as well. All these analyses were performed based on the basic descriptive analyses, the tests of reliability and validity of the measures and data screening steps (Hair *et al.*, 2008).

### Results

#### *Basic assumptions, reliability, and construct validity tests*

Prior to data analyses, several pre-tests were considered in terms of normal distribution, outlier detection, item-internal consistency, and construct validity. With regard to the size of cases used in the data analyses ( $n = 305$ ), according to the central limit theorem (Schneeberger, 2009), basic normal distributions of the cases were assumed. Furthermore, using the Mahalanobis  $D^2$  test, which measures the distance of a case from the centroid (multidimensional mean) of the variance distribution (Z-value ranges within  $|3.0|$ ), given the covariance of the distribution, nine extreme outliers were detected and excluded from the final data set (Kline, 2005), which resulted in the final data set ( $n = 296$ ) for further analyses.

As shown in Table I, the instrument reliability of the summative variables in terms of item-internal consistency estimates ranged from 0.90 to 0.91, which is highly stable; and the correlation coefficient estimates ranged from 0.334 to 0.652, which were at the significantly moderate level of coefficients (Hair *et al.*, 2008). These results basically confirmed acceptable reliability of the items, and the convergent validity and divergent validity of the instruments (Thompson, 2003). Furthermore, confirmatory factor analysis (CFA) was used to assess the construct validity of the research measurements based on the sub-summative scales of the three research variables (Thompson, 2004). As all measures in the current research were validated in several contexts, previously the exploratory factor analysis (EFA) was not considered (Hair *et al.*, 2008; Thompson, 2004).

The results of the CFA showed that the research measurement confirmed a very good level of construct validity (Schumacker and Lomax, 2010) based on the values of

Variable	M	SD	$\alpha$	1	2	3
1. Learning organization	3.32	0.71	0.90	1		
2. Work engagement	3.54	0.58	0.90	0.450*	1	
3. Innovative behavior	3.38	0.69	0.91	0.334*	0.652*	1

**Table I.**  
Descriptive correlation  
estimates and  
item-internal consistency

**Notes:**  $\alpha$ =Cronbach's alpha estimates; \*Correlation coefficient estimates are significant at  $p < 0.001$

model-data fit indices (comparative fit index (CFI) and goodness of fit index (GFI)) and two types of residual estimations (root mean square error approximation (RMSEA) and root mean residual (RMR)) (Table II). Furthermore, due to the size of the sample ( $n = 296$ ), the chi-square was not in the acceptable range ( $\chi^2 = 217.36, p < 0.05$ ), thus adjusted chi-square ( $\chi^2/df = 2.49$ ) was considered. The results showed that approximately 91 percent of the variance and covariance of the developed measurement model was explained by the research data set (Kline, 2005). In addition, all factor loadings of the summative observed variables on the assigned latent variables ranged from 0.67 to 0.94, which are strong factor-loading values (Hair *et al.*, 2008; Thompson, 2004).

Furthermore, in order to assess unintended interactive correlations among the variables, which cause multicollinearity and auto (serial) correlation, several values were tested including the tolerance value (0.798), variance inflation factor (1.254), and Durbin-Watson index (0.945). All results were found to be acceptable, indicating no violations of multicollinearity and auto (serial) correlation (Hair *et al.*, 2008).

*Hierarchical multiple regression analysis*

In order to assess the general relationships among the three research variables and the initial mediating effect of the designed mediating variable, work engagement, hierarchical multiple regression was performed to examine the pattern changes of the regression coefficient estimates and beta values (Hair *et al.*, 2008).

As described in Table III, two independent variables, the learning organization and work engagement, significantly and jointly influenced the dependent variable, innovative behaviors, accounting for about 42 percent of the variance ( $R^2 = 0.423$ ). Furthermore, in step 2, adding the second independent variable resulted in a significant increase ( $\Delta R^2 = 0.315$ ) of the R-square while the beta value of the first independent variable was decreased ( $\Delta\beta = 0.283$ ). These results indicated that once the second independent variable was added, approximately 32 percent of the magnitude of the explanation was increased at the significant level. These results provided evidence of the initial mediating effect of work engagement on the relationship between the learning organization and innovative behaviors (Hair *et al.*, 2008).

