



## The Model of Relationships between Intellectual Capital, Learning Organizations, and Innovation-Oriented Organizational Structures in Educational Organizations\*

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### ABSTRACT

**Purpose:** To gain an advantage in a rapidly changing competitive environment, organizations should be aware of their invisible and hard-to-imitate assets as well as their tangible assets. The survival skills of organizations that discover and enrich their abilities are increasing. Therefore, it is important to consider the intellectual capital of the organizations, the learning organizations, and the innovation-oriented organizational structure. This research aims to model the relationship between the intellectual capital of educational organizations, the learning organization, and the innovation-oriented organizational structure.

**Research Methods:** The Structural Equation Model (SEM) was used to reveal the relationship patterns between the variables in the study. Five hundred and fifty-three school administrators and teachers voluntarily participated in the study. Three different scales were used to collect data, these were: The Intellectual Capital Scale, The Learning Organization Scale, and The Innovative School Scale. The mediation model was tested to determine the relationship patterns between learning organizations, innovation-oriented organizations, and intellectual capital based on the educational organizations' perceptions. **Findings:** The structure between the learning organizational structure of educational organizations and the organizational structure focused on intellectual capital and innovation, were found to be positively and highly significant. It has been determined that the intellectual capital of educational organizations has a partial intermediary role between the learning organizations and the innovation-oriented organizations. **Implications for Research and Practice:** According to the structural equality model used to reveal the relationship patterns between the three variables, the findings show that the learning organizational structure of educational organizations indirectly affects innovation-oriented organizations through intellectual capitals. Building educational organizations as learning organizations is effective for their innovation-oriented structure. These organizations that value intangible assets such as intellectual capital, will ensure the development and effectiveness of human, structural, and relational capitals.

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## Introduction

Organizations have to adapt to new developments to maintain and continue their competitive power in a changing world. It is highlighted that learning organizations that adapt to innovation processes and environmental factors (Sharifirad, 2010), have more innovation capabilities in both service production and organizational processes (Calantone et al., 2002). Therefore, it can be said that organizational learning is one of the pioneers of innovation. Organizational learning can be increased by the formation of new ideas and the development of creativity (Ozdevecioğlu & Bickes, 2012). New and creative ideas help develop innovation capacity by combining existing knowledge infrastructures with new knowledge. With the good management of knowledge and intellectual capital assets in the organization, individuals learn how to learn rather than what they need to learn. Organizational learning develops when an individual's learning adapts to organizational benefits (Kelly, 2004), and innovation capacity develops when organizational learning strengthens (Calantone et al., 2002). In contrast, the intellectual capital, which is vital for the long-term survival and productivity of organizations in a fast-competitive environment is also strengthened (Karakus, 2008). It has been understood that the concepts of learning organizations, intellectual capital, and innovation have critical importance for organizations. It is necessary to investigate the factors that make up these concepts and their effect on educational organizations when reconstructing living organizations as modern structures.

Today, industry-oriented production and working methods have started to lose their effect, whereas, changing information systems and technologies have started to be more of use in all areas of life. Organizations that see knowledge management processes as an important aspect for creating value and building intellectual capital (Bontis, 1998; Earl, 2001; Guthrie & Petty, 2000; Stewart, 1997; Sveiby, 2001) are more human-centered, knowledge-based, and innovation-oriented modern organizations that can adapt themselves as constantly learning structures (Harrison & Kessels, 2004; Kools & Stoll, 2016; Schleicher, 2012; Stewart, 1999). At a time when the competitive environment is changing rapidly, management paradigms and leadership conceptions are also changing. For this reason, organizations have to make structural changes to increase their performances (Secundo et al., 2018; Ozden, 2005). This change can be possible if individual and collective knowledge in organizations are managed effectively, resulting in the development of intellectual capital (Casey, 2010; Hermans, 2005; Hussi, 2004). Intellectual capital utilizing intangible values such as organizational learning abilities and innovation capacity is a core competence area for organizations (Kannan & Aulbur, 2004), and is critical for improving performances (Chang, 2007). The need for constant change and innovation, and education organizations affected by this, have to leave aside their traditional methods of understanding and must adopt different methodologies and contents that go beyond this (Altan, 2018). For this reason, it is important to determine the relationship pattern between the intellectual capital, learning organization, and innovation capacity of the educational organization, to influence the education management policies, and to guide policymakers with the results obtained by analyzing the findings. This study

aimed to determine and explain the relationship pattern between the intangible assets of educational institutions by determining the levels of intellectual capital, learning organizations, and innovation-oriented organizational structures through the perceptions of the administrators and the teachers. In this direction, answers were sought for the following sub-purposes:

- (i) Does the learning organizational structure predict intellectual capital?
- (ii) Does the learning organizational structure predict the innovation-oriented structure?
- (iii) Does the intellectual capital of the organizations predict the innovation-oriented structure?
- (iv) What is the intermediary role of intellectual capital in the relationship between learning organizations and innovation-oriented structure?

#### *Literature Review*

In the first part of the literature review, there are theoretical perspectives on the intellectual capital of organizations, in the second part will look into the concept of learning organizations, and the third part will focus on innovation in organizations.

#### *Intellectual Capital*

Hiroyuki Itami first used the concept of intellectual capital in literature in 1980 in research named "Mobilizing Invisible Assets" conducted in Japan. This study was translated into English in 1987 and reached a wider audience, and thus it was seen as the first scientific study on the concept of intellectual capital (Itami & Roehl, 1991). In that study, Itami addressed large enterprises, that direct the capital market in the competitive society, and emphasized that the real factors affecting performance differences depend on the correct management of intangible assets (Chang, 2007). Intellectual capital, seen as the intangible assets of the organization, is the individual and collective knowledge accumulation used to gain competitive advantage in an organization and to increase the value of other types of capitals (Casey, 2010; Hermans, 2005; Hussi, 2004). Individual competencies and abilities are maps that contain the organizations' culture, norms, values, and group dynamics (Williams & Bukowitz, 2001). Intellectual capital is divided into three categories of intangible assets in organizations: human capital, internal capital (structural capital), and external capital (relational capital) (Chang et al., 2008; Guthrie & Petty, 2000; Kelly, 2004; Martin-Sardesai & Guthrie, 2018; Sveiby, 2001). Human capital deals with the competencies of its employees, including their knowledge, skills, and abilities. Internal capital (structural capital) refers to the non-human information stores in an organization such as the organizational structure, organizational culture, management philosophy, and similar routines. The purpose of the internal capital is to support the transformation of human capital into intellectual capital. Internal capital (structural capital) is the infrastructure that creates a source of information and encourages people to use that information (Cheng, 2015; Edvinsson & Sullivan, 1996). External capital (relational capital) however, represents knowledge embedded in relations with the external environment. It is the potential that an organization has due to its intangible existence and it is also relevant to the brand value and reputation of the organization. Relational capital, especially composed of external stakeholders, can help the organization strongly achieve its goals (Chang et al., 2008). Educational organizations can turn into

effective organizations by strengthening their human, structural, and relational capitals.

