

The Level of Innovation Management of School Principals' in Turkey¹

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ABSTRACT The purpose of this paper is to determine the levels of innovation management attained by school principals' in Turkey. The participants were 1436 teachers from the cities of Istanbul, Kocaeli, and Sakarya. An 'Innovation Management Scale' was used. Its reliability level was .97 and Kaiser-Meyer-Olkin (KMO) value of the scale .96. The research was conducted using a descriptive model to determine the levels of innovation management displayed by school principals in terms of gender, age, location, and seniority. The researcher used variance and regression analysis in this research. Based on the results, the general level of innovation management is moderate, therefore, it can be claimed that school principals in Turkey use innovative methods to help improve the school system. Significant differences in the results were observed between women and men. Moreover, school principals have more positive perceptions than teachers about the level of innovation in Turkish schools.

INTRODUCTION

In an organizational context, increased performance which is critical to success, is not a direct process, and is affected by numerous variables and elements. One such element, organizational trust, is a key factor that should be considered in terms of the efficiency and performance of employees, and the quality of organizational processes in schools. Nowadays, in order to develop schools, innovation has become more attracting with trust. The purpose of this paper is to help us learn how to provide effective schooling through innovation in a culture of organizational trust. This paper presents ways to help develop an innovative vision for schools in Turkey, which can only be achieved if every principal at every level is engaged in change and leadership.

Innovation

Innovation is now a well-known concept in the global academic world, and it is also one of the most repeated terms in relation to competitive strategies. According to Kanter (1984), innovation is the acceptance and implementation of new ideas, processes, products, or services. The process of innovation is about bringing new, problem-solving ideas into use. There are many ways of defining and classifying the term innovation. For example, Henderson and Clark (1990) describe radical, incremental, and architectural

innovations. Chesbrough and Teese (1996) distinguish between autonomous and systematic innovation.

As mentioned above, innovation is vital for the success of organizations. However, innovation does not occur suddenly, it requires a lot of work and effort pursued according to a plan. Organizations can neither inherit innovation nor purchase it. Therefore, innovation should be created and sustained within an organization (Dobni 2006). Innovation represents the instantiation of creative ideas (Mumford and Gustafson 1988; Amabile et al. 2004). Innovation is also often associated with change (Drucker 1985; Martins and Terblanche 2003). According to West and Farr (1990), innovation is regarded as something new that leads to change. However, change cannot always be regarded as innovative since it does not always involve new ideas or lead to improvements in an organization (cited: Martins and Terblanche 2003). According to Watt (2002), the objective of creating innovation within the organization requires vision, deliberation, and a strong belief. In addition, for a successful organization, the right conditions, structure, culture, and climate should be created. Proper directions is needed within an organization and innovation should encompass all of the areas and aspects it deals with. More importantly, the organization should be filled with the right people who possess innovative skills, attitudes, and behaviors.

Leaders can positively encourage innovation in a number of ways. As several scholars have suggested, leaders shape employee behavior in both direct and indirect ways (Shamir et al. 2000). The concept of shared leadership, now emerging, mainly in team-based work structures, is appropriate for dealing with changes and competitive environments (Pearce 2004; Pearce and Manz 2005). One possible outcome of shared leadership is team innovative behavior (West and Farr 1989).

Generally, within teams, new and creative ideas are more likely to develop under supportive leadership or in a climate of support (Hunter and Cushenbery 2011). In other words, if team members have diverse knowledge and information and these are shared, this will lead to a competitive advantage for the team and for the complex task of innovation development (Morgeson et al. 2010). Apart from these considerations, the issue of deciding which innovations should be used needs to be addressed. Choosing innovative ideas and practices, which do not work out, can in the long run incur needless expense and loss of trust. Leadbeater (2011) offered the following explanation: "Estimations about what innovation involves are still dominated by models derived from the private sector and, in detailed ways, from high-tech, knowledge-intensive product development. This model of innovation, in which designers and researchers develop new products for the market, is largely based on new developments in science and technology, and is associated mainly with the manufacturing and pharmaceutical industries."

