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**Organizational Learning in the Philippines: How do team and individual learning contribute?**

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## **Organizational Learning in the Philippines: How do team and individual learning contribute?**

### **ABSTRACT**

Organizational learning is essential especially in rapidly changing environments, through the exploitation of existing knowledge and the exploration of new knowledge, to unleash innovative potential. It is therefore, important to identify what increases employee engagement in these organizational learning activities. Research was conducted through a survey of local public sector employees in the Philippines to examine empirically the hypothesis that individual learning will increase employee involvement in organizational learning activities through their increased engagement in team learning activities. The findings confirm the mediating role of team learning between individual learning and organizational learning. This study also examines the distinct roles of internal (within team) and external team (across team) learning in this relationship and findings suggest team learning also plays a significant role in improving organizational performance. This study has the potential to inform the development of appropriate human resource management strategies to facilitate knowledge sharing and learning within and across teams at the local level, as a major intermediate step towards motivating employees to engage in organizational learning activities by applying their individual knowledge.

**Keywords:** individual learning; team learning; organizational learning; Philippines

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### **Key points**

1. Organizational learning is important if local government in the Philippines is to meet increased demands for service delivery in a context of devolved responsibility and financial constraint.
2. Team learning has a central role in mediating between organizational and individual learning.
3. Both internal team learning (sharing and communication activities) and external team learning (observation and discussion outside the immediate team) mediate the relationship between organizational and individual learning.
4. Team learning also contributes positively to organizational performance.

## **Introduction**

There has been much support for organizational learning as a tool to improve performance and unleash innovative potential (Jerez-Gomez, Cespedes-Lorente, and Valle-Cabrera 2005), especially in rapidly changing organizational and environmental contexts. However, it is important to have a better understanding of how employee engagement in organizational learning (OL) can be improved, especially in the context of developing Asian economies such as the Philippines. Organizational learning involves the process of continual testing of experience (Senge 1990), the acquisition and interpretation of knowledge (Dimovski 1994), and the distribution and consolidation of new knowledge into the organizational memory (Huber 1991). These processes are known to result in behavioural and cognitive changes that will in turn have an impact on organizational performance (Dimovski 1994).

Organizations learn from both the knowledge *exploitation* and *exploration* activities of their individual members. For example, employees can engage in organization-wide knowledge transfer to achieve full exploitation of existing knowledge, and experiment with new ideas to promote organizational knowledge exploration in order to develop new routines (March 1999, Raisch et al. 2009). This study will focus on employee involvement in activities that promote *organizational learning: organization-wide knowledge transfer and experimentation*.

It is crucial to identify what contributes to employees' increased involvement in these organizational learning activities, to inform the development of appropriate human resource management strategies. Individual learning is the basic building block of organizational learning (Senge 1990). However, it is also argued that organizational learning is inherently an interactive process involving teams (Edmondson 2002). *Team learning* is defined as activities in which team members seek to acquire, share, refine, or combine knowledge through *interaction* with one another (Argote, Grunenfeld, and Naquin 1999, 370). Team learning also plays a substantial role in enhancing the understanding of organizational learning (Hayes and Allinson 1998; Lundberg 1995). According to Bain (1998), and Brown and Duguid (1998) organizations can learn better if teams learn collectively through experience and knowledge sharing among individuals. This notion is supported by a number of researchers (Argyris and Schön 1978, Gibson and Vermeulen, 2003, Kasl, Marsick and Dechant 1997, Van der Vegt and Bunderson 2005) who indicated a positive association between team learning behaviors and team performance. Although considerable research has been devoted to gaining a deeper appreciation of learning in organizations relatively little is yet known about team learning (Edmondson 1999), and indeed empirical work on team learning is relatively limited. This study seeks to bridge this research gap in the literature.

This study examines the role of *team learning* in *mediating* the relationship between employee involvement in individual learning and organizational learning activities:

- (1) First, the study proposes that employee engagement in individual learning activities increases their organizational learning activities (knowledge transfer and experimentation), *through* their increased involvement in team learning activities.
- (2) Second, the study will differentiate the role of *internal team learning* and *external team learning* activities in mediating the proposed relationship between individual learning and organizational learning activities performed by employees.

The paper falls into six main parts. First is a discussion of the research context – local government in the Philippines. Second is a review of the literature on organizational learning. This itself falls into several subsections including the role of team learning in mediating individual and organizational learning; the relationship between team and individual learning; the relationship between team and organizational learning; the distinction between internal and external learning, and their respective application to team learning. Third is a description of research methods. Fourth results are presented. Fifth is a discussion of the results. Finally some implications for future research directions are considered.

## **The research context**

With a population of over 70 million, the Philippines are emerging as a strong middle economic power in the Asian region. Economic growth accompanied by strong consumer spending power, macroeconomic buoyancy, and labor market flexibility underpin a story of resilience in a region where adverse cyclical factors have affected other countries. According to the Philippines National Statistical Coordination Board the country's gross domestic product (GDP) grew by 7.8 percent in the first quarter of 2013, and it was cited as the fastest growing nation in Asia. Calderon (2013), Olchondra (2013) and Santos (2013) noted that the Philippine's GDP growth is faster than its counterparts in China (7.7 percent), Indonesia (6 percent), India (5.5 percent), Thailand (5.3 percent) and Vietnam (4.9 percent). This growth

is driven by several key industries including manufacturing and construction. Larano (2013) reported the industrial sectors, such as manufacturing and construction grew by 10.9 percent, while the services sector that accounts for approximately half of GDP climbed by only 7 percent. Despite this growth the number of unemployed Filipinos has remained at 7.25 million (about 19 percent of the working population) – an indicator of basic economic weakness (Flores 2013). This notion is supported by Beja Jr (2012) who stated “It [Philippines] cannot generate enough jobs to absorb the large army of unemployed Filipinos who have different skill levels and educational attainment.” (p.1). To tackle the problematic issues associated with the high unemployment rate of the chain of islands, which in effect excludes the poorest and least skilled, it is important to reform vocational pathways for the booming population of the Philippines. Some economists have urged the public sector to diversify the economy by revamping the education system within the Philippines, and in the meantime there is a need to provide further employment opportunities and offer different training schemes for current employees in other industries such as manufacturing (Santos 2013).

