The Effect of Leadership on Organizational Learning

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Abstract The effect of leadership on organizational learning was examined in this meta-analysis study. A total of 170 research studies were collected as a result of a literature review, out of which 31 were included in the meta-analysis. The 31 research studies were compiled to obtain a sample size of 11,944 subjects. The analysis results of the random effect model showed that leadership has a *large effect* on organizational learning. In the study, of the moderators publication type, publication year, sample group/sector, leadership style/approach and leadership scale, only leadership style/approach was found to be a moderator variable.

1 Introduction

When we consider the premise that humans are learners by nature, it would not be wrong to state that learning takes place all the time. From this perspective, learning is a need rather than a preference (Lloréns Montes, Ruiz Moreno, & García Morales, 2005). Particularly in the changing world, learning is seen as a competitive advantage (De Geus, 1988), and, in this sense, organizations perform more successfully when better learning is realized (Abbasi & Zamani-Miandshti, 2013). Successful organizations are organizations where all parties are involved in active learning and understand the importance of adaptation to become organizationally competitive (Kinghorn, Black, & Oliver, 2011). Thus, organizational learning and learning organizations have taken their place in the new organizational paradigms.

Organizational learning is the changing and expansion of knowledge and value systems of organizations, the development of their capacity to solve problems and take action and the changes in the common reference frameworks of employees (Probst & Büchel, 1997; cited in Yazıcı, 2001). Arygris (1996) contends that organizational learning is the process of identifying mistakes and rectifying them and argues that learning is what happens at the end of this process. According to Huber (1991), organizational learning is the processing of information with the aim

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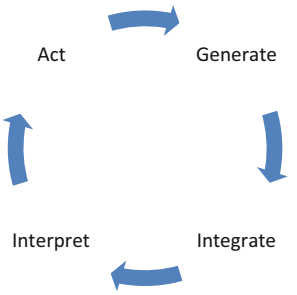

Fig. 1 Organizational learning process

of collating organizational memory and is comprised of four constructs: (i) knowledge acquisition, (ii) information distribution, (iii) information interpretation and (iv) organizational memory. Similarly, organizational learning is expressed as developing and attaining information, sharing and distributing information and putting the information into practice (Garcia-Morales, Lopez-Martin, & Llamas-Sanchez, 2006). Furthermore, the learning process in organizations resembles that of human life. Dixon (1994) summarizes this process as a cycle with four stages: (i) generation of information, (ii) integration of information into the organization, (iii) interpretation of the information and (iv) actions taken based on the interpreted information (Fig. 1).

Senge, Kleiner, Roberts, Ross, and Smith (1994) explain the five disciplines of organizational learning as follows:

(i) *Personal mastery:* to develop personal learning capacity and the creation of an organizational environment to encourage all members of the organization to reach the aims and objectives.
(ii) *Mental models:* the pictures of a person's inner world made up of deep thoughts that can be continuously explained and developed. They are shaped as a result of actions and decisions.
(iii) *Shared vision:* the creation of the feeling of being a group by developing the shared aspects to reach the desired aim for the future and the principles and guidance practices concerning the points aimed to be reached.
(iv) *Team learning:* the transforming of interactive and collective thinking skills. In this way, groups become larger than the total of individual skills of its members and understanding, and skills can be developed in a more dependable way.
(v) *Systems thinking:* a method of language and thinking for understanding and the means of understanding the strengths and interactive relationships that shape the behaviors of systems. This discipline is useful for organizations to be informed of how systems can more efficiently change and how to become harmonious with larger processes in the natural and economic world.

The mental characteristics of organizations have been determined by considering the information produced by organizations, the generation of new information

based on this information, and the fact that members of organizations learn better when acting collectively (Levitt & March, 1988; Yazıcı, 2001). Learning members of the organizations can predict the change and the consequences of the actions taken. The existence of a learning culture in the organization will ensure access to collective learning and the interaction for efforts for change (Korkmaz, 2008).