Model fit indices	<i>df</i>	$\chi^2$	$\chi^2/df$	RMSEA	RMR	GFI	CFI
Measurement model	87	217.36	2.49	0.071	0.031	0.091	0.987

**Table II.**  
Results of confirmatory factor analysis (CFA)

Predictor	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	VIF	Adjusted $R^2$	<i>F</i>	<i>P</i>	$\Delta R^2$
<i>Step 1</i>									
Learning organization	0.326	0.054	0.334	6.6078	1.00	0.10	36.9	0.001	
<i>Step 2</i>									
Learning organization	0.050	0.048	0.051	1.035	1.254		161.4	0.001	0.315
Work engagement	0.746	0.059	0.629	12.707	1.254	0.423		0.001	

**Table III.**  
Results of hierarchical multiple regression on innovative behavior

**Note:** The dependent variable is: innovative behaviors

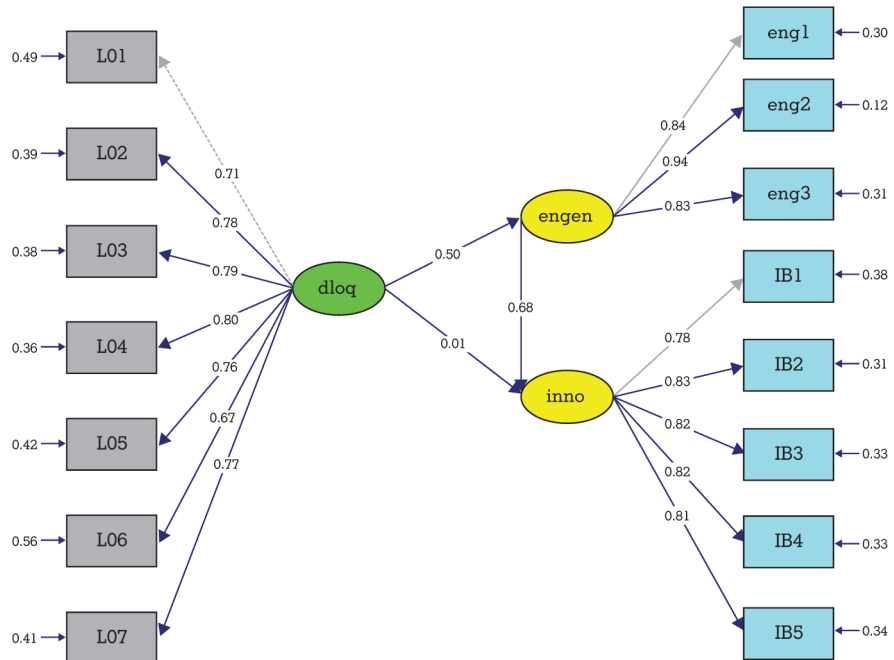
*Structural equation modeling (SEM) analysis*

In order to assess the multiple relationships among the variables and the mediating effect of work engagement, SEM analyses were performed. To interpret the magnitude of relational paths among the research variables, standardized path coefficient (SPC) estimates were examined. In doing so, according to Byrne (1998) and Kline (2005) the *t*-value of each path needs to be greater than |1.96| to be significant.

As illustrated in Figure 2, the direct paths from the learning organization to work engagement (SPC = 0.50, *t*-value = 7.55) and from work engagement to innovative behaviors (SPC = 0.68, *t*-value = 9.58) were found to be significant paths, while the direct influence of the learning organization on the innovative behaviors was found to be non-significant (SPC = 0.01, *t*-value = 0.22). Similar to the result from the multiple regression analysis, those two independent variables jointly impacted the dependent variable, and SEM results clarified that the direct influence of the learning organization on the innovative behaviors was found to be non-significant.