Local government has a significant role in supporting job creation both as an employer and also as a training provider. However it must do so in a climate of both economic constraint and challenges to provide better services. The Local Government Code of 1991 devolved to local government much power and responsibility for service delivery across a wide range of areas including poverty alleviation, infrastructure development, health and education delivery and much else. Coincidentally there was increased reliance upon central government funding rather than local taxes. Huge demands co-existed with scarce resources and ever present accusations of corruption and inefficiency. The net effect of these changes was to place demands upon local government staff to improve their skills and professionalism. A study by the World Bank in 2009 found that a major US\$100 million project had suffered from weak

managerial and workforce competencies (World Bank, 2009). By the same token, investments that had been funded ten years earlier were beginning to pay off as local government rose to the challenge. It is in this economic, social and organizational context that this research into organizational learning must be placed.

## **Organizational learning**

In this section we divide the literature upon organizational learning into several subordinate bodies relating to different key objectives, questions and hypotheses.

### **Does team learning mediate between individual and organizational learning?**

Since the organization is an aggregate of its individual members it is generally agreed that individual learning is the basic building block of organizational learning (Antonacopoulou 2006, Senge 1990, Richter 1998). However, individuals can share their knowledge across the organization (Bain 1998, Senge 1990) and as a result build organizational memory to facilitate knowledge exploitation of the organization; they can also develop new knowledge (Marsick and Watkins 2003). According to Gill (2009), the continual improvement and knowledge management of an organization is directly linked to its learning culture. By surveying 110 top managers in the banking sectors of Pakistan, Imran, Rizvi and Ali (2011) found that there is a high correlation between an organization's learning culture and the improvement of knowledge performance.

However, it is also argued that organizational learning is an interactive social process. Senge (1990) suggests that teams are the fundamental learning unit in an organization. Akgün, Lynn, and Byrne (2003) argued that organizational learning is a social process and emphasized the importance of group activities and communication in organizational learning. Edmondson (2002) also proposed that organizations learn through actions and interactions that take place



between individuals situated within smaller groups and teams. Yu (2013) suggested that a positive organizational learning culture has the potential to improve team and individual learning activities.

Individuals help promote organizational knowledge exploitation through sharing knowledge with others, and their knowledge sharing activities often begin with a smaller number of individuals acting to promote team performance which eventually enable progress towards wider organizational goals (Edmondson 2002). Similarly, individuals help facilitate organizational knowledge exploration by creating new knowledge and ideas through their interaction in small teams composed of individuals with different ideas and knowledge (Martins and Terblanche 2003). This study proposes that the individual learning activities of employees do not directly increase organizational learning activities, but are mediated by their increased knowledge sharing and interaction within and across teams.

Crossan, Lane, and White (1999) developed the 4Is model of organizational learning, which describes processes involved in individual learning, team learning, and organizational learning activities. It proposes that these three learning activities are linked by four processes: intuiting, interpreting, integrating, and institutionalizing (4Is). Individuals first learn by developing new insights through a subconscious process called *intuiting*. Individual knowledge is highly personal and tacit at this stage. This is followed by *interpreting*, when individuals reflect on their knowledge and make it conscious and explicit. When the knowledge of the individual becomes conscious and explicit, it will be available for sharing with others, with whom they work closely, such as team members or other teams with high task interdependence, allowing the process of integrating to take place. *Integrating* involves the sharing of knowledge and the development of collective understanding with other individuals at the team level. Finally, the institutionalizing process captures and incorporates

learning by individuals and teams across the whole organization by embedding them into formal systems and routines.

According to this model, team learning can be an important intermediate step between individual learning and organizational learning. However, the mediating role of team learning remains understudied. The first aim of this study is to empirically test the prediction that employee individual learning activities will lead to an increase in their organizational learning activities, through their increased involvement in interaction and knowledge sharing within and across teams.

### **The relationship between team and individual learning**

The existence of a relationship between team and individual learning stems from the consensus that teams are composed of groups of individuals working towards a common goal (Dechant, Marsick, and Kasl 1993). Teams require individuals to share knowledge, reflect on ideas collectively, contribute to team problem solving, and subsequently achieve team performance goals (Kasl, Marsick, and Dechant 1997).

According to the 4Is model of organizational learning (Crossan, Lane, and White 1999), individual learning takes place through the intuiting and interpreting processes. When individuals learn, their knowledge is often highly personal and tacit to begin with. Tacit knowledge is a person's 'know-how', which is often difficult to communicate through words and written forms (Spender 1994). People are also often unaware of how their knowledge can be of value to others (Baumard 1999). However, through the interpreting process, individuals can become aware of their knowledge and make this tacit knowledge explicit. This interpreting process of individual learning allows knowledge to be shared between individuals, thus becoming an increasingly collective learning activity.

However, this study proposes that these individual learning activities do not directly lead to increased engagement in organizational learning activities by these individuals. Instead, employees are likely to first share their individual knowledge with people whom they work closely with in smaller groups. Tagliaventi and Mattarelli (2006) found a positive relationship between knowledge sharing and operational proximity in the organization. Furthermore, Agrawal, Kapur, and McHale (2008) found that both spatial and social proximity increase knowledge flows. It is therefore expected that individuals will first share their knowledge with people in close physical, social, or operational proximity, such as members of their own team, and other teams with a high level of work interdependence, before broadening their knowledge sharing across the wider organization.