Administrative innovation is quite different to the technical variety mentioned above, in that it does not tend to focus on only one concrete item or technique. In his study, Damanapour (1991) stated that administrative innovations are related to the organizational and management process and procedures. In addition, administrative innovations can be defined as involving administrative elements that affect an organization's social system. Due to its all round, managerial and cultural consequences, administrative or organizational innovation is a pivotal aspect of wider creativity and trust within an organization.

Innovation management has become more attractive to organizations in Turkey over the last 10 years. Acaray (2007), Gokcek (2007), Arıkan (2008), Celiktaş (2008) and Oztürk (2009) have explored levels of innovation exhibited in areas

of the Turkish business sector. Some studies related to the innovation levels of schools in Turkey have been carried out such as Karip (1997), Ozdemir and Cemaloglu (1999), Tas (2007), Ozkan (2009), Gulsen and Gokyer (2010), Bulbul (2012), and Gol and Bulbul (2013), however, none of these studies have been comprehensive enough. Building upon the findings of the above literature, this paper gives an overall evaluation to discover the levels of innovation management displayed by school principals in Istanbul, Izmit, and Sakarya. The current paper will seek to answer the following questions:

1. What is the innovation management level of school principals?
2. Is there a significant difference in the levels of innovation management exhibited by school principals in terms of gender, age, and seniority?

METHODOLOGY

This research was conducted by using descriptive and correlational survey methods to determine the innovation management levels of school administrators in terms of gender, age, city, and seniority.

Participants

The participants were 1436 teachers from the cities of Istanbul, Kocaeli, and Sakarya in Turkey. They were chosen through simple random sampling, which is used when the number of individuals in a population is known.

Data Collection

Data was gathered through the use of the "Innovation Management Scale" that was adapted and used by Bulbul (2012). The scale had 32 items and 4 sub-dimensions including: input management (5 items; alpha = .82 and factor load spreading from .69 to .77), innovation strategy (6 items; alpha = .88; and factor load spreading from .53 to .82) organizational culture and structure (6 items; alpha = .89 and factor load spreading from .54 to .77) and project management (15 items; alpha = .96 and factor load spreading from .74 to .83), and total reliability level, which is .97 for this research data. KMO level of the scales is .96 and Bartlett's Test of Sphericity is significant (Chi = 9028.82; p = .00).

The researcher used mean, standard deviation, t-test and variance analysis. Parametric tests - ANOVA and t-tests- were used to compare the group means. t-tests can be used to determine if two sets of data are significantly different from each other, it is a statistical examination of two population means. ANOVA is a collection of statistical models used to analyze the differences between group means. ANOVA was used in this research because it provides a statistical test of whether or not the means of several groups are all equal, and therefore generalizes a t-test to more than two groups. Finally, a Scheffe test was conducted in order to compare two means at a time and to provide the hypotheses that the means of each pair of waves are equal. As the final process, regression analysis was conducted to determine predictions of innovation management levels in Turkish schools.

RESULTS AND DISCUSSION

In this section, descriptive results pertaining to levels of innovation management (input management, innovation strategy, organizational

structure and culture, and project management dimensions) in Turkish schools are presented.

Table 1 illustrates that the perceptions of principals and teachers' according to the average input value in the management dimension of innovation management are moderate. But on the other hand, when the competencies related to this dimension are compared on an item basis, these teachers and principals clearly accept deficiencies in the following competency: "I get expert (consultant) support for innovation studies" ($X = 3.19$). Table 2 illustrates that principal and teacher perceptions, according to the average value in the innovation strategy dimension of innovation management level, agree. But on the other hand, when the competencies related to this dimension are compared on an item basis, these teachers and principals obviously accept deficiencies in the following competency: "I immediately end innovation projects that I feel will not bring any positive contribution to the school and the surrounding area" ($X = 3.60$). Table 3 illustrates that principal and teachers' perceptions according to the average value of the project management dimension of innovation