To examine the mediating effect of work engagement, the controlled model was created by controlling the direct path between the learning organization and the innovative behaviors to be zero (Bae, 2006; Schumacker and Lomax, 2010). Prior to the model comparison, the following necessities were tested:

- the model fit of the structural model of the learning organization and innovative behaviors without the mediating variable needs to be acceptable (RMSEA = 0.087, GFI = 0.911);



**Figure 2.**  
Full model SEM results  
with SPC estimates

**Note:** dloq = learning organization; engen = work engagement; inno = innovative behaviors

- the model fit of the controlled model by setting the relationship between the learning organization and innovative behaviors to be zero needs to be acceptable (RMSEA = 0.071, GFI = 0.911); and
- the direct paths between the learning organization and innovative behaviors (SPC = 0.35,  $t$ -value = 5.33), between the learning organization and work engagement (SPC = 0.50,  $t$ -value = 7.52), and between work engagement and innovative behaviors (SPC = 0.69,  $t$ -value = 10.80) need to be significant (Schumacker and Lomax, 2010).

After confirming all required assumptions for the model comparison, two models (the full research model and controlled model) were compared based on the chi-square difference and general changes of model-data fit indices (see Table IV).

According to the model comparison between the two structural models (full and controlled), based on the chi-square differences,  $\Delta\chi = 0.11$  ( $\Delta\chi df = 1$ ,  $p < 0.05$ ), the difference between the two models was found to be statistically not significant ( $\Delta\chi \leq 3.84$ ). In addition, most of the model-data fit indices' values were found to be almost identical (Kline, 2005), and in the previous full research model analysis, the direct path between the learning organization and innovative behaviors was not significant (see Figure 2). In accordance with these results, we confirmed that work engagement is playing the full mediation role to explain the learning organization and innovative behaviors in the workplace (Byrne, 1998; Kline, 2005). Together, all hypotheses (i.e. the learning organization directly influences employee engagement, and employee engagement directly and indirectly influences innovative behaviors) except the first one (the learning organization directly influences innovative behaviors) were supported.

## Discussion

The purpose of the study was to build upon and extend the existing research on individual innovative behavior by offering a proactive way for organizations to encourage organizational learning culture and their employees' work engagement. To achieve this objective, the study developed and tested a model in which learning organization was hypothesized to affect individual innovative behavior directly and indirectly through work engagement. SEM analysis revealed that learning organization does not directly influence innovative behavior; however, it indirectly influences innovative behavior through work engagement. In other words, organizational learning culture promotes individuals' innovative behavior when employees are engaged in their work. The findings of this study suggest that employees with high levels of work engagement are more likely to seek out new and innovative ideas and thrive to improve their organization's effectiveness in the learning organization setting (Dulaimi *et al.*, 2003). Previous studies also reported the mediating role of work engagement in the relationship between organizational resources and service climate (Salanova *et al.*, 2005), job resources and proactive behaviors (Salanova

Model fit indices	$df$	$\chi^2$	$\chi^2/df$	RMSEA	RMR	GFI	CFI	NNFI
Full model	87	217.36	2.49	0.071	0.031	0.911	0.978	0.974
Controlled model	88	217.25	2.46	0.071	0.031	0.911	0.979	0.974

**Table IV.**  
Model comparison  
between full model and  
controlled model

and Schaufeli, 2008), and various antecedents (job characteristics, perceived organizational support, perceived supervisory support, rewards and recognition, procedural justice, and distributive justice) and job satisfaction, organizational commitment, intention to quit, and organizational citizenship behavior (Saks, 2006). Similarly, this study supports that the learning organization in terms of culture, team learning, continuous inquiry, support systems, embedded knowledge sharing system, and leadership must directly tackle and promote employees' work engagement.

The unique contribution of the study is to provide the first empirical research aligning the learning organization and employee engagement to study innovative behavior. Most importantly, the study provides evidence of the mediating effect of work engagement on the relationship between the learning organization and innovative behavior. While previous research has shown that organizational learning culture is related to innovation process (e.g. Hirst *et al.*, 2009; Skerlavaj *et al.*, 2010; Yoon *et al.*, 2010), the findings of this study suggest that the learning organization is effective in enhancing individual innovative behavior when facilitating work engagement at the same time. The results of the study were consistent with those of other studies that had shown that individual intrinsic motivation and positive emotions predict innovative behavior (e.g. Amabile, 1996; Binnewies *et al.*, 2007; Isen, 2001; Vinarski-Peretz and Carmeli, 2011). Therefore, organizations intended to develop a strong innovation culture need to make efforts to create and sustain the workplace environment that promotes not only knowledge sharing and strategic leadership but also employees' work engagement by focusing on both individual level and organizational level support.