A review of the research led to the conclusion that organizational learning is related to concepts such as innovation (Aragon-Correa, Garcia-Morales, & Cordon-Pozo, 2007; Bueno, Aragón, Paz Salmador, & Garcia, 2010; Calantone, Cavusgil, & Zhao, 2002; Cohen & Levinthal, 1990; Tushman & Nadler, 1986), organizational culture (Chang & Lee, 2007), organizational performance (Garcia-Morales, Jimenez-Barrionuevo, & Gutierrez-Gutierrez, 2012, Montes, Moreno, & Garcia-Morales, 2005), job satisfaction (Chang & Lee, 2007; Mirkamali, Thani, & Alami, 2011), creativity (Sanchez & Mahoney, 1996; Yli-Renko, Autio, & Sapienza, 2001) and inspiration (Damanpour, 1991; Dishman & Pearson, 2003).

As the organizational world becomes more dynamic, independent and unpredictable, it seems that organizational leadership becomes impossible to solve all problems (Senge, 1990). Leaders of learning environments have importance due to the learning skills and characteristics they establish (Korkmaz, 2008). Transformational leaders in learning environments are catalysts, mentors, facilitators and trainers (Senge et al., 1994). According to Popper and Lipshitz (2000), leadership is a factor that affects organizational learning. Leaders can shape the culture of the organization with various actions and services by establishing an organizational structure. A review of the literature, which can act as a basis for this conclusion, shows that many studies on the effect of leadership on organizational learning suggest there is a strong relationship between leadership and organizational learning (Abbasi & Zamani-Miandshti, 2013; Amitay, Popper, & Lipshitz, 2005; Lam, 2002; Leithwood, Leonard, & Sharratt, 1998; Leithwood & Menzies, 1998; Stasny, 1996; Zagorsek, Dimovski, & Skerlavaj, 2009).

This study examined the effect of leadership on organizational learning. Furthermore, the moderators that were expected to have a medium effect in this study were identified as: (i) type of publication, (ii) year of publication, (iii) sample group/sector, (iv) leadership style/approach and (v) leadership scale. All these variables, along with the results of previous research results, were used to test the following hypotheses of this study:

H_1 Leadership has a positive effect on organizational learning.
H_2 The studies' publication type is a moderator for the positive effect of leadership on organizational learning.
H_3 The studies' publication year is a moderator of the positive effect of leadership on organizational learning.
H_4 The sample group/sector is a moderator of the positive effect of leadership on organizational management.
H_5 Leadership style/approach is a moderator of the positive effect of leadership on organizational learning.

H_6 Leadership scale is a moderator of the positive effect of leadership on organizational learning.

2 Method

2.1 Study Design

In this study, the effect of leadership on organizational learning was tested with a meta-analysis design.

2.2 Review Strategy and Criteria for Inclusion/Exclusion

To determine the research studies to include in the meta-analysis, the Science-Direct, Proquest and Ebsco academic databases were used to conduct a literature review. For this process, the terms *leadership* and *organizational learning* included in the titles of the studies were used to screen the research studies. The end date for the research studies included in the research was identified as March 2014. Doctoral dissertations and peer-reviewed journals were included in the study.

Many strategies were used to identify the research studies that were appropriate for the meta-analysis of the study. First, a research study pool of 170 research studies was established including all studies with leadership and organizational learning in their titles. The abstracts of these studies were reviewed, and all were found appropriate to include in the study. In the second stage, all research studies in the pool were examined in detail; 31 of the research studies in the pool were appropriate, and 139 were not found suitable. The descriptive statistics of the 31 research studies to be included in the analysis are presented in Table 1.