### **The relationship between team and organizational learning**

According to Senge (1990), team learning is the basic component of organizational learning. Team learning is defined as the activities by which team members seek to acquire, share, refine, or combine task-relevant knowledge through interaction with one another (Argote, Grunefeld, and Naquin 1999, 370). Edmondson (2002) suggested that an organization learns through interactions such as knowledge sharing, collective reflection, and action between people situated within smaller teams or groups.

When individuals contribute their knowledge, and engage in collective action and reflection within their own teams and with other teams with high task interdependence, they are engaging in the integrating process of Crossan, Lane, and White's (1991) 4Is model. These team learning activities are likely to promote further organizational learning activities such as cross-organizational knowledge transfer and experimentation with new ideas.

Team learning activities can be an important intermediate step towards helping individual knowledge to be eventually captured and disseminated across the organization for full

knowledge exploitation. Knowledge ambiguity is one of the most important hindrances to organizational knowledge transfer (e.g. Levin and Cross 2004, Simonin 1999, Szulanski, Capetta, and Jensen 2004). As discussed earlier, individuals may first share knowledge with people close in proximity. According to Nonaka (1994), individuals externalize and clarify their knowledge during socialization processes such as knowledge sharing, explaining the knowledge to others, and collective reflection in teams. This helps reduce knowledge ambiguity, and increases employee awareness of how their knowledge can be useful not just for their teams, but also for the organization as a whole. This in turn increases their knowledge self-efficacy (such as understanding why people choose to share knowledge in some contexts and not in others) (Bandura 1986, Cabrera, Collins, and Salgado 2006) -- their confidence in their ability to provide valuable knowledge to others -- motivating other employees to expand their knowledge sharing across the organization.

These interactive team learning activities may also help an organization develop new ideas through knowledge exploration. Innovation is an interactive process, stimulated by assimilating a diverse range of knowledge from various sources (Tsai 2001). Kanter (2006) argues that innovations are often the result of integrating existing abilities in new ways. Communication between individuals with diverse backgrounds could stimulate the creation of new ideas (Martins and Terblanche 2003). Individual learning by employees may therefore lead to increased organizational knowledge exploration activities through their increased involvement in knowledge sharing, collective reflection and action within and across teams. On this basis we propose the following hypothesis.

Hypothesis 1: Employees who engage in individual learning activities will have greater involvement in organizational learning activities (such as organization-wide knowledge transfer and experimentation), through their increased involvement in team learning activities.

## **Internal and external learning**

Edmondson (1996) proposed two different types of team learning activities, namely, *internal team learning* and *external team learning*. The former allows team members to learn from each other through activities such as enquiry, feedback and information sharing (Edmondson 1999). According to Argote and McGrath (1993), internal team learning can be considered the extent to which team members engage in behaviors to monitor performance against organizational goals in order to obtain new information, test assumptions, and create new possibilities. Other studies have examined the significance of external team learning (Edmondson, Winslow, and Bohmer 2003, Wong 2004) which emphasizes boundary spanning activities that transcend the quest for learning within the team to acquiring knowledge outside the team. Furthermore, external team learning behaviors have been defined as an assessment by several of the team's customers and/or managers of the extent to which the team engages in activities associated with seeking new information or asking those who receive or use its work for feedback (Argote and McGrath, 1993). Through empirical studies Wong (2004) found that internal team learning (local) and external team learning activities (distal) differ in significant ways. This study further advances the current literature by examining the relative importance of employee involvement in both internal and external team learning as mediating factors between individual and organizational learning.

## **Internal team learning**

Bresman (2010) suggested within-team knowledge sharing may help team members to learn all aspects of the team's work. This helps them fully exploit the knowledge and past experiences of other team members with similar experiences, so as to avoid repetition, and to detect and correct mistakes. Edmondson, Winslow, and Bohmer (2003) found that late adopters of new processes often progress faster than early adopters because they can learn

from the experiences of others. These positive experiences may encourage employees to expand their efforts to engage in organizational-wide knowledge transfer activities to promote knowledge exploitation. Team members may also test their assumptions by drawing on each other's experiences, and engaging in various trial-and-error and reflective processes within their teams. These may lead to new information and abilities, and eventually promote organizational learning through knowledge exploration and experimentation.

### **External team learning**

Bresman (2010) also proposed two distinct methods of external team learning: vicarious learning and contextual learning. Vicarious learning involves observation of other teams and inviting people outside their teams to discuss how to improve their work. Contextual learning involves going out and finding out about market trends, customer preferences and what the competitors are doing. By engaging in these boundary spanning activities, employees may become motivated to engage in even broader organizational-wide knowledge transfer. In support of this, Tsai (2001) argued that innovation is stimulated by effectively assimilating a range of knowledge from various sources. Communication between individuals with diverse backgrounds could also encourage knowledge exploration and stimulate the creation of new ideas (Martins and Terblanche 2003). External team learning activities, by integrating knowledge from more diverse sources, may also play an important role in mediating the relationship between individual learning activities and increased organizational learning activities of the employees. On the basis of this distinction between internal and external team learning this study proposes to add to Hypothesis 1, the two hypotheses below.

Hypothesis 2a: Increased individual learning by employees will increase their engagement in organizational learning activities (organizational-wide knowledge transfer and experimentation) through their increased involvement in *internal* team learning activities.

Hypothesis 2b: Increased individual learning by employees will increase their engagement in organizational learning activities (organizational-wide knowledge transfer and experimentation) through their increased involvement in *external* team learning activities.

## **Research Methods**

### **Participants**

The study was undertaken across eighteen municipalities within the Province of Misamis Occidental, Mindanao in the Philippines. Respondents consisted of 322 full time employees from a cross section of positions (ranging from top executives to lower levels of administration/clerical), with varying management responsibilities and job functions. The sample represented 48.8% of the 660 employees that were part of the local public sector areas studied. Data was collected using anonymous self-report questionnaires.