### **Implications for future research**

Although there is a large body of literature on innovation, the roles of learning organization culture and employee energy in promoting individual innovative behavior have been rarely examined. This study proposed and found that employees' work engagement facilitates innovative behavior within the learning environment. The outcomes of this study add further evidence to a number of studies that have emphasized the effect of employees' energy and motivation in the innovation process (e.g. Amabile, 1996; Dulaimi *et al.*, 2003). Moreover, the results extend the understanding of the interplay of the individual and organizational learning culture as forces of individual innovative behavior. Work engagement should help employees generate new ideas and take initiative in implementing creative ideas with the support of the organizational learning culture. Amabile (1996) noted that intrinsic motivation is a key component of innovative behavior because positive behavior and strong psychological resilience derived from self-fulfillment are necessary to deal with challenges that arise in the innovation process.

The results of the study also indicated that learning organization itself does not guarantee development of employees' innovative behavior. At the individual level, it appears that individuals' innovative behavior depends on how they are engaged in their work and how they feel while working rather than perceiving the organizational learning environment. When people feel energetic and happy at their work, they are more likely to get involved in innovative processes by using personal and organizational resources. Therefore, job characteristics, such as job complexity and resource availability, warrant further examination in future studies.

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### Implications for HRD practice

The findings of this study have three important implications for HRD practices. First, HRD practitioners can provide effective interventions to enhance their employees' innovative behavior by devoting efforts to create a workplace that promotes collaborative learning culture and work engagement. In addition, the study revealed that learning organization itself is not enough to promote their innovative behavior; therefore, HRD practitioners should take employees' work engagement into account when developing relevant programs. Second, the results of the study provide evidence supporting that HRD should be involved in the strategic planning process because building an innovative culture needs organizational change efforts beyond developing individual competencies. In view of the strategic role of HRD in organizational change (Garavan, 2007), the study highlights the fact that HRD practitioners should be proactive in working with senior managers who set organization's goals and strategies and employees across departments within the organization. Third, the study analysis provides vital information regarding the benefits of employees' work engagement. As shown in a number of studies (e.g. Bakker and Bal, 2010; Hakanen *et al.*, 2008; Saks, 2006; Salanova and Schaufeli, 2008), employees' positive emotions and energy contribute to organizational success. Work engagement is a concept that addresses employees' passion, energy, and commitment to work; therefore, HRD practitioners can consider aligning employees' work engagement with organizational success by encouraging them to add value to their work.

### Limitations

Several limitations to this study need to be acknowledged. First, the study did not examine individual attributes/characteristics, for instance, self-evaluation (Crawford *et al.*, 2010), personality (Wefald *et al.*, 2011), or self-efficacy (Lowman, 2005), because Xanthopoulou *et al.* (2007) shared that the literature did not clarify the role of personality as an input or a mediator for examining innovative behaviors. Individuals might react differently to a leader's attempts to encourage the level of engagement; thus, the personal variables of cognition and affects that matter to the job/task and relations with others should be considered in future research. Second, this study used cross-sectional and self-reported data only. If actual performance measures that reflect the firm's innovative capacity can be captured, such variables should be measured (Škerlavaj *et al.*, 2010). Third, the generalizability of the findings of the study to other businesses and cultures is limited due to a sample drawn from a limited number of consenting organizations and due to the Korean cultural context. Lastly, findings from this study will not be applicable where employees work with a coach or team leader who has been specifically matched for the purpose of improving innovative behaviors. In such conditions, it could be important to include variables such as leader-member exchanges and empowering leadership.