Table 1: The descriptive result of input management dimensions

Rank	Items		\bar{X}	Importance rank
1	I try to find supports for innovation studies from public institutions around the school.	3.27	1.275	2
2	I try to find supports for innovation studies from private organizations (professional associations, NGOs, etc.) around the school.	3.15	1.266	4
3	I get expert (consultant) support for innovation studies.	2.89	1.288	5
4	I allocate physical spaces (meeting rooms, study rooms) at school with the aim of contributing to the innovation efforts.	3.20	1.321	3
5	I provide the supply of tools and equipment that can be used in the innovation process	3.48	1.192	1

Table 2: The descriptive result of innovation strategy dimensions

Rank	Items		\bar{X}	Importance rank
1	In order to achieve the necessary external information for innovation, I provide all staff to participate in various activities (in-service training, seminars, etc.).	3.57	1.218	4
2	In order to achieve the necessary external information for innovation, I provide the supply of resources such as books, magazines	3.54	1.128	5
3	I track the new developments in the field of education.	3.70	1.100	1
4	I effort for being understood of innovations in the field of education by all school staff.	3.69	1.138	2
5	I try to have a clear vision of innovation that all staff are aware of and share for our school.	3.60	1.116	3
6	I immediately end innovation projects that I feel will not bring any positive contribution to the school and the surrounding area.	3.52	1.121	6

Table 3: The descriptive result of organizational structure and culture dimensions

<i>Rank</i>	<i>Items</i>	\bar{X}	<i>Importance rank</i>	
1	I emphasize the importance of innovative understanding to all staff in the school	3.66	1.048	5
2	I clearly explain the contribution to all school staff that innovation will bring to the school and its surroundings.	3.76	1.105	3
3	I clearly appreciate innovative individuals at school.	3.70	1.157	4
4	I'm greeted with respect, creative and innovative ideas by all school staff.	3.82	1.076	1
5	I clearly encourage innovative learning and effort.	3.81	1.045	2
6	I try to keep staff who adopt and advocate innovative ideas.	3.45	1.357	6

management level are also agreed. However, when the competencies related to this dimension are compared on an item basis, these teachers and principals obviously accept deficiencies in the following competency: "I make an effort to keep staff who adopt and advocate innovative ideas" ($X= 3.67$). Table 4 illustrates that principal and teacher perceptions about the average value of the organizational culture and structure dimensions related to innovation management levels are agreed. Although, when the competencies related to this dimension are compared on an item basis, these teachers and principals ob-

viously accept deficiencies in the following competency: "I develop criteria to measure the effectiveness of our innovation projects." (= 3.69).

According to the results of this research, the innovation management levels of Turkish schools are usually moderate. Gol and Bulbul's (2012) research results about levels of innovation management have similarities to the results presented in this paper. Some research findings in studies such as Karip (1997), Cemaloglu (1999), Tas (2007), Gulsen and Gokyer (2010), show that there are some barriers to educational innovation development in Turkish schools. Lots of new

Table 4: The descriptive result of project management dimensions

<i>Rank</i>	<i>Items</i>	\bar{X}	<i>Importance rank</i>	
1	I adopt consensus and a common approach for making a decision.	3.79	1.098	2
2	I provide innovation in school that can be seen as adapting to the environment and engaging with the environment.	3.67	1.034	6
3	I'm open to communication with the entire school staff, students and parents during the innovation process.	3.74	1.084	4
4	Creating strong bonds among all school staff, I try to create a sense of innovation ownership dominant in school.	3.63	1.075	7
5	I pay attention to the school environment for all innovation.	3.55	1.098	10
6	I expect innovative ideas from all school staff rather than a single person or group.	3.76	1.080	3
7	I try to convince all school personnel that the risks taken for being innovative will be worth it.	3.59	1.128	9
8	I allow the efficient use of school resources in the innovation process	3.79	1.040	2
9	I give priority to the innovations that will contribute to the development of our school	3.81	1.066	1
10	I care about what tools and resources are selected to be used in the innovation process.	3.76	1.048	3
11	I'm prepared for unpredictable results of the innovation process in school.	3.61	1.088	8
12	I make cost / benefit analysis for what innovation gives to the school.	3.69	1.016	5
13	I constantly check the contribution of school staff to the innovation process.	3.63	1.099	7
14	For the aim of developing innovative projects, I expect allstaff to cooperation with each other.	3.69	1.150	5
15	I develop criteria to measure the effectiveness of our innovation projects.	3.43	1.162	11