### **Measures**

A composite survey instrument consisting of 33 items was administered. This instrument is made up of four different well-developed self-report scales, including: the Individual Learning Scale (Ames and Archer 1988); the Team Learning Survey (Edmondson 1996); and two subscales of the Organizational Learning Survey (Goh and Richards 1997). These scales have been shown to be valid and reliable measures (Chan 2003, Chan, Pearson, and Entrekina 2003).

Internal and external team learning behaviors are measured by the Team Learning Survey (Edmondson 1996). In this survey, internal team learning is defined as "...the extent to which team members engage in behaviors to monitor performance against goals, obtain new information, test assumptions, and create new possibilities." External team learning is defined as "...an assessment by several of the team's customers and/or managers about the extent to

which team engages in behaviors such as seeking new information or asking those who receive or use its work for feedback.” (Edmondson 1996, 166). Both the internal and external learning behaviors were measured with five items. In addition, two subscales of the Organizational Learning Survey are adopted in this study (Goh and Richards 1997): (1) *Experimentation and Rewards*; and (2) *Transfer of Knowledge*. The respondents were asked to indicate their responses on a seven point Likert scale where 1 equals strongly disagree and 7 equals strongly agree.

## **Results**

Demographic details of the participants are presented in Table 1. There are four major characteristics of the study respondents. First, the respondents were skewed towards older members of the workforce, and indeed, almost half of the investigated respondents were aged 50 or above (47.1%). Second, a large number of the study respondents were well educated (almost 90% were educated beyond secondary level). It is reasonable to assume that in the public sector a large proportion of jobs were promoted based on seniority. This promotional approach still plays a dominant role in many Asian cultures, and this notion is particularly evident in the Philippines context. Third, a majority of the participants occupied white collar/professional roles in the organizations investigated. Such findings provides foundation for the claim that public sector jobs are considered ‘good’ and ‘secure’ occupations, that is often associated with secure benefits and treatment. Fourth, the service length of the study participants indicates durable tenure in long careers.

**<Table 1 approx here>**

The reliability measures of the selected scales in this study are presented in Table 2. According to Hill and Petty (1995), 0.30 is considered as a generally accepted minimum factor loading because it indicates that approximately 10% variance for a corresponding



variable has been explained by a factor. In this study, individual learning, team learning, and organizational learning exhibited Cronbach alpha coefficients of 0.646, 0.661 and 0.779, respectively. These scores are deemed acceptable by Choo, et al. (2006) and DeVellis (1991) who suggested that the above, or the minimum acceptable range of Cronbach alphas coefficients, is between 0.65 and 0.70.

**<Table 2 approx here>**

Composite scores for individual learning, team learning, and organizational learning were calculated and the descriptive statistics of these items are presented in Table 3 below.

**<Table 3 approx here>**

Pearson correlations were taken between all measures, controlling for the demographic variables in Table 1. These demographic variables might systematically influence the relationships in the proposed model. It is therefore important to ensure that the relationships between the variables in the proposed model do not reflect an underlying influence by extraneous variables.

All of these correlations are positive and are statistically significant at the  $p < .01$  level after the potential impact of the demographic variables is controlled for. These correlations are presented in the correlation matrix in Table 4 below.

### **Model 1: The mediating role of team learning**

Structural equation modeling (SEM) was performed to examine the interrelationships between individual learning, team learning, and organizational learning. The structural model is presented within the shaded area of Figure 1.

Team learning and organizational learning were developed and confirmed as multi-dimensional constructs measured by their corresponding subcomponents. This resulted in two measurement models, with team learning and organizational learning represented as latent variables (in ovals), and their corresponding subcomponents as observed variables (in rectangles).

SEM also allows the examination of the proposed mediating role of team learning by examining the direct and indirect effects of individual learning on organizational learning.

<Figure 1 approx here>

### **Model Fit**

A number of fit indices indicate that this model has a good fit. The model has a small chi square value,  $\chi^2$  (3, N = 308) = 6.020,  $p = .111$ , suggesting that the model is consistent with the sample data. The model has a RMSEA of .057 (PCLOSE = .344, HI90 = .124), Standardized RMR of .011, a CFI of .994 and GFI of .992. All of these measures indicate a good model fit with the sample data.

The regression coefficients in the two measurement models represent the factor loadings of each of the subcomponents to their corresponding higher order factors (organizational learning and team learning). The factor loadings of all of the subcomponent measures are statistically significant and strong, indicating that they are valid measures of their corresponding latent constructs (See Figure 1).

### **Hypothesis Testing**

The study hypothesizes that those organizational members who learn as individuals will engage in more organizational learning activities, through their increased involvement in team learning activities both within their teams and across teams.

The standardized regression coefficients of the hypothesized predictive relationships in the structural model are presented in Table 5 below, and within the shaded area in Figure 1 above. Initial analysis by SEM provides preliminary support to the mediating role of team learning in the relationship between individual learning and organizational learning. First, individual learning significantly predicts the level of team learning ( $b = .380, t(306) = 5.490, p < .001$ ). Team learning then predicts organizational learning ( $b = .845, t(306) = 4.702, p < .001$ ). However, the direct relationship between individual learning and organizational learning fails to reach statistical significance ( $b = -.009, t(306) = -.132, p = .895$ ).

<Table 5 approx here>

The hypothesized mediating role of team learning between individual learning and organizational learning can be further confirmed by breaking down the *total effect* of individual learning on organizational learning into *direct effect* and *indirect effects*. The breakdown of the total effect between individual learning and organizational learning is presented in Table 6 below.