#### *Innovation-Oriented Organization*

Innovation is the process of learning new things and ideas and the process of trying to make and understand something new (Fullan, 1992). According to Drucker (1985), innovation is a special tool that entrepreneurs use to consider change as an opportunity. Schumpeter (2003) referred to innovation as a “creative destruction”. Organizations need to manage learning and innovation processes correctly to survive in the changing world (Silins et al., 2002; Stewart, 1999; Watkins & O’Neil, 2013). Innovation is a spiritual power that adds value to the organization (Pfister, 2009) and a process of innovation and opportunities that add value to capacity (Ahmet & Shepherd, 2010). Modern organizations aim to create a culture that encourages creativity by adopting innovation processes so that new ideas can bloom (Gupta, 2011). Having an innovation-oriented structure can support science in the organization, the technological infrastructure can be improved, the needs of the individual and the society can be met at a good level, and organizations can be sustained in the competitive environment (Ahmet & Shepherd, 2010). The knowledge and skills of human capital play a critical role in organizations having this structure (Igel & Islam, 2001; McAdam & McClelland, 2002; Jung et al., 2003; Robbins et al., 2001). Such organizations have a high capacity in motivating people to improve themselves. This way, employees view themselves as capable of taking on more responsibility and using their initiative (Baranano, 2005; Tidd et al., 1997). To create a knowledgeable society in the global economy where innovation continues to accelerate, educational organizations need to empower human capitals (Stewart, 1997), interact with policymakers (Cheng, 2015), and know-how knowledge is managed (Omur & Argon, 2016; Secundo et al., 2018). Innovative organizations that transform knowledge for the benefit of the organization can increase their success and be able to train qualified students (Basile, 2009; Cheng, 2015; Kelly, 2004). At a time when the quality of educational organizations is questioned, it is understood that organizations need to be shaped in an innovation-oriented way to meet the expectations of the era.

#### *Learning Organization*

Identifications for organizations that are learning can go back to the 1940s in the literature, however, the concept of learning organization started in the 1980s, with institutions taking up learning when working to maximize growth and resilience in increasingly competitive markets. In the 1990s, important studies were conducted to define and understand the concept of learning organizations (Argyris & Schön, 1995; Diggins, 1997; Garrat, 1994; Fullan, 1993; Marquardt 1996; Marquardt 2002; Pedler et al., 1991; Senge, 1990; Watkins & Marsick, 1993). With the publication of Peter Senge's (1990) Fifth Discipline book, the concept became more important and popular for organizations that were learning together. According to Senge (1990), learning organizations are organizations in which individuals constantly improve their capacities to achieve the results they really desire, they adopt comprehensive and new thinking patterns and collective working understandings, and they learn to see the whole picture at all times. A significant number of researchers working in the field of learning organizations include Senge's model in their studies and see it as the most

suitable framework for organizational development. Senge's "fifth discipline" philosophy is inspiring (Bui & Brauch, 2010). Senge (2014) states that to become a learning organization, the organization must have the dimensions of personal dominance (mastery), mental models, shared visions, team learning, and systematic thinking. (i) Personal Mastery is considered to be specific skills possessed by individuals. (ii) Mental Models are thoughts that affect people's capacity to understand the world, they are the pre-assumptions, generalizations, pictures, and symbols they have in their minds that affect their behaviors. (iii) Shared vision is the capacity to hold a common picture of the future that is desired to be created. They are the understandings and thoughts about where and how individuals and institutions should stand for the future. (iv) Team learning: The discipline of learning as a team is the activation of the process of thinking together through dialogues by suspending the assumptions of individual team members. (v) System thinking is the fusion of the other four disciplines to form a coherent whole. The whole represents a more important value than the sum of the individual parts.

The learning organization focuses on learning as a tool, leverage, and a philosophy to achieve sustainable change and innovation in organizational structures in a rapidly changing world (Bui & Baruch, 2010). In learning organizations, people constantly increase their capacity to create the results they desire. New and broad patterns of thinking are nurtured, collective aspirations are released, and people constantly learn to learn together (Argyris & Schön, 1978; Baranano, 2005; Brandt, 2003; Lyle, 2012; Senge, 2014; Schlechty, 2014; Stewart, 2001). In the development of human resources, for learning to be continuous and ubiquitous, the aim was to create the necessary cultural infrastructure for learning in individuals, groups, organizations, and even the profession itself (Marsick & Watkins, 1990). Learning organizations support both individual and team learnings to encourage creative and critical thinking. In these institutions, people are seen as a meaningful part of a whole that contributes to the organizational success with their work. This way, employees take care of the processes that determine the success or failure of the organization. This sense of ownership ensures the sustainable development of both individuals and the organization, encouraging them to constantly learn, solve problems, collaborate, and innovate (Lyle, 2012; Watkins & O'Neil, 2013). Creating a culture that helps employees learn, facilitates organizational change, increases performances, and thus helps create a sustainable competitive advantage (Dirani, 2009; Senge, 1990; Watkins & Marsick, 2003). This way, the competitiveness of educational organizations on a global scale will increase and there will be significant improvements in the quality of education. As stated by Basaran and Cinkir (2013), the learning education system produces and uses information to maximize its effectiveness; It is a flexible system suitable for continuous innovation to meet the needs of the society.

## Method

### *Research Design*

In this research, a theoretical model is proposed to measure the intellectual capital of educational institutions, innovation-oriented organizations, and learning organization structures. Structural Equation Modelling (SEM) was used to test the proposed model. The Structural Equation Model is used to test theoretical models that explain the relationships between variables (Hu & Bentler, 1998). In other words, it tests the conformity of the data obtained by the researchers to the proposed theoretical model (Tabachnick & Fidel, 2007; Tavsancıl, 2002; Ozdamar, 2017).