developments have occurred from the 1990s to the present day in the Turkish system to help create innovative schools. However, an innovative school system in Turkey is still some distance away. With regard to developing innovative school systems, Wassweatein-Warnet and Klein (2000) claim that the more learning and creative abilities schools have, the more innovative management can be promoted. In fact, many schools practice innovation, but only a few innovations can enhance the effectiveness of a school. Similarly, Zhao and Ordóñez de Pablos (2013) have also said that schools are committed to innovative management, but the strategies adopted are different, and the effects achieved are also different due to different understandings of innovation. Organizational learning promotes school innovative management. Moreover, West and Farr (1990) claim that innovation is regarded as something new that leads to change (cited in Martins and Terblanche 2003; Bucarelli 2015). Leadership, management change and innovation are related to each other. Change is an outcome of the innovation process and innovation management leads to change. To enable this change, Titrek and Zafer-Gunes (2011) suggest that cultivating positive attitudes amongst school principals' towards technology, and decreasing cynical behaviors (Polatcan and Titrek 2013) are key factors.

When we look at the variance analysis results for the innovation management dimensions, we see significant differences in all dimensions

of the total innovation level of Turkish schools based on the city variable. Moreover, in each dimension post-hoc analysis result, Sakarya and Kocaeli have higher scores than Istanbul ($F_{(2-1064)} = 10.56$; $p=.00$). The results of the Gol and Bulbul's (2012) study of Kirklareli are higher than the cities examined in this paper. Based on these results it can be said that when the population of a city gets higher, innovation levels decrease.

When the researcher looked at the t-test results for innovation management dimensions in Table 5, significant differences based on gender were found in all dimensions. Males' perceived higher levels of innovation in Turkish schools than females in all dimensions: Input management ($t_{(2-1064)} = -4.125$; $p=.00$); innovation strategy ($t_{(2-1064)} = -2.025$; $p=.043$); organizational culture and structure ($t_{(2-1064)} = -2.503$; $p=.012$) and project management ($t_{(2-1064)} = -2.47$; $p=.014$). When we look at the mean based on the total innovation level of Turkish schools, men (= 3.59) have higher scores than women (= 3.45). However, we could not find any significant differences based on education level ($F_{(3-1422)} = 1.133$; $p=.168$); seniority ($F_{(4-1411)} = 1.026$; $p=.411$); and age ($F_{(4-1395)} = 1.017$; $p=.438$). Gol and Bulbul (2013) didn't find any significant differences regarding gender, seniority and branch variables. But they found significant differences in terms of age variable in innovation management dimensions.

Table 5: Variance analysis results of teachers according to city on duty

City		N	\bar{X}	SD	F	df	p (Tukey b)	
Input Management	Istanbul	445	15.84	4.54338	4.88	2	.00	
	Kocaeli	619	16.75	4.91606				1381
	Sakarya	328	16.82	4.57894				1383
Innovation Strategy	Istanbul	448	20.27	5.11717	7.84	2	.00	
	Kocaeli	607	21.60	5.11717				1375
	Sakarya	329	21.62	5.39243				1377
Organizational Culture and Structure	Istanbul	343	20.59	5.93762	7.90	2	.00	
	Kocaeli	509	21.97	5.83880				1151
	Sakarya	278	22.38	5.61637				1153
Project Management	Istanbul	425	50.57	12.82804	4.88	2	.00	
	Kocaeli	591	53.91	13.17507				1326
	Sakarya	325	55.03	12.90626				1328
Total Innovation Level	Istanbul	313	106.71	26.32064	10.56	2	.00	
	Kocaeli	464	113.41	27.44319				1064
	Sakarya	266	117.01	27.32932				1066

p<.05

Table 6: Prediction level of innovation management regarding the results of multiple regression analysis