### Conclusion

Given the current business environment that constantly demands new and customized products, enhancing employee innovative behavior appears to be of overriding importance. Drawing on several theories related to motivation and innovation, the study examined the positive role of employee energy and happiness in innovative behavior within the learning environment. The study results indicated that individual

innovative behavior is influenced by the organizational learning culture through work engagement. In particular, the study suggests that the organizational culture and systems alone are not sufficient without its members' full involvement and commitment. Thus, organizations need to consider how various components of the learning organization can be aligned with employees' work engagement and provide the necessary support systems to develop their employees' innovative capacity.

### References

- Amabile, T.M. (1996), "Creativity and innovation in organizations", *Harvard Business School*, Vol. 5 No. 2, pp. 396-239.
- Ardichvili, A. and Yoon, S.W. (2009), "Designing knowledge management systems for co-creation of meaning", *Advances in Developing Human Resources*, Vol. 11 No. 3, pp. 307-319.
- Ashby, F.G., Isen, A.M. and Turken, A.U. (1999), "A neuropsychological theory of positive affect and its influence on cognition", *Psychological Review*, Vol. 106 No. 3, pp. 529-550.
- Atak, M. (2011), "A research on the relation between organizational commitment and learning organization", *African Journal of Business Management*, Vol. 5 No. 14, pp. 5612-5616.
- Bae, B.Y. (2006), *LISREL Structural Equation Modeling: Understanding, Application, and Programming*, Chunglam Publishing, Seoul.
- Bakker, A.B. and Bal, M.P. (2010), "Weekly work engagement and performance: a study among starting teachers", *Journal of Occupational and Organizational Psychology*, Vol. 82 No. 1, pp. 189-206.
- Bakker, A.B. and Demerouti, E. (2008), "Towards a model of work engagement", *Career Development International*, Vol. 13 No. 3, pp. 209-223.
- Bakker, A.B., Demerouti, E. and Verbeke, W. (2004), "Using the job demands-resources model to predict burnout and performance", *Human Resource Management*, Vol. 43 No. 1, pp. 83-104.
- Binnewies, C., Ohly, S. and Sonnentag, S. (2007), "Taking personal initiative and communicating about ideas: what is important for the creative process and for idea creativity?", *European Journal of Work and Organizational Psychology*, Vol. 16 No. 4, pp. 432-455.
- Byrne, B.M. (1998), *Structural Equation Modeling with LISREL, PRELIS, and SIMPLIS: Basic Concepts, Applications, and Programming*, Lawrence Erlbaum Associates, Mahawah, NJ.
- Cadwallader, S., Jarvis, C.B., Bitner, M.J. and Ostrom, A.L. (2009), "Frontline employee motivation to participate in service innovation implementation", *Journal of the Academy of Marketing Science*, Vol. 38 No. 2, pp. 219-239.
- Carmeli, A. and Spreitzer, G.M. (2009), "Trust, connectivity, and thriving: implications for innovative behaviors at work", *The Journal of Creative Behavior*, Vol. 43 No. 3, pp. 169-191.
- Cohen, W.M. and Levinthal, D.A. (1990), "Absorptive capacity: a new perspective on learning and innovation", *Administrative Science Quarterly*, Vol. 35 No. 1, pp. 128-152.
- Conway, J.M. and Lance, C.E. (2010), "What reviewers should expect from authors regarding common method bias in organizational research", *Journal of Business Psychology*, Vol. 25, pp. 325-334.
- Crawford, E.R., LePine, J.A. and Rich, B.L. (2010), "Linking job demands and resources to employee engagement and burnout: a theoretical extension and meta-analytic test", *Journal of Applied Psychology*, Vol. 95 No. 5, pp. 834-848.