<Table 6 approx here>

Although the *total effect* from individual learning to organizational learning is statistically significant ( $b = .313, p < .001$ ), the *direct effect* is not ( $b = -.009, p = .895$ ). The *indirect effect* mediated by team learning accounted for much of the total effect between individual learning and organizational learning ( $b = .321, p < .0001$ ). This result indicates the full mediation role of team learning in this relationship. Furthermore, the removal of the direct effect from individual learning to organizational learning from the model does not result in a statistically significant deterioration in model fit,  $\Delta\chi^2 (1, 308) = 0.016, n.s$ . The full model does not fit the data better than the more parsimonious model (with the direct effect excluded), suggesting that the impact of individual learning on organizational learning is indirect. A

statistically significant Sobel test demonstrated that team learning *fully* mediates the relationship between individual learning and organizational learning ( $Z = 3.565, p < .001$ ).

Individual learning by employees does not *directly* lead to their greater involvement in organizational learning activities. Instead, as individual organizational members learn, they will engage in more team learning activities at the local level, and this will eventually lead to their increased involvement in organizational learning activities, such as experimentation and organization-wide knowledge transfer.

### **Model 2: The mediating role of internal team Learning**

The second SEM was performed to examine the interrelationships between individual learning, organizational learning, and *internal* team learning. This structural model is presented within the shaded area of Figure 2 below.

<Figure 2 approx here>

### **Model Fit**

Various model fit indices indicate a good fit with the sample data. The model has a small chi square value,  $\chi^2 (1, N = 308) = .982, p < .322$ , accepting the null hypothesis that the model exactly fits the data. The model has a RMSEA of .000 (PCLOSE = .485, HI90 = .150), Standardized RMR of .005, a CFI of .998 and GFI of 1.000.

### **Hypothesis Testing**

The second hypothesis of this study that is organizational members who learn as individuals will engage in more organizational learning activities through their increased involvement in *internal* team learning activities.

The standardized regression coefficients of the hypothesized relationships are presented in Table 7 below, and within the shaded area in Figure 2 above. Individual learning significantly predicts the level of internal team learning ( $b = .260, t(306) = 4.727, p < .001$ ). Internal team learning then predicts organizational learning ( $b = .375, t(306) = 6.021, p < .001$ ). The direct relationship between individual learning and organizational learning is also statistically significant ( $b = .210, t(306) = 3.511, p < .001$ ).

<Table 7 approx here>

Initial analysis indicates a possible partial mediation by internal team learning, and this can be further confirmed by analyzing the direct effects and indirect effects. The breakdown of the total effect between individual learning and organizational learning is presented in Table 8 below.

<Table 8 approx here>

The *total effect* between individual learning and organizational learning ( $b = .308, t(306) = , p < .001$ ), and the *indirect effect* mediated by internal team learning ( $b = .098, t(306) = ., p < .01$ ), are both statistically significant. Furthermore the *direct effect* between individual learning and organizational learning is also significant ( $b = .210, t(306) = , p < .01$ ). It indicates only a partial mediation of team learning in this relationship. The removal from the model of the direct effect from individual learning to organizational learning actually worsens the model fit ( $\Delta\chi^2 (1, 308) = 12.346, p < .001$ ). The Sobel test demonstrates a significant *partial* mediation of internal team learning in the relationship between individual learning and organizational learning ( $Z = 3.727, p < .001$ ).

### **Model 3: The mediating role of external team learning**

This final SEM was performed to examine the interrelationships between individual learning, organizational learning, and *external* team learning. This structural model is presented within the shaded area of Figure 3 below.

<Figure 3 approx here>

### **Model Fit**

This proposed model has a good model fit. The model has small chi square value,  $\chi^2$  (1, N = 308) = .035,  $p < .851$ , showing that the model is consistent with the data. The model has a RMSEA of .000 (PCLOSE = .898, HI90 = .085), Standardized RMR of .001, a CFI of 1.000 and GFI of 1.000.

### **Hypothesis Testing**

The study hypothesizes that organizational members who engage in individual learning activities will also engage in more organizational learning activities, through their increased involvement in *external* team learning activities.

Individual learning significantly predicts external team learning ( $b = .301$ ,  $t(306) = 5.538$ ,  $p < .001$ ). External team learning then predicts organizational learning ( $b = .674$ ,  $t(306) = 10.299$ ,  $p < .001$ ). The direct relationship between individual learning and organizational learning is also statistically significant ( $b = .108$ ,  $t(306) = 2.141$ ,  $p < .05$ ). The regression coefficients of these relationships are presented in Table 9 below and Figure 3 above.

<Table 9 approx here>

As the direct relationship between individual learning and organizational learning remains statistically significant, the potential partial mediation by external team learning can be evaluated by examining the direct effects and indirect effects (see Table 10 below).

<Table 10 approx here>

The total effect between individual learning and organizational learning is statistically significant ( $b = .311$ ,  $t(306) = , p < .01$ ). The *indirect effect* mediated by external team learning is also statistically significant ( $b = .203$ ,  $t(306) = , p < .01$ ), indicating a mediating role of external team learning in the relationship. However, the *direct effect* between individual learning and organizational learning remains significant ( $b = .108$ ,  $t(306) = , p < .05$ ), indicating only a partial mediating role of external team learning. The removal from the model of the direct effect from individual learning to organizational learning indeed leads to a deterioration of model fit ( $\Delta\chi^2 (1, 308) = 4.629$ ,  $p < .05$ ). The Sobel test demonstrates a significant *partial* mediation of external team learning in the relationship between individual learning and organizational learning ( $Z = 4.867$ ,  $p < .001$ ).