### *Population and Sample*

This research is made up of 44,599 educational administrators and teachers working in public schools in the Anatolian side of Istanbul, during the 2020-2021 academic year. To determine the sample group, 13 districts on the Anatolian side, Maltepe, Kartal, Pendik, Tuzla, Sultanbeyli, and Adalar districts were selected through a simple random sampling method. A total of 553 administrators and teachers from six districts voluntarily participated in the study. In Structural Equation Modeling the sample size varies according to the proposed model, the number of variables, the method of analysis, and whether the data is normally distributed (Brown, 2006). Kline (2011) considers a sample size of 100-1000 to be sufficient for unidentified models and 200 in general structural equation model studies. Barret (2007) stated that it can be 200 or more for Chi-Square tests. According to these proposed criteria, it can be said that the sample size of 553 participants represents the population.

Of the 553 participants participating in the study, 282 were women (56%) and 222 were men (44%); 84 (16.7%) were 30 years and younger, 105 (20.8%) were between 31-35 years old, 113 (22.4%) were between 36-40 years old, 87 (17.3%) were between 41-45 years old, 61 (12.1%) were between the ages of 46-50, and 54 (10.7%) were aged 51 and over. Four hundred (79.4%) of the participants participating in the study were graduates, while 104 (20.6%) had postgraduate education. 54 (10.7%) of the participants had 5 years or less professional seniority, 139 (27.6%) had between 6-10 years, 101 (20%) had 11-15 years, 68 (13.5%) had 16-20 years, 89 (17.7%) had 21-25 years, and 53 (10.5%) had 26 years or more professional seniority. Two hundred and fifty-six (50%) of the participants are working in primary schools, 142 (28.2%) in secondary schools, and 106 (21%) in high schools. Three hundred and eighty of these participants work as teachers (75.4%) and 124 (24.6%) work as administrators.

### *Data Collection Tools*

Intellectual Capital Scale, Innovative School Scale, and Learning Organization Scale were used in the research. Also, a personal information form was used.

*Personal Information Form.* Demographic variables such as gender, age, graduation status, years of professional seniority, school type, and position were included in the personal information form.

*Intellectual Capital Scale:* Was developed by Karakus and Cobaoglu (2013) to measure the intellectual level of educational organizations. The respondents marked their level of agreement with each item on a 5-point Likert-type rating scale: (1) I strongly disagree, (2) I disagree, (3) I partially disagree, (4) I agree, and (5) I strongly agree. The intellectual capital scale consists of 25 items and a total score can be obtained. The highest score given by the participants shows that the intellectual capital of the organization is high. The scale has three dimensions: human capital, structural capital, and relational capital. The Cronbach Alpha reliability coefficient was calculated as 0.94. The usefulness of the scale was determined as a result of the confirmatory factor analysis performed to test its validity and reliability (DFA;  $\chi^2/sd=3.379$ ; GFI = 0.883; AGFI = 0.854; CFI = 0.920; RMR = 0.026; RMSEA = 0.066)

*Innovative School Scale.* The Innovative School Scale was developed by Aslan and Kesik (2016) to measure the innovation capacities of educational institutions. Individuals who answered the scale marked their level of participation in each item on a 5-point Likert-type rating scale: (1) Never, (2) Rarely, (3) Sometimes, (4) Most of the time, (5) Always. The scale consists of three dimensions and a total of 19 items. Innovative atmosphere, administrative support, and organizational barriers constitute the three dimensions of the scale. The highest score given by the participants shows that the innovation capacity of the organization is high. The Cronbach Alpha reliability coefficient of the scale was calculated as 0.91. The usefulness of the scale was determined as a result of the confirmatory factor analysis performed to test its validity and reliability (DFA;  $\chi^2/sd=3.906$ ; GFI = 0.898; AGFI = 0.870; CFI = 0.920; RMR = 0.027; RMSEA = 0.073)

*Learning Organization Scale.* Was developed by Cetin and Baydar (2021) to measure the learning organizational structure of educational organizations. The scale is a type of a 5-point Likert scale. The scale consists of three dimensions and a total of 16 items. The scale sub-dimensions consist of organizational learning, innovative learning, and visionary learning. The highest score given by the participants shows that the learning organizational capacity of the organization is high. The Cronbach Alpha reliability coefficient of the scale was calculated as 0.96. The usefulness of the scale was determined as a result of the confirmatory factor analysis performed to test its validity and reliability (DFA;  $\chi^2/sd=1.908$ ; GFI = 0.901; AGFI = 0.861; CFI = 0.967; RMR = 0.023; RMSEA = 0.068)

#### *Collection of Data*

The scales were applied in the fall semester of the 2020-2021 academic year after the necessary permissions were obtained (Document No: 20292139-050.01.04/E.2749). Later, administrators and teachers were visited at their schools, and the process of applying the scale, its necessity, and purpose were explained to them. Participation was voluntary and each session with a participant took an average of 30 minutes.

#### *Analysis and Evaluation of Data*

The theoretical model was proposed to reveal the relationship pattern between the independent, mediator, and dependent variables, and the proposed model was tested

using correlation, regression, and then the structural equation model. Before starting the regression analysis, the univariate and multivariate normal distributions of the three variables to be analyzed, their possible extreme values, and the cases of multiple linearities among the variables to be used as predictors were examined. The skewness and kurtosis values of the three variables for the univariate normal distribution were evaluated by taking into consideration the -1.5 and +1.5 values determined by Tabachnick and Fidell (2007). Table 1 below shows the skewness and kurtosis values for each variable.

**Table 1**

*Skewness and Kurtosis Values of Research Variables*

Perception variable	Skewness <sup>a</sup>	Kurtosis <sup>b</sup>
Learning organization	-,031	-,315
Innovative school	-,132	-,328
Intellectual capital	,130	-,123

<sup>a</sup>Standard error = 0,104, <sup>b</sup>Standard error = 0,207

When the values in the above table were examined with the values determined by Tabachnick and Fidell (2007), it was seen that the univariate normal distributions of the three variables remained within the specified values. In this case, it is accepted that the three variables show a normal univariate distribution. Therefore, there is no harm in running parametric statistical tests on three variables. The extreme univariate values were examined for each variable both by the means of the box plot and standardized scores that affect the normal distribution, the mean value for each variable are less than -2 or greater than +2, and as a result, no extreme values were found. (Field, 2017). Looking at these results, there was no need for any extreme value extraction. Since the relevant variables will be included in the regression analysis, they have also been examined with the distance values determined by Mahalanobis and Cook as extreme values may affect the regression analysis (Field, 2017). After the Mahalanobis distances were calculated, it was observed that the values of 90 participants were significant. However, Field (2017) suggests that the sample has a significant effect on the evaluation of this distance value and that Cook's distance value, in large numbers, should also be examined. He also mentions that if there is a value greater than one, it may create a significant outlier effect. In this context, Cook's distance values of each participant were calculated and no value greater than one was found. As a result, no extreme values were encountered in the data set obtained in the study that would affect the regression analysis.