- 
- Deci, E.L. and Ryan, R.M. (1985), *Intrinsic Motivation and Self-Determination in Human Behavior*, Plenum Press, New York, NY.
- Dulaimi, M.F., Ling, F.Y.Y. and Bajracharya, A. (2003), "Organizational motivation and inter-organizational interaction in construction innovation in Singapore", *Construction Management and Economics*, Vol. 21 No. 3, pp. 307-318.
- Fredrickson, B.L. (2001), "The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions", *American Psychologist*, Vol. 56 No. 3, pp. 218-226.
- Garavan, T.N. (2007), "A strategic perspective on human resource development", *Advances in Developing Human Resources*, Vol. 9 No. 1, pp. 11-30.
- Garvin, D.A. (1998), "Building a learning organization", *Harvard Business Review on Knowledge Management*, Harvard Business School Publishing, Boston, MA, pp. 47-80.
- Garvin, D.A., Edmondson, A.C. and Gino, F. (2008), "Is yours a learning organization?", *Harvard Business Review*, Vol. 86 No. 3, pp. 109-116.
- Hair, J.F., Anderson, R.E., Babin, B.J. and Mehta, R. (2008), *Sales Management: Building Customer Relationships and Partnerships*, South-Western College Pub, Cincinnati, OH.
- Hakanen, J.J., Perhoniemi, R. and Toppinen-Tanner, S. (2008), "Positive gain spirals at work: from job resources to work engagement, personal initiative and work-unit innovativeness", *Journal of Vocational Behavior*, Vol. 73 No. 1, pp. 78-91.
- Hays, S. and McCallum, R.S. (2005), "A comparison of the pencil-and-paper and computer-administered Minnesota multiphasic personality inventory-adolescent", *Psychology in the Schools*, Vol. 42 No. 6, pp. 605-613.
- Hirst, G., Van Knippenberg, D. and Zhou, J. (2009), "A cross-level perspective on employee creativity: goal orientation, team learning behavior, and individual creativity", *Academy of Management Journal*, Vol. 52 No. 2, pp. 280-293.
- Ho, L.H., Wang, Y.P., Huang, H.C. and Chen, H.C. (2011), "Influence of humorous leadership at workplace on the innovative behavior of leaders and their leadership effectiveness", *African Journal of Business Management*, Vol. 5 No. 16, pp. 6674-6683.
- Isen, A.M. (2001), "An influence of positive affect on decision making in complex situations: theoretical issues with practical implications", *Journal of Consumer Psychology*, Vol. 11 No. 2, pp. 75-85.
- Janssen, O. (2004), "How fairness perceptions make innovative behavior more or less stressful", *Journal of Organizational Behavior*, Vol. 25 No. 2, pp. 201-215.
- Jensen, P.E. (2005), "A contextual theory of learning and the learning organization", *Knowledge and Process Management*, Vol. 12 No. 1, pp. 53-64.
- Johnston, R.E. and Bate, J.D. (2013), *The Power of Strategy Innovation: A New Way of Linking Creativity and Strategic Planning to Discover Great Business Opportunities*, Amacom, New York, NY.
- Kanter, R.M. (1988), "When a thousand flowers bloom: structural, collective, and social conditions for innovation in organization", in Straw, B.M. and Cummings, L.L. (Eds), *Research in Organizational Behavior*, JAI Press, Greenwich, CT, pp. 169-211.
- Kaplan, D. (2009), *Structural Equation Modeling: Foundation and Extensions*, 2nd ed., Sage, Thousand Oaks, CA.
- Kline, R.B. (2005), *Principles and Practice of Structural Equation Modeling*, 2nd ed., The Guilford Press, New York, NY.