### Common method bias

Given that the present study used a self-report survey method to measure the factors in the proposed model, it is possible that common method bias has occurred. Common method bias refers to a systematic bias introduced by using the same method to measure different constructs, resulting in an inflation of the observed relationships from the true relationships between these constructs (Doty and Glick 1998). The post-hoc Harman's single-factor test was performed to evaluate whether or not a single factor explains a large amount of variances (Podsakoff and Organ 1986). The test revealed no evidence of a single factor accounting for the majority of the variance in the variables (no single factor accounting for more than 24.88% of the variance). A latent common variable test was then performed (Podsakoff et al. 2003). The latent common variable only accounts for 28% of the variances among all the items.

### Discussion

The rationale for this study is to examine the mediating role of team learning activities in the relationship between individual learning and the organizational learning activities of employees. It is expected that employees who learn individually will engage in more organizational learning activities, such as organizational-wide knowledge sharing and experimentation with new ideas, through their increased involvement in team learning activities. The existence of organizational culture and its implications on the relationships between the examined variables cannot be ignored. Indeed, culture is deemed as a significant force that influences people's behaviors, attitudes, and mental models (Lee 2007). Furthermore, Wang and Satow (1994) and Kaye and Taylor (1997) argue that cultural factors such as assumptions, perceptions and feelings can have an implicit influence on the ways in which organizational members behave. Ultimately, there is a need to consider cultural constraints when examining the organization learning theories. The results of this study have implications for both theory and HRM practices.

This study contributes to theoretical development as the first attempt to empirically examine the mediating role of team learning in this relationship, as predicted by Crossan, Lane, and White's (1999) 4Is model. It is generally agreed that individual learning is the basic building block of organizational learning (Antonacopoulou 2006, Senge 1990, Richter 1998). However, by integrating employee involvement in all three types of learning activities into a structural model, the findings support the hypothesis that the direct relationship between individual and organizational learning is not significant on its own and is fully mediated by team learning.

This study further adds to theoretical development by examining the role of internal team learning and external team learning in mediating this relationship. Internal team learning activities involve sharing, obtaining feedback and reflecting with one another within the team. On the other hand, external team learning involves boundary spanning activities across teams



and the seeking of information outside the organization. These two types of team learning activities may therefore play different roles in the relationship between individual learning and organizational learning activities.

The findings demonstrate that both internal and external team learning mediate the relationship between individual learning and organizational learning, but neither one fully mediates this relationship. It appears that internal team learning and external team learning play their own specific and equally important roles in mediating the relationship between the individual learning and organizational learning activities the employees take part in. This study also has significance for HRM practice.

These findings have important implications for designing activities and management practices to promote organizational learning. Many organizations have a strong focus on training and development practices targeted at individual development (Aguinis and Kraiger 2009, Zhou 2003). These practices are often used in conjunction with knowledge management (KM) structures such as centralized knowledge repositories (Grover and Davenport 2001) to ensure that the knowledge of these individuals will be captured, retained, and consolidated within the organizational memory. However, this study puts forward the idea that organizational learning is inherently an interactive process. Both knowledge exploration and exploitation within the organization are the result of its members sharing their individual knowledge, collectively reflecting, assimilating, and eventually experimenting with new ideas.

Team learning, defined as activities by which team members learn through interaction with one another (Argote, Grunefeld, and Naquin 1999), is therefore an important intermediate step to motivating employees who learn individually to eventually engage in broader organization-wide knowledge transfer and experimentation. Apart from providing individual

learning opportunities, for example, individual training programs and skill development, human resource practices must also encourage employees to freely express their ideas, take part in joint reflection, and make changes, first at the local level. On this foundation they can eventually engage in broadening these collective activities across the whole organization.

Transfer of knowledge: to assist with knowledge transfer, centralized knowledge repositories are often introduced to encourage employees to share knowledge across the organization. However, individual knowledge is often tacit and subconscious. Interaction within and across teams can increase an employee's awareness of how their knowledge can be valuable not only to their teams but also to the whole organization, thus encouraging organization-wide transfer. Furthermore, these formal knowledge management structures are unlikely to be effective if employees are unwilling to share their knowledge. Knowledge hoarding will occur if individuals do not behave pro-socially and work purely for self-interest (Lam and Lambermont-Ford 2010, Wasko and Faraj 2000). Ardichvili, Page, and Wentling (2003) noted that knowledge sharing is more likely if employees view their knowledge as a public good that belongs to the whole organization. It is therefore important to develop a pro-social atmosphere under which employees are willing to share their knowledge across the whole organization (Alvesson and Karrenman 2001). The development of this atmosphere can begin at the team level. Day-to-day knowledge sharing activities within and across groups can create a trusting, collaborative, and pro-social culture for further organizational-wide knowledge dissemination. In addition, learning processes within organizations are often tied to culture. Culture plays a significant role as it helps determine the foundation of knowledge, and also which kinds of knowledge can and should be managed. It is therefore reasonable to assume that culture informs the ways in which new knowledge is created, legitimated, and transferred or hoarded within organizations (Talbot 2013).

Experimentation and reward: To assist in experimentation organizations can reward individuals who explore and experiment

with new ideas. Both theories and empirical evidence suggest that the sharing of ideas between individuals and teams with diverse knowledge backgrounds will promote creativity (Alves et al. 2007, Kanter 1985, 2006, Leonard and Straus 1997), the rationale being that the cross-fertilization of diverse ideas encourages employees to look beyond their own knowledge and their usual mindsets (Kanter 1985, 2006, Leonard and Straus 1997). Creative ideas are often the result of combining a diverse array of ideas in new and unexpected ways (Mahmoud-Jouini and Charue-Duboc 2008). As a result, organizational knowledge exploration will become more effective when individuals come together. Edmondson (2002) argued for promoting organizational learning, an atmosphere that will encourage open communication. This requires both a high degree of psychological safety and minimal power differences. On this basis teams can then encourage reflection and the exploration and testing of new ideas. Employees should be encouraged to communicate and challenge each other's notions within the team, and also to reach out to others and seek out input and feedback outside the team (Edmondson 2002).