Variable	B	Standard error B	Beta	T	p	Zero order	Partial r
Sabit	102,603	3.394	-	30.231	.000	-	-
Gender	2,894	1.736	.055	1.667	.096	.080	.052
Education	1,509	1.819	.026	.830	.407	.039	.026
Seniority	0,837	.957	.043	.875	.382	.086	.027
Age	1,027	1.476	.034	.696	.487	.087	.022
R=.110	R2=.012	F (5-1012)=3.098			p=.015		

In Table 6 gender, education, seniority and age each had significant but low level correlations with the innovation management level of Turkish schools ($R = .110$, $R^2 = .012$; $p < .05$). These four variables totally explain the variance of 12 percent for innovation management. According to the standardized regression coefficient (Beta), the predictor variables for innovation management based on the relative order of importance are: gender, seniority, age and education. Taking the regression coefficients, t-test, and results of these variables and examining them in relation to the management of innovation is a significant predictor of whether differences can be observed, the researcher could not find significant differences. According to the results of the regression analysis, the prediction of innovation management according to the equality of regression is given below.

Innov. Management = $102,603 + 2,894 \text{ Gender} + 1,509 \text{ Education} + 0,837 \text{ Seniority} + 1,027 \text{ Age}$

CONCLUSION

The aim of this paper was to investigate the levels of innovation management in Turkish schools in terms of education level, gender, age and seniority variables based on the perceptions of teachers in the cities of Istanbul, Kocaeli and Sakarya cities. The findings of the research have revealed that there is no significant difference in the innovation management levels of participants in terms of education level, seniority and age. However, the gender, location, and rank variables had significant differences. The perceptions of males are more positive than females, and based on population levels, schools in small cities are more innovative than those in relatively bigger cities such as Istanbul.

Based on the findings related to innovation management and its dimensions, input management, innovation strategy, organizational culture and structure, and project management, are important to develop effective schools. The researcher infers that teachers believe that innovation management in education is highly important, and that organizational culture and structure is the most important area in innovative school development. Teachers' perceptions about the level of innovation in Turkish schools are moderate but some deficiencies can be seen in these findings: in relation to input management, teachers believe that they do not have enough expert (consultant) support to help develop innovative ideas. Moreover, teachers think that Turkish schools sometimes persist with projects that never have positive effects on schools or surrounding areas. There is also some deficiency in supporting the efforts of staff who wish to adopt and advocate innovative ideas. In Turkish schools, innovative projects do not always have positive results. To develop the level of innovation in an organization, evaluation is one of the most important processes. However, based on teachers' perceptions, the researcher found that there are some problems in finding and developing criteria to help measure the effectiveness of innovation projects in Turkish schools.

RECOMMENDATIONS

To promote the development of the Turkish schools, the researcher suggests that principals should develop an innovative school culture and system. Moreover, principals should become experts in education innovation therefore, we need to educate principals and teachers about how they can create innovative schools. They

should be guided to help create innovative activities and learning environments in the classroom.

In the Turkish Education System, an e-education system should be promoted, to enable principals to develop their managerial skills. Moreover, principals should be encouraged to attend master programs related to educational administration and leadership. These programs should focus on developing the creativity, change management, innovation, leadership, and entrepreneurial skills of school principals', which can be done via school projects.

Furthermore, to develop effective schools, principals should create an innovative school culture and structure. Schools need to be life-long learning centers. When principals organize some innovative school development projects, the effectiveness of these projects should be evaluated by a school development team. Based on evaluation results, the school system could be redeveloped and principals could further develop an innovative culture.

RECOMMENDATIONS FOR OTHER RESEARCHERS

The researchers suggests that researchers-research for the problems that prevent innovation in Turkish schools, especially in the areas of input and project management. Moreover, it is suggested that innovation studies should be carried out in relation to student population size.

LIMITATIONS

This research was carried out in three cities in western Turkey. However, Turkey is a large country. Thus, this type of research should be conducted in the other regions in Turkey to see the big picture regarding school innovation levels.

NOTE

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