The criteria for inclusion of the research studies to the analysis study were:

- To have the statistical information necessary for correlational meta-analysis (n and r, or R^2 values)
- To be a study measuring the correlation between leadership and organizational learning

Reasons for not including a research study in the meta-analysis:

- Having no quantitative data (qualitative research)
- Not having a correlation coefficient
- Not focusing on organizational learning
- Not focusing on leadership

Table 1 Characteristics of the studies included in the meta-analysis

Variables		1	2	3	4	Total
Publication year		1990–1999	2000–2009	2010 and beyond	–	–
	n	3	12	16	–	31
	%	9.67	38.7	51.61	–	100
Publication type		Dissertation	Article	–	–	–
	n	11	20	–	–	31
	%	35.48	64.51	–	–	100
Sample group/sector		Education	Service	Student	Health	
	n	9	18	1	3	31
	%	29.03	58.06	3.22	9.67	100

2.3 Coding Process

The coding process is essentially a data sorting process used to ascertain which of the complex data in studies are clear and suitable for the study. In this scope, a coding form was developed before the statistical analysis was conducted, and the coding was conducted according to the form. The main aim was to develop a specific coding system that allowed the study to see the entirety of the research studies in general and that would not miss any characteristics of each individual research study. The coding form developed in the study was comprised of:

- References for the research
- Sample information
- Sample group/sector
- Leadership style/approach
- Data collection tool(s)
- Quantitative values

2.4 Statistical Processes

The effect size acquired in a meta-analysis is a standard measure value used in the determination of the strength and direction of the relationship in the study (Borenstein, Hedges, Higgins, & Rothstein, 2009). Pearson's correlation coefficient (r) was determined to be the effect size in this study. Because the correlation coefficient has a value between $+1$ and -1, the r value calculated was evaluated by converting this value into the value as it appears in the z table (Hedges & Olkin, 1985). Provided that more than one correlation value is given between the same structure categories in correlational meta-analysis studies, two different approaches were used in the determination of the one to be used in the meta-analysis (Borenstein et al., 2009; Kulinskaya, Morgenthaler, & Staudte, 2008). For this study, *i*) first, if the correlations were independent, all the related correlations were included in the analysis and were considered to be independent studies, and (*ii*) if there were dependent correlations, then the *conservative estimation value* was accepted. A *random effect model* was used for the meta-analysis processes in this study. The *Comprehensive Meta-Analysis* program was used in the meta-analysis process.

2.5 Moderator Variables

To determine the statistical significance of the difference between moderators of the study, only the Q_b values were used. Five moderator variables that were expected to have an effect were identified in the study. The first of these, *leadership style/*

approach, was expected to be a moderator of the relationship between organizational learning and leadership styles/approaches. The second, *sample group/sector,* was expected to moderate the average effect of leadership perceptions and organizational learning. The third was the studies' *publication year* and *publication type,* and the fourth was the leadership scale.

2.6 Publication Bias

A funnel plot for the research studies included in the meta-analysis of the study can be seen in Fig. 2. Evidence for the effect of publication bias in the research studies included in the meta-analysis can be seen in Fig. 2. A serious asymmetry would be expected in the funnel plot if there were a publication bias. The concentration of plots on one side, under the line of the average effect size and particularly in the bottom section of the funnel, suggests the probability of a publication bias. In this study, no evidence of the partiality of the publications was observed in any of the 55 data subjected to the meta-analysis.

Although no partiality in publications was observed in the funnel plot, the results of Duval and Tweedie's trim and fill test, which was applied to determine the effect size related to partiality in publications acquired with the meta-analysis using the random effect model, are given in Table 2. As seen in Table 2, there is no difference between the effect observed and artificial effect size created to fix the effect of the partiality of publications. The research on each side of the center line is symmetrical, and this is the indicator of non-difference. Because there is no evidence indicating lost data on either side of the center line, the difference between the fixed effect size and the observed effect size is zero.