In the next step, the normal distributions of multiple variables and the cases of multiple linearities of the learning organization and intellectual capital variables, which were defined as predictors, were examined. Whether these two variables show a multivariate normal distribution or not was examined by Mardia's test (1970). According to the test results, the multivariate skewness values of the two variables together were  $b = 0.056$ ,  $Z = 5.16$ ,  $p = 0.27$ , and the kurtosis values were  $b = 8.25$ ,  $Z = 0.74$ ,  $p = 0.46$ . Looking at these values, it was seen that the two variables showed a multivariate normal distribution (Costello & Osborne, 2005). To examine the multiple

linearities of these two variables, Tolerance and Variance Inflation Factors (VIF) values were examined. These values provide information to researchers about how much the possible linearity situation that may occur between two variables can affect a regression model (Field, 2017). While evaluating the linearity, it is suggested that the Tolerance value should not be too close to zero and that the VIF value should not be more than 10 (Field, 2017). Between the two variables, the Tolerance value was 0.563 and the VIF value was 1.776. Looking at these values, a level of linearity was not observed between the two variables that could affect the results of the regression analysis. Additionally, the self-value and Condition Index table were calculated for linearity diagnosis as suggested by Hair et al. (2013) and Kennedy (2003) and given in Table 2 below.

**Table 2**

*Multiple Linearity Diagnostic Values*

Model	Dimension	Eigenvalue	Condition Index	Variance rate		
				Fixed	Learning Organisation	Intellectual Capital
1	1	2,982	1,000	0,00	0,00	0,00
	2	0,014	14,641	0,37	0,62	0,00
	3	0,004	25,855	0,62	0,38	0,99

When examining Table 2, firstly the dimensions where the Condition Index value above 15 are seen, then their variance ratio is checked (Hair et al., 2013; Kennedy, 2003). A value greater than 15 is an indication of a possible multi-linearity. Then the rows are examined for their variance rates. In these rows, values over 0.90 on more than one variable are examined (Hair et al., 2013; Kennedy, 2003). When the relevant table is examined, a value over 15 is seen in the 3rd dimension, and when the variance ratio is examined, a ratio above 0.90 is only seen in the intellectual capital variable. Considering these results and the suggestions made in the literature, it was observed that no multi-linearity would affect the regression analysis between the average scores of the learning organization and intellectual capital perceptions provided by the participants in this study. After this stage, a structural equation model was used to reveal the relationship pattern between the variables. The structural equation model was used to test the proposed model with the collected data (Barret, 2007). According to the proposed theoretical model, learning organizations were determined as the independent variable, innovation-oriented organizations as the dependent variable, and intellectual capitals were determined as the intermediary variable.

**Results**

Before testing the model, the normality distribution of the variables was examined, and the correlation and regression calculations were made. To reveal the relationships between the learning organizations, innovation-oriented organizations, and intellectual capital perceptions of administrators and teachers, the Pearson product-moment coefficient analysis was performed and presented in Table 3 below.

**Table 3**

*Relationship Analysis Results Between Variables*

Variables	1	2	3
1- Learning organization	1		
2- Innovation oriented organization	0.721**	1	
3- Intellectual capital	0.661**	0.661**	1

Note. N = 553 \*p < 0.05, \*\*p < 0.01

When the results of Table 3 are examined, significant and positive relationships were observed between the three variables that were a little above the expected value. When the relationship between the learning organization and the innovative school was examined ( $r = 0.721$ ,  $p < 0.01$ ), it was seen that the rate of variance shared between the two variables was 51.98%. In the light of these findings, a positive increase in the perception of innovative schools can be expected as the perception of the learning organizations increases. When the intellectual capital perception was examined, it was revealed that there was an equal relationship with both other variables ( $r = 0.661$ ,  $p < 0.01$ ). The variance rates of intellectual capital perceptions shared by both variables were 43.69%. As a result, it was observed that there is a positive, and slightly above average, relationship between the variables that are the subjects of the study. It can be said that an increase in one perception can lead to a positive increase in the other two variables. Additionally, the necessity of there being a linear relationship between the predictor and the predicted variables, which is another assumption of regression analysis (Field, 2017), can also be shown as evidence for these three variables showing a significant and above-average relationship with each other.

A linear regression analysis was conducted to determine the perceptions learning organization of administrators and teachers have on their intellectual capital levels. Teachers' perceptions of learning organizations were included in the analysis as predictors and their intellectual capital perceptions were included as variables. The analysis results obtained a significant level of regression equation,  $F(1,551) = 427,669$ ,  $p < 0.001$ . Additionally, the Durbin-Watson coefficient was found to be 1.770, this is the existence of the relationship between the error terms in the obtained model, that tests the autocorrelation state. For this value, Field (2017) specified the value of 2 as the criterion and stated that the values that are most or least close to this value are an indication that there is no autocorrelation. When the value found is examined, it can be said that there is no autocorrelation problem. Before analyzing the results of the analysis, Field (2017) states that the extreme values of the standardized residual values may affect the regression results and that these values should also be examined. After determining these values, Field (2017) also discusses how many extreme values can be accepted and states that there can be residual extreme values as big as 1% of the sample size. In this analysis, a total of two residual extreme values were found, and when the 553 participants were taken into account, it was seen that the maximum number of residual extreme values were less than 5. In this case, Field (2017) stated that

subtraction was not required for the residual extreme values. Detailed analysis results are given in Table 4 below.