- Leiter, M.P. and Bakker, A.B. (2010), "Work engagement: introduction", in Bakker, A.B. and Leiter, M.P. (Eds), *Work Engagement: A Handbook of Essential Theory and Research*, Psychology Press, New York, NY, pp. 1-9.
- Lowman, R.L. (2005), "Executive coaching: the road to Dodoville needs paving with more than good assumptions", *Consulting Psychology Journal: Practice and Research*, Vol. 57 No. 1, pp. 90-96.
- McLean, L.D. (2005), "Organizational culture's influence on creativity and innovation: a review of the literature and implications for human resource development", *Advances in Developing Human Resources*, Vol. 7 No. 2, pp. 226-246.
- Marsick, V.J. and Watkins, K.E. (2003), "Demonstrating the value of an organization's learning culture: the dimensions of the learning organization questionnaire", *Advances in Developing Human Resources*, Vol. 5 No. 2, pp. 132-151.
- Martins, E.C. and Terblanche, F. (2003), "Building organizational culture that stimulates creativity and innovation", *European Journal of Innovation Management*, Vol. 6 No. 1, pp. 64-74.
- Miron, E., Erez, M. and Naveh, E. (2004), "Do personal characteristics and cultural values that promote innovation, quality, and efficiency compete or complement each other?", *Journal of Organizational Behavior*, Vol. 25 No. 2, pp. 175-199.
- Monica Hu, M.-L., Horng, J.-S. and Christine Sun, Y.-H. (2009), "Hospitality teams: knowledge sharing and service innovation performance", *Tourism Management*, Vol. 30 No. 1, pp. 41-50.
- Nimon, K., Zigarmi, D., Houson, D., Witt, D. and Diehl, J. (2011), "The work cognition inventory: initial evidence of construct validity", *Human Resource Development Quarterly*, Vol. 22 No. 1, pp. 7-35.
- Pieterse, A.N., Van Knippenberg, D., Schippers, M. and Stam, D. (2010), "Transformational and transactional leadership and innovative behavior: the moderating role of psychological empowerment", *Journal of Organizational Behavior*, Vol. 31 No. 4, pp. 609-623.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J. and Podsakoff, N.P. (2003), "Common method biases in behavioral research: a critical review of the literature and recommended remedies", *Journal of Applied Psychology*, Vol. 88 No. 5, pp. 879-903.
- Saks, A.M. (2006), "Antecedents and consequences of employee engagement", *Journal of Managerial Psychology*, Vol. 21 No. 7, pp. 600-619.
- Salanova, M. and Schaufeli, W.B. (2008), "A cross-national study of work engagement as a mediator between job resources and proactive behavior", *The International Journal of Human Resource Management*, Vol. 19 No. 1, pp. 116-131.
- Salanova, M., Agut, S. and Peiró, J.M. (2005), "Linking organizational resources and work engagement to employee performance and customer loyalty: the mediation of service climate", *Journal of Applied Psychology*, Vol. 90, pp. 1217-1227.
- Salanova, M., Schaufeli, W.B., Xanthopoulou, D. and Bakker, A.B. (2010), "The gain spiral of resources and work engagement: sustaining a positive worklife", in Bakker, A.B. and Leiter, M.P. (Eds), *Work Engagement: A Handbook of Essential Theory and Research*, Psychology Press, New York, NY, pp. 118-131.
- Schaufeli, W.B. and Bakker, A.B. (2010), "Defining and measuring work engagement: bringing clarity to the concept", in Bakker, A.B. and Leiter, M.P. (Eds), *Work Engagement: A Handbook of Essential Theory and Research*, Psychology Press, New York, NY, pp. 10-24.