### **Future research directions**

This study examines the relationship between the involvement of individual, team, and organizational learning activities of individual employees. The findings support the study hypothesis that when employees learn individually, they are more likely to engage in organizational learning activities such as organizational-wide knowledge transfer and experimentation with new ideas. In addition, through the intermediate step of increased involvement in knowledge sharing within their teams or with other interdependent teams in close proximity, individual learning is likely to facilitate organizational learning activities. While this study focuses on examining these three types of learning activities at the individual level, future studies could adopt a multi-level approach by examining whether

learning at the individual level will promote the learning of the team, and as a result whether such action is likely to promote organizational learning activities.

The findings of this study also demonstrate that external team learning and internal external team learning both play a role in mediating the relationship between employee involvement in individual learning and organizational learning activities. Future studies could examine how internal team learning and external team learning work together to mediate this relationship. For example, Bresman (2010) found an interaction between internal team learning and a vicarious type of external team learning (learning from other teams) on team performance. The interaction illustrates that team members may not be able to learn effectively from the experiences of other teams if they do not also learn from their own experiences. For example, with internal adjustment and reflection, the team may apply knowledge from other teams that is inappropriate to its condition. The relationship between employee involvement in individual learning and organizational learning activities may break down if they do not engage in both internal and external team learning activities.

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Table 1. Demographic information of the participants

		N	Percentage
Gender	M	190	63.3
	F	110	36.7
Age	<20	7	2.4
	20-29	11	3.7
	30-39	45	15.2
	40-49	94	31.6
	>50	140	47.1
Education	Secondary	32	10.4
	College/Certificate/Diploma	100	32.6
	Bachelor degree	133	43.3
	Postgraduate Diploma	17	5.5
	Master	17	5.5
	Doctorate	3	1.0
	Other	5	1.6
Job Function	Executive	8	3.0
	Senior Manager	11	4.1
	Supervisor	57	21.0
	Manager	5	1.8
	Administration/Clerical	107	39.5
	Other	83	30.6
Average Service Length (years)		17.29 (SD = 9.77)	
Average Years in Department		16.44 (SD = 9.67)	
Average Years of Work		20.89 (SD = 9.35)	

Table 2. Reliability measures for the survey instruments

Measures	Alphas
Individual Learning	.646
Team Learning	.661
Organizational Learning	.779

Table 3. Descriptive statistics of the variables in the proposed model

	Mean	Standard Dethroughtion
Individual Learning	5.495	0.642
Team Learning	4.644	0.831
Internal	4.483	0.653
External	4.910	0.953
Organizational Learning	4.873	0.760
Experimentation	4.721	0.904
Knowledge Transfer	4.801	0.878

Table 4. Correlation table

	Individual Learning	Team Learning	Internal Team Learning	External Team learning	Organizational Learning	Experimentation	Transfer of Knowledge
Individual Learning	1.000	.333	.265	.284	.347	.271	.238
Team Learning		1.000	.816	.851	.686	.568	.556
Internal Team Learning			1.000	.441	.452	.332	.381
External Team Learning				1.000	.704	.619	.550
Organizational Learning					1.000	.875	.851
Experimentation						1.000	.690
Transfer of Knowledge							1.000

Table 5. Regression weights of the structural model

Predictors	Dependent Variables	Beta	Standardized Beta	Standard Error	t	p value
Individual Learning	Team Learning	.640	.380	.117	5.490	<.001
	Organizational Learning	-.025	-.009	.186	-.132	.895
Team Learning	Organizational Learning	1.448	.845	.308	4.702	<.001

Table 6. Total effect, direct effect, and indirect effects between individual learning and organizational learning

	Standardized beta	Standard error	p value
<b>TOTAL EFFECT</b>	.313	.058	<.001
<b><i>DIRECT EFFECT:</i></b>			
Individual Learning → Organizational Learning	-.009	.070	.895
<b><i>INDIRECT EFFECT:</i></b>			
Individual Learning → Team Learning → Organizational Learning	.321	.069	<.001

Table 7. Regression weights of the structural model

Predictors	Dependent Variables	Beta	Standardized Beta	Standard Error	t	p value
Individual Learning	Internal Team Learning	.265	.260	.056	4.727	<.001
	Organizational Learning	.372	.210	.106	3.511	<.001
Internal Team Learning	Organizational Learning	.653	.375	.108	6.021	<.001

Table 8. Total effect, direct effect, and indirect effects between individual learning and organizational learning

	Standardized beta	Standard error	t	p value
<b>TOTAL EFFECT</b>	.308	.060		<.001
<b>DIRECT EFFECT:</b>				
Individual Learning → Organizational Learning	.210	.061		<.01
<b>INDIRECT EFFECT:</b>				
Individual Learning → <i>Internal Team Learning</i> → Organizational Learning	.098	.026		<.001

Table 9. Regression weights of the structural model

Predictors	Dependent Variables	Beta	Standardized Beta	Standard Error	t	p value
Individual Learning	External Team Learning	.447	.301	.081	5.538	<.001
	Organizational Learning	.241	.108	.113	2.141	.032
External Team Learning	Organizational Learning	1.012	.674	.098	10.299	<.001

Table 10. Total effect, direct effect, and indirect effects between individual learning and organizational learning

	Standardized beta	Standard error	t	p value
<b>TOTAL EFFECT</b>	.311	.058		<.001
<b>DIRECT EFFECT:</b>				
Individual Learning → Organizational Learning	.108	.051		.024
<b>INDIRECT EFFECT:</b>				
Individual Learning → <i>External Team Learning</i> → Organizational Learning	.203	.043		<.001