**Table 4**

*Regression Analysis Results of the Perceptions of the Learning Organisation on the Intellectual Capital*

Model	Non-standard coefficient		Standard Coefficient	t	p
	B	Standard Error	$\beta$		
1	Constant	2,273	,085	26,634	,000
	Learning Organisation	,615	,030	,661	,000

Note. N = 553, R = 0,661, R<sup>2</sup> = ,437, Adjusted R<sup>2</sup> = ,436

When the results given in Table 4 are examined, it is seen that the learning organization perception has a positive, and slightly above average predictive effect on the intellectual capital perception. The learning organization perception variable explains 43.7% of the total variance of intellectual capital perception. The adjusted explained variance value was found to be 43.6%. There is a significantly small difference between the explanation rates of these two variances. This situation ensures that when the analysis results are tried again in another sample, the predictive ability of the obtained model will not be affected much. In other words, the cross-validation of the regression model results is achieved (Field, 2017). This way, it is seen that the regression model used is the correct one. Looking at the obtained model, it can be said that a one-point increase in the teachers' perception of learning organizations causes an increase of 0.615 points in the teachers' perception of intellectual capital.

A linear regression analysis was conducted to determine how perceptions of administrators and teachers on learning organizations predicted innovation-oriented organization perception levels. Teachers' perceptions of learning organizations were included in the analysis as a predictor and their innovative school perceptions were included as the predicted variables. As a result of the analysis, a significant level of regression equation was obtained,  $F(1, 551) = 596.947$ ,  $p < 0.001$ . Additionally, the Durbin-Watson coefficient, the existence of the relationship between the error terms in the obtained model which tests the autocorrelation state, was found to be 1.864. For this value, Field (2017) specified the value of 2 as the criterion and stated that the values that are most or least close to this value are an indication that there is no autocorrelation. When the obtained value is examined, it can be said that there is no autocorrelation problem. Before analyzing the results of the analysis, Field (2017) states that the extreme values of the standardized residual values may affect the regression results and that these values should also be examined. After determining these values, Field (2017) also discusses how many extreme values can be accepted and states that there can be residual extreme values as big as 1% of the sample size. In this analysis, a total of two residual extreme values were found, and when the 553 participants were taken into account, it was seen that the maximum number of residual extreme values were less than 5. In this case, Field (2017) stated that subtraction was

not required for the residual extreme values. Detailed analysis results are given in Table 5 below.

**Table 5**

*Regression Analysis Results of the Perceptions of the Learning Organization on Innovation-Oriented Organizations*

Model	Non-standard coefficient		Standard Coefficient	t	p	
	B	Standard Error	$\beta$			
1	Constant	1.689	0.087	19.410	0.000	
	Learning Organization	0.741	0.030	0.721	24.432	0.000

Note. N = 553, R = 0.721, R<sup>2</sup> = 0.520, Adjusted R<sup>2</sup> = 0.519

When the results given in Table 5 are examined, it is seen that the learning organization perception has a positive and a high level of predictive effect on the innovation-oriented organization perception. The learning organization perception variable explains 52.0% of the total variance of the innovation-oriented organization perception. The adjusted explained variance value was found to be 51.9%. There is a significantly small difference between the explanation rates of these two variances. This situation ensures that when the analysis results are tried again in another sample, the predictive ability of the obtained model will not be affected much. In other words, the cross-validation of the regression model results is achieved (Field, 2017). This way, it is seen that the regression model used is the correct one. Looking at the model obtained, it can be said that a one-point increase in the teachers' perception of learning organizations causes an increase of 0.741 points in the teachers' perception of innovation-oriented organizations.

A linear regression analysis was conducted to determine how perceptions of administrators and teachers on intellectual capital predicted innovation-oriented organization perception levels. Teachers' perceptions of intellectual capital were included in the analysis as a predictor and their innovative school perceptions were included as the predicted variables. As a result of the analysis, a significant level of regression equation was obtained,  $F(1, 551) = 427.854$ ,  $p < 0.001$ . Additionally, the Durbin-Watson coefficient, the existence of the relationship between the error terms in the obtained model which tests the autocorrelation state, was found to be 1.808. For this value, Field (2017) specified the value of 2 as the criterion and stated that the values that are most or least close to this value are an indication that there is no autocorrelation. When the obtained value is examined, it can be said that there is no autocorrelation problem. Before analyzing the results of the analysis, Field (2017) states that the extreme values of the standardized residual values may affect the regression results and that these values should also be examined. After determining these values, Field (2017) also discusses how many extreme values can be accepted and states that there can be residual extreme values as big as 1% of the sample size. In this analysis, a total of two residual extreme values were found, and when the 553 participants were taken into account, it was seen that the maximum number of residual

extreme values were less than 5. In this case, Field (2017) stated that subtraction was not required for the residual extreme values. Detailed analysis results are given in Table 6 below.

**Table 6**

*Regression Analysis Results of the Perceptions of Intellectual Capital on Innovation-Oriented Organizations*

Model	Non-standard coefficient		Standard Coefficient	t	p
	B	Standard Error	$\beta$		
1 Constant	0.856	0.143		6.003	0.000
1 Intellectual Organization	0.730	0.035	0.661	20.685	0.000

Note. N = 553, R = 0.661, R<sup>2</sup> = 0.437, Adjusted R<sup>2</sup> = 0.436

When the results given in Table 6 are examined, it is seen that the intellectual capital perception has a positive and a high level of predictive effect on the innovation-oriented organization perception. The intellectual capital perception variable explains 43.7% of the total variance of the innovation-oriented organization perception. The adjusted explained variance value was found to be 43.6%. There is a significantly small difference between the explanation rates of these two variances. This situation ensures that when the analysis results are tried again in another sample, the predictive ability of the obtained model will not be affected much, in other words, the cross-validation of the regression model results is achieved (Field, 2017). This way, it is seen that the regression model used is the correct one (Field, 2017). Looking at the obtained model, it can be said that a one-point increase in the teachers' perception of intellectual capital causes an increase of 0.730 points in the teachers' perception of innovation-oriented organizations.

A linear regression analysis was conducted to determine how perceptions of administrators and teachers on learning organization and intellectual capital together predicted innovation-oriented organization perceptions. Teachers' perceptions of learning organizations and intellectual capital were included in the analysis as predictors and their innovation-oriented organization perceptions were included as the predicted variables. As a result of the analysis, a significant level of regression equation was obtained,  $F(2,550) = 380,244$ ,  $p < 0.001$ . Additionally, the Durbin-Watson coefficient, the existence of the relationship between the error terms in the obtained model which tests the autocorrelation state, was found to be 1.859. For this value, Field (2017) specified the value of 2 as the criterion and stated that the values that are most or least close to this value are an indication that there is no autocorrelation. When the found value is examined, it can be said that there is no autocorrelation problem. Before analyzing the results of the analysis, Field (2017) states that the extreme values of the standardized residual values may affect the regression results and that these values should also be examined. After determining these values, Field (2017) also discusses how many extreme values can be accepted and states that there can be residual extreme values as big as 1% of the sample size. In this analysis, a total of two residual

extreme values were found, and when the 553 participants were taken into account, it was seen that the maximum number of residual extreme values were less than 5. In this case, Field (2017) stated that subtraction was not required for the residual extreme values. Detailed analysis results are given in Table 7 below.