- 
- Schaufeli, W.B., Bakker, A.B. and Salanova, M. (2006), "The measurement of work engagement with a short questionnaire: a cross-national study", *Educational and Psychological Measurement*, Vol. 66 No. 1, pp. 701-716.
- Schaufeli, W.B., Salanova, M., González-Romá, V. and Bakker, A.B. (2002), "The measurement of engagement and burnout: a two sample confirmatory factor analytic approach", *Journal of Happiness Studies*, Vol. 3 No. 1, pp. 71-92.
- Schneeberger, S. (2009), *Realized Power Variation of Some Fractional Stochastic Integrals: Laws of Large Numbers and Central Limit Theorems*, VDM Verlag, Saarbrücken.
- Schumacker, R.E. and Lomax, R.G. (2010), *A Beginner's Guide to Structural Equation Modeling*, 3rd ed., Routledge, New York, NY.
- Scott, S.G. and Bruce, R.A. (1994), "Determinants of innovative behavior: a path model of individual innovation in the workplace", *Academy of Management Journal*, Vol. 37 No. 3, pp. 580-607.
- Senge, P.M. (1990), *The Fifth Discipline: The Art and Practice of the Learning Organization*, Currency, New York, NY.
- Seppala, P., Mauno, S., Feldt, T., Hakanen, J., Kinnunen, U., Tolvanen, A. and Schaufeli, W. (2009), "The construct validity of the Utrecht work engagement scale: multisample and longitudinal evidence", *Journal of Happiness Studies*, Vol. 10 No. 4, pp. 459-481.
- Škerlavaj, M., Song, J.H. and Lee, Y. (2010), "Organizational learning culture, innovative culture and innovations in South Korean firms", *Expert Systems with Applications*, Vol. 37 No. 9, pp. 6390-6403.
- Slater, S.F. and Narver, J.C. (1995), "Market orientation and the learning organization", *Journal of Marketing*, Vol. 58 No. 3, pp. 63-74.
- Song, J.H., Jeung, C.-W. and Cho, S.Y. (2011), "The impact of the learning organization environment on the organizational learning process", *The Learning Organization Journal*, Vol. 18 No. 6, pp. 468-495.
- Song, J.H., Joo, B.K.B. and Chermack, T.J. (2009), "The dimensions of learning organization questionnaire (DLOQ): a validation study in a Korean context", *Human Resource Development Quarterly*, Vol. 20 No. 1, pp. 43-64.
- Sonnentag, S. (2003), "Recovery, work engagement, and proactive behavior: a new look at the interface between nonwork and work", *Journal of Applied Psychology*, Vol. 88 No. 3, pp. 518-528.
- Thompson, B. (2003), "Understanding reliability and coefficient alpha, really", in Thompson, B. (Ed.), *Score Reliability: Contemporary Thinking on Reliability Issues*, Sage, Thousand Oaks, CA, pp. 3-23.
- Thompson, B. (2004), *Exploratory and Confirmatory Factor Analysis: Understanding Concepts and Applications*, American Psychological Association, Washington, DC.
- Torraco, R.J. (2000), "The relationship of learning and performance improvement at different system levels", *Performance Improvement Quarterly*, Vol. 13 No. 1, pp. 60-83.
- Tseng, C. (2011), "The influence of strategic learning practices on employee commitment", *Journal of Multidisciplinary Research*, Vol. 3 No. 1, pp. 5-23.
- Vinarski-Peretz, H. and Carmeli, A. (2011), "Linking care felt to engagement in innovative behaviors in the workplace: the mediating role of psychological conditions", *Psychology of Aesthetics, Creativity, and the Arts*, Vol. 5 No. 1, pp. 43-53.
- Wang, Z. and Wang, N. (2012), "Knowledge sharing, innovation and firm performance", *Expert Systems with Applications*, Vol. 39 No. 10, pp. 8899-8908.

- Wefald, A.J., Reichard, R.J. and Serrano, S.A. (2011), "Fitting engagement into a nomological network", *Journal of Leadership & Organizational Studies*, Vol. 18 No. 4, pp. 522-537.
- Xanthopoulou, D., Bakker, A.B., Demerouti, E. and Schaufeli, W.B. (2007), "The role of personal resources in the job demands-resources model", *International Journal of Stress Management*, Vol. 14 No. 2, pp. 121-141.
- Yang, B., Watkins, K.E. and Marsick, V.J. (2004), "The construct of the learning organization: dimensions, measurement, and validation", *Human Resource Development Quarterly*, Vol. 15 No. 1, pp. 31-55.
- Yoon, S.W., Song, J.H., Lim, D.H. and Joo, B.K. (2010), "Structural determinants of team performance: the mutual influences of learning culture, creativity, and knowledge", *Human Resource Development International*, Vol. 13 No. 3, pp. 249-264.
- Young, L.D. (2012), "How to promote innovative behavior at work? The role of justice and support within organizations", *The Journal of Creative Behavior*, Vol. 46 No. 3, pp. 220-243.
- Zahra, S.A. and George, G. (2002), "Absorptive capacity: a review, reconceptualization, and extension", *The Academy of Management Review*, Vol. 27 No. 2, pp. 185-203.
- Zhang, X. and Bartol, K.M. (2010), "Linking empowering leadership and employee creativity: the influence of psychological empowerment, intrinsic motivation, and creative process engagement", *Academy of Management Journal*, Vol. 53 No. 1, pp. 107-128.

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