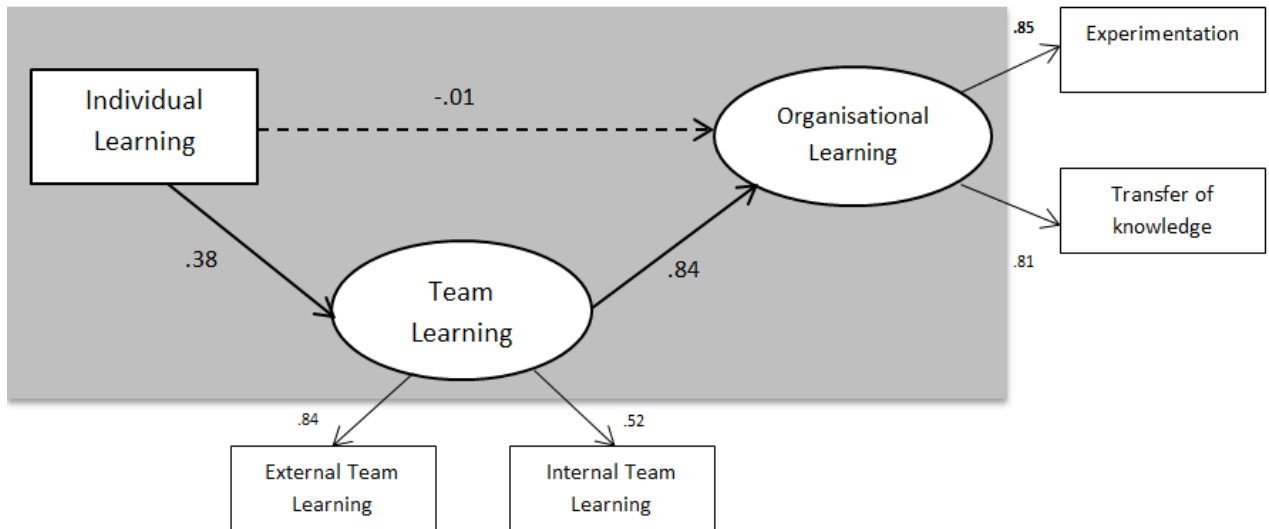


Figure 1. SEM results on individual, team, and organizational learning

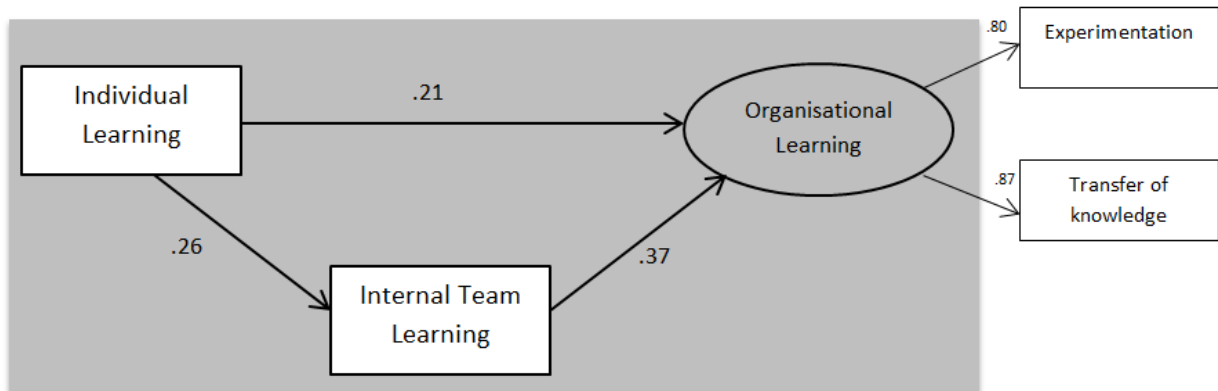


Figure 2. SEM results on individual, internal team, and organizational learning

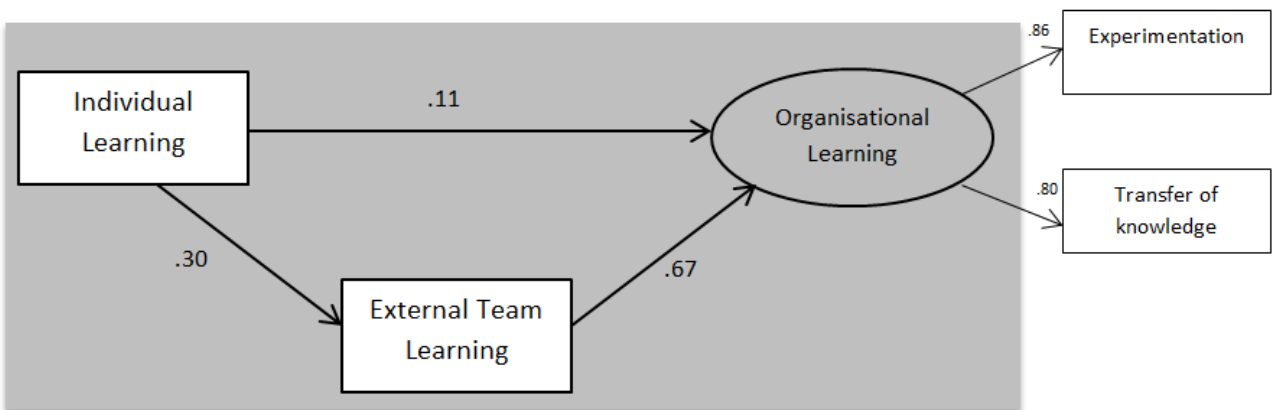


Figure 3. SEM results on individual, external team, and organizational learning

**Key points:**

1. Employee involvement in individual learning will predict their involvement in organizational learning activities.
2. This relationship was mediated by their increased involvement in team learning activities.
3. Both internal and external team learning mediate the relationship between employees' individual and organizational learning.