**Table 7**

*Regression Analysis Results of the Perceptions of Intellectual Capital and Learning Organization on Innovation-Oriented Organizations*

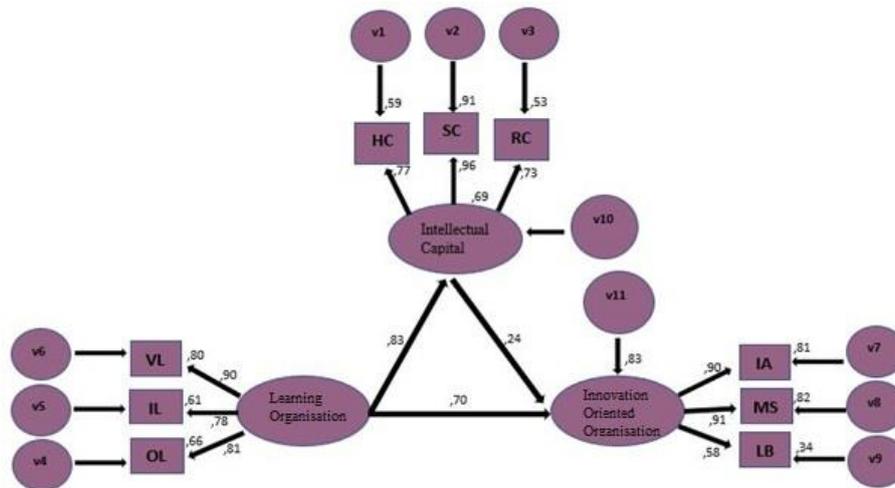
Model	Non-standard coefficient		Standard Coefficient	t	p
	B	Standard Error	$\beta$		
1	Constant	0.867	0.123	7.038	0.000
	Intellectual Capital	0.362	0.041	8.900	0.000
	Learning Organization	0.519	0.038	13.707	0.000

Note. N = 553, R = 0.762, R<sup>2</sup> = 0.580, Adjusted R<sup>2</sup> = 0.579

When the results given in Table 7 are examined, it is seen that the intellectual capital perception has a positive and a slightly lower level of predictive effect on the innovation-oriented organization perception ( $\beta = 0.328$ ), and the learning organization has a positive and medium level of predictive effect on the innovation-oriented organization perception (= 0.505). The predictive amount of learning organization perception is higher than the predictive amount of intellectual capital perception. Together, two predictive variables explain 58.0% of the total variance of the innovation-oriented organization perception. The adjusted explained variance value was found to be 57.9%. There is a significantly small difference between the explanation rates of these two variances. This situation ensures that when the analysis results are tried again in another sample, the predictive ability of the obtained model will not be affected much, in other words, the cross-validation of the regression model results is achieved (Field, 2017). Taking into consideration the obtained model, it can be said that when all other variables remain constant, a one-point increase in the perception of intellectual capital causes an increase of 0.362 points in the teachers' perception of innovation-oriented organizations. Likewise, when other variables remain constant, a one-point increase in the teachers' perception of learning organizations causes an increase of 0.519 points in the teachers' perception of innovation-oriented organizations.

To identify whether administrators' and teachers' perceptions of learning organizations are guided by the intellectual capital variable that is affected through innovation-oriented organization perceptions or not, mediation analysis steps suggested by Baron and Kenny (1986) were applied. According to Baron and Kenny (1986), mediator variable analysis takes place in three stages. (i) the independent variable (learning organization) should affect the dependent variable (innovation-oriented organization) and the intermediary variable (intellectual capital), and the intermediary variable should affect the dependent variable. (ii) The intermediary variable (intellectual capital) must affect the dependent variable. (iii) When the

independent variable (learning organization) and the intermediary variable (intellectual capital) are added to the model together, the effect of the independent variable on the dependent variable should be '0' or it should be noticeably reduced. With the impact the learning organization had on the innovation-oriented organization, the proposed mediation model was tested again by adding intellectual capital as the mediator variable (Figure 1).



OL: Organizational Learning, IL: Innovative Learning, VL: Visionary Learning, IA: Innovative Atmosphere, MS: Managerial Support, LB: Learning Barriers, HC: Human Capital, SC: Structural Capital, RC: Relational Capital.

**Figure 1.** Measurement Model in which Intellectual Capital is Added as a Tool

After this stage, Hair et al. (2016) suggest calculating the intermediary variance ratio of the mediation variable. This ratio is calculated by dividing the total effect by the sum of the direct and indirect effects. When Table 8 below is examined, total, direct, and indirect effects and their significance values are given.

**Table 8**

*The Total, Direct, and Indirect Effects Between the Variables*

Variables	Total Impact	Direct Impact	Indirect Impact
Learning Organization ---> Innovation-Oriented Organization	0.901	0.698	0.203
Learning Organization ---> Intellectual Capital	0.831	0.831	0.000
Intellectual Capital ---> Innovation-Oriented Organization	0.245	0.245	0.000

According to Table 8, the learning organization has a total and direct positive effect on intellectual capital ( $\beta = 0.83$ ;  $p < 0.01$ ) and the intellectual capital has a significant total effect and a direct positive effect on the innovation-oriented organizations ( $\beta = 0.25$ ;  $p < 0.01$ ). The positive total effect the learning organization has on the innovation-oriented organization is ( $\beta = 0.90$ ;  $p < 0.01$ ), its direct positive effect is ( $\beta = 0.70$ ;  $p < 0.01$ ),

and its indirect positive effect on the innovation-oriented organization through intellectual capital is ( $\beta = 0.20$ ;  $p < 0.01$ ). According to these results, it seems that the effects of intellectual capital and learning organization perceptions on innovation-oriented organization perceptions mediate 20% of the variance.