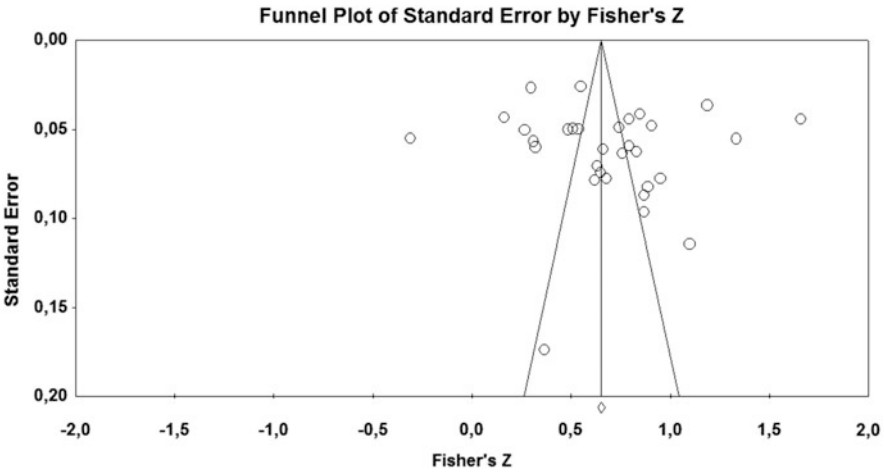

Fig. 2 Effect size funnel for publication bias

Table 2 Duval and Tweedie's trim and fill Test results

	Excluded study	Point estimate	CI (Confidence Interval)		Q
			Lower limit	Upper limit	
Observed values		0.59	0.49	0.67	1,786.64
Adjusted values	0	0.59	0.49	0.67	1,786.64

3 Findings

Table 3 shows the results of meta-analysis of leadership and organizational learning. The findings supported H_1, which argued that there would be a positive relationship between leadership and organizational learning. The effect size of leadership on organizational learning was calculated to be 0.59. This result shows that leadership has a *large effect* on organizational leadership (*see* Cohen, 1988).

The findings did not provide support H_2, which predicted that the type of publication of a research study would play a moderator role. Although a statistically significant difference between effect of publication type was not found ($Q_b = 0.51$, $p > 0.05$), a large effect for research studies [$r = 0.61$] and for dissertations [$r = 0.54$] was found.

Findings did not support H_3, which hypothesized that studies' publication year would play a positive moderator role in leadership's effect on organizational learning. Although the moderator analysis did not find a statistically significant difference in the effect size for studies' for publication year ($Q_b = 1.79$, $p > 0.05$), it was seen that leadership has a large impact on organizational learning in publications from 1990–1999 [$r = 0.63$], 2000–2009 [$r = 0.65$] and for 2010 and beyond [$r = 0.53$].

The results of the moderator analysis showed that H_4, which predicted that the sample group/sector would be a moderator for the positive effect of leadership on organizational management, was not supported. Although the results of the analysis were not found to be statistically significant between the sample groups/sectors ($Q_b = 4.68$, $p > 0.05$), a large effect of leadership on organizational learning was found for the education sector [$r = 0.55$], the service sector [$r = 0.56$], students [$r = 0.83$] and the health sector [$r = 0.63$].

The findings supported H_5, which predicted that leadership style/approach would moderate the effect of leadership on organizational learning. The moderator analysis found a statistically significant difference between the effect size of leadership style/approach ($Q_b = 5.32$, $p < 0.05$). Out of the studies included in the research, it was found that transformational leadership [$r = 0.65$] had a large effect, and other leadership styles/approaches [$r = 0.40$] has a medium effect.