**Table 9**

*Significance Value of the Path Coefficients Between Variables*

Variables			Estimate	S.E.	C.R.	p
Intellectual Capital	<--	Learning Organization	0.872	0.055	15.762	***
Innovation-Oriented Organization	<--	Learning Organization	0.697	0.067	10.356	***
Innovation-Oriented Organization	<--	Intellectual Capital	0.233	0.059	3.943	***

In Table 9 it can be seen that the path coefficients between the three variables are significant ( $p < 0.01$ ). To evaluate the suitedness of the model after this stage, the reference values in the literature were examined (Hu & Bentler, 1999; Kline, 2011; Maydeu-Olivares & Garc'a-Forero, 2010; Ozdamar, 2017; Shumacker & Lomax, 2010; Tabachnick & Fidell, 2007) and the model suitedness values together with these values are given in Table 10 below.

**Table 10**

*Indices for Testing the Suitedness of the Model*

Suitedness Index	Perfect Values	Acceptable Values	Values Obtained from the Model
p	$p < 0.01$	$p < 0.05$	$p < 0.01$
$\chi^2 / df$	$0 \leq \chi^2 / df \leq 3$	$3 \leq \chi^2 / df \leq 5$	3.87
RMR	$0 < RMR \leq 0.5$	$0.5 < RMR < 1$	0.016
SRMR	$0 < SRMR \leq 0.5$	$0.5 < SRMR \leq 0.8$	0.025
GFI	$0.95 \leq GFI \leq 1.00$	$0.90 \leq GFI \leq 0.95$	0.959
AGFI	$0.90 \leq AGFI \leq 1.00$	$0.85 \leq AGFI \leq 0.90$	0.923
NFI	$0.95 \leq NFI \leq 1.00$	$0.90 \leq NFI \leq 0.95$	0.972
TLI	$0.95 \leq TLI \leq 1.00$	$0.90 \leq TLI \leq 0.95$	0.969
CFI	$0.95 \leq CFI \leq 1.00$	$0.90 \leq CFI \leq 0.95$	0.979
RMSEA	$0 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$	0.076

$\chi^2$ =Chi-square; df=degree of freedom;  $p < 0.05$ ; RMR= Root mean square residuals; SRMR= Standardized root mean square residual; GFI= Goodness-of-fit index; AGFI=Adjusted goodness-of-fit index; TLI=Turker-Lewis Index; CFI= Comparative Fit Index; RMSEA= Root mean square error of approximation.

According to Table 10, the values for the model and suitedness indices were compared and the model was tested. According to these results, the p-value was found to be significant ( $p < 0.01$ ). Furthermore, the ratio to Chi-Square / Degree of Freedom ( $2 / df$ ) was calculated ( $92.894 / 24 = 3.87$ ) and the value was found to be at an acceptable level. When looking at the other suitedness values of the model, there was a perfect fit with RMR = 0.016, a perfect fit with SRMR = 0.025, a perfect fit with GFI = 0.96, a perfect fit with AGFI = 0.92, a perfect fit with NFI = 0.97, a perfect fit with TLI = 0.97, a perfect fit with CFI = 0.98, and had an acceptable fit with RMSEA = 0.076. When all of the criteria were evaluated together, it was seen that the proposed theoretical model was compatible with the collected data. In other words, it can be said that the intellectual capital variable is a partial mediator in the relationship between the learning organization and the innovation-oriented organization variables.

### Discussion, Conclusion, and Recommendations

Modern organizations should have a structure that is human-centered, knowledge-based, innovation-oriented, creates a continuous learning climate, and values intellectual capital (Harrison & Kessels, 2004; Stewart, 1999). For this reason, it is important to ensure that educational organizations have modern features. With this study, the aim was to reveal the relationship patterns between intellectual capital, learning organizations, and innovation-oriented organizations in educational organizations. According to the findings, a high-level positive relationship between the learning organization and the innovation-oriented organization was found, a medium level positive relationship was found between the learning organization and the intellectual capital, and a medium level positive relationship between the innovation-oriented organization and the intellectual capital was found. According to Saglam (2020), for learning to take place in organizations, employees need to be continuously taking part in learning activities. When organizations have a learning structure, it forms the basis of dialogue and cooperation, which are important in the development of human capital. The open communication environment within the organization enables strong teamwork (Senge, 2014). Employees of the organization strengthen their relational capital by establishing a strong bond through open communications within both internal and external environments. Organizations that develop human, structural, and relational capitals increase their productivity by allocating resources to the innovation process (Bontis, 1998; Youndt, 2005). When educational organizations develop their learning organization and intellectual capital capacities, the innovative capacities of schools will increase.

The learning organization positively and significantly affects and predicts intellectual capital. In their research, Gungor and Celep (2016) found that intellectual capital dimensions significantly affect organizational learning capacity. Supporting the human capital working in the organization has a positive effect on the spread of information within the organization and the organizational learning capacity. The formation of an information-sharing culture in organizations is the basis for the formation of a learning organizational culture. Thus, information-sharing cultures play a critical role in the development of the intellectual capital of organizations. Educational organizations receive, transform, and transfer information. However, this

is not enough for them to be a learning organization. To define educational organizations as learning organizations, the ability of their intellectual capital to multiply unique and intangible and/or tangible resources that cannot be easily imitated should be observed (Paletta & Alimehmeti, 2014; Sveiby, 1997).

The organizational structure positively and significantly affects the innovative organization. This comes to show that as the capacity of learning organization in educational organizations increases the capacity of innovation-oriented organizations will also increase significantly. Ozer's (2017) research identified that the formation of an innovative environment depends on the cultural influence of organizational learning. In the study conducted by Yoldas (2019), a positive relationship between a learning-oriented structure and the organization's readiness in the process of change was found. Therefore, organizations that show a high level of learning organizational structure should be highly sensitive to change. These findings highlight that organizations must develop a learning organizational structure to adapt to the rapid changes that are brought about by innovation. Different studies contribute to the process of building an innovation-oriented structure in learning organizations (Avcı, 2009; Calantone et al., 2002; Keskin, 2006; Naktiyok, 2007; Weerawardena et al., 2006; Yoldas, 2009). With the formation of trust and cooperation in learning-oriented organizations, employees can express themselves easily. Therefore, there is an increase in information sharing and employees benefiting from the experiences of internal-external stakeholders can aid the process of developing innovation-oriented processes (Silins & Mulford, 2004). As educational organizations develop their learning organization structures, this will support their transformation into an innovation-oriented structure.