Findings did not support H_6, which hypothesized that leadership scale would play a positive moderator role in leadership's effect on organizational learning. Although the effect size of the leadership scale was not found to be statistically

Table 3 Findings of the correlations between leadership and organizational learning: Results of meta-analysis

Variables	k	N	r	CI (Confidence Interval)		Q	Q_b
				Lower Limit	Upper Limit		
Organizational learning	31	11,944	0.59*	0.49	0.67	1,786.64*	
Moderator [Publication Type]							0.51
Article	20	7,011	0.61*	0.50	0.71		
Dissertation	11	4,933	0.54*	0.36	0.69		
Moderator [Sample Group/Sector]							4.68
Education	9	5,409	0.55*	0.38	0.70		
Service	18	4,922	0.56*	0.43	0.66		
Student	1	753	0.83*	0.46	0.95		
Health	3	860	0.75*	0.52	0.88		
Moderator [Publication Year]							1.79
1990–1999	3	975	0.63*	0.29	0.83		
2000–2009	12	4,084	0.65*	0.51	0.76		
2010 and beyond	16	6,885	0.53*	0.38	0.65		
Moderator [Leadership style/approach]							5.32**
Transformational	22	9,183	0.65*	0.55	0.73		
Other	9	2,761	0.40**	0.17	0.59		
Moderator [Leadership scale]							1.57
MLQ	14	6,675	0.65*	0.51	0.76		
Other	17	5,269	0.53**	0.38	0.66		

*$p < 0.01$, **$p < 0.05$

significant in the results of the analysis ($Q_b = 1.57$, $p > 0.05$), it was found that the MLQ scale [$r = 0.65$] had a large effect on organizational learning and other leadership scales [$r = 0.53$].

Conclusion

Thirty-one studies were included in this meta-analysis aimed at investigating the effect size of leadership on organizational learning. The moderator variables of the study were publication type, sample group/sector, year of publication, leadership style/approach and leadership scale. The results of the meta-analysis obtained from the study showed that leadership *has a large positive effect* on organizational learning. This finding is congruent with findings of many other research studies that show the positive relationship between organizational learning and leadership (Chang & Lee, 2007;

(continued)

Chen, 2004; Garcia-Morales et al., 2012; Jeon, 2011; Korkmaz, 2006; Kurland, Peretz, & Hertz-Lazarowitz, 2010; Singh, 2008; Tebbano, 2002)

The moderator variable analysis of the sample group/sector in research studies did not find a significant difference in effect size in regards to sample groups/sectors. However, it can be stated that the largest impact was found to be the student group, and the smallest was found within the education sector. Many research studies have found that the leadership of school principals supports organizational learning and that transformational leadership is particularly effective in constructing education and schools (Hallinger & Heck, 1998; Leithwood, 1994; Leithwood & Jantzi, 1999; Silins & Mulford, 2004). In this light, the finding of a large effect of leadership on organizational learning is consistent with the literature. However, considering that the smallest effect was seen in employees of the education sector, it can be stated that only students are open to learning in organizations using teaching-learning activities.

The effect of leadership on organizational learning was not statistically significant in regards to publication type and year of publication according to the results of the moderator analysis. It was seen that publication type does not influence the effect size and that articles and dissertations have a large effect. A review of the magnitude of the effect of studies conducted in 1990–1999, 2000–2009 and after 2009 showed that they had a large effect. Although the year of publication was not found to influence the effect size, the emergence of concepts of organizational learning and learning environments shows that leadership is closely related to these concepts.

Leadership scales included in the research studies were not found to be statistically significant in regards to the effect of leadership on organizational learning. In research studies where PPL, MLQ, McColl-Kennedy and Anderson and TLI scales were used, the effect size was found to be large.

The moderator analysis conducted in relation to leadership style/approach found that leadership plays a moderator role in organizational learning. It was found that transformational leadership has a large effect on organizational leadership, whereas other leadership styles/approaches have a medium effect. In learning organizations, leaders shape the learning characteristics of the organization (Korkmaz, 2008). With the emergence of the concept of organizational learning, it is known that transformational leadership is necessary for learning in organizations (Senge et al., 1994). Similar to these findings, it was found that transformational leadership is effective in organizational learning in the results of studies in the literature (Amitay et al., 2005; Aragon-Correa et al., 2007; Cheung, 2012; Korkmaz, 2006; Montes et al., 2005).

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