The intellectual capital of educational organizations positively and significantly affects the innovation-oriented organization. As organizations invest in human capital, they will raise individuals who can create innovation, who also think creatively, take risks, have an entrepreneurial spirit, openly express their thoughts, and are not afraid to experiment with innovations that participate in the organizations' functions (Castello et al., 2019; Dahlander & Gann, 2010). With the strength of its structural capital, it is thought that the strong connection established with the environment will reduce the risks in the organization. By establishing a strong connection with the environment, the organization can both improve its relational capital and reduce risks with the confidence created by satisfaction and loyalty (Saglam, 2020). Educational organizations with increased risk-taking capacities and entrepreneurial characteristics can adapt to innovations more easily and use their resources more effectively (Sarican, 2018). With the increase in intellectual capital, the innovation capacity of organizations also increases (Martin-Sardasai & Guthrie, 2018). According to these results, increasing the intellectual capital of educational organizations also means strengthening their innovation-oriented structure.

Another important finding obtained in the study is the result that intellectual capital mediates the relationship between the learning organization and the innovation-oriented organizational structures. In other words, intellectual capital is a partial mediator variable feature between the learning organization and the innovation-oriented organizational structure. Learning organizations try to establish a

strong bond with the environment they are in contact with to develop their relational capital. Organizations that are in contact with the environment also strengthen their employees. The empowerment of employees has an effect that also increases the human capital of the organization (Saglam, 2020). Human capital is an essential element in almost all categories. It is the sum of the qualities of an organizations' employees such as knowledge, skills, experiences, desires, motivation, intuition, attitude, professional competency, entrepreneurship, innovation, comprehension abilities, accepting and rejecting abilities, and creativity, that are valuable to the organization. Though organizations create opportunities for the developments of human capital, most organizations want to work with people who will carry out these developments themselves (Cikrikci & Dastan, 2002; Guthrie, 2001; Jacobsen & Hofman-Bang, 2005; Karakus, 2008; Stewart, 1997). When there are enough people with leadership skills in the organization, positive relationships are established between people and employees are motivated for continuous development. The ability to adapt to socio-political, educational, economic, and cyclical changes in an environment is only possible with an effective and strong leader (Aslan & Karip, 2014; Balci, 2013; Bil, 2018; Buckler, 2006; Karip, 2014; Ozgenel, 2020; Schlechty, 2014). By attaching importance to human capital, structural capital, and relational capital of learning organizations, their innovative capacity can be improved (Bontis, 1998, Youndt, 2005). Self-learning organizations can be effective organizations by using and sharing the knowledge they have acquired effectively (Huysman & Wulf, 2006) and this will therefore increase the innovative capacity of the organizations.

There is a direct relationship between learning organizations and innovation-oriented organizations (Avci, 2009; Calantone et al., 2002; Keskin, 2006; Naktiyok, 2007; Weerawardena et al., 2006; Yoldas, 2009). Organizations that show their ability to be learning organizations, would also have an increase in their innovation and intellectual capitals (Bontis, 1998; Chen et al; Cetin et al., 2017; Matin & Alavi, 2007; Youndt, 2005). Intellectual capital is at the center of school management in educational organizations (Paletta & Alimehmeti, 2014). For the development of policies to improve educational organizations, organizations need to be evaluated in the context of their human, structural, and relational capitals (Kelly, 2004). Giving importance to intangible resources and showing efforts to increase intellectual capital will increase the quality of educational processes (Borneman & Wiedenfoer, 2014). The evaluation of organizational performances should not only be based on an economic criterion, and the development and evaluation of intangible assets related to intellectual capital should also be considered (Altan, 2014). As employees of educational organizations spend more time in their institutions, use teamwork effectively, and adopt effective communication, help strengthen their communication with outside stakeholders and ensure the development of structural and relational capitals. As a result, building educational organizations as learning organizations is effective in increasing adaptation to change and innovation capacity (Cetin et al., 2016). Valuing intangible assets such as intellectual capital plays a critical role in improving the performance of the organization. In a changing world and a competitive environment, organizations can adapt to change by learning on their own and increasing their innovation capacity.

When the results obtained from this study are evaluated together, it is understood that educational organizations should strengthen their learning organization

structure, they should develop their innovation-oriented structure, and they should strengthen their intellectual capital. Given the transformative power of knowledge, the paradigm of management systems should be questioned. It should be seen that the cooperation of all stakeholders who have a proactive role is important in the development of educational organizations as open systems and in maintaining a common vision for development. For this reason, educational organizations should be transparent and accountable, they should increase the qualifications of their employees, and these organizations should be built as environmentally friendly open systems. Organizations should reveal and develop their intangible/invisible values as well as their tangible/material values. Finally, to further advance and validate research in this area various studies can be conducted with different variables and different sample groups.

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## Eğitim Örgütlerinde Entelektüel Sermaye, Öğrenen Örgüt ve İnovasyon Odaklı Örgüt Yapısı Arasındaki İlişki Modeli

### Atıf:

Baydar, F., & Çetin M. (2021). The model of relationships between intellectual capital, learning organisations and innovation-oriented organisational structures in educational organisations. *Eurasian Journal of Educational Research*, 94, 265-294  
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### Özet

*Problem Durumu:* Örgütler, hızlı değişen rekabetçi bir ortamda avantaj elde etmek için, somut varlıklarının yanında taklit edilmesi zor ve görünmeyen varlıklarının da farkında olmalıdır. Kendi yeteneklerini keşfeden ve zenginleştiren örgütlerin hayatta kalma yetenekleri artmaktadır. Bu bağlamda örgütlerin entelektüel sermayesi, öğrenen örgüt ve inovasyon odaklı örgüt yapısının ele alınması bu açıdan önemlidir. Bu araştırmanın amacı, eğitim örgütlerinin entelektüel sermaye, öğrenen örgüt ve inovasyon odaklı örgüt yapısı arasındaki ilişkiyi modellemektir. Bu amaç doğrultusunda aşağıdaki alt amaçlara cevap aranmıştır:

- (i) Öğrenen örgüt yapısı, entelektüel sermayeyi yordamakta mıdır?
- (ii) Öğrenen örgüt yapısı, inovasyon odaklı yapıyı yordamakta mıdır?
- (iii) Örgütlerin entelektüel sermayesi, inovasyon odaklı yapıyı yordamakta mıdır?
- (iv) Öğrenen örgüt ve inovasyon odaklı yapı arasındaki ilişkide entelektüel sermayenin aracılık rolü ne düzeydedir?

*Araştırmanın Yöntemi:* Bu çalışmada, eğitim kurumlarının entelektüel sermayesini, inovasyon odaklı örgüt ve öğrenen örgüt yapısını ölçmek amacıyla teorik bir model önerilmiştir. Önerilen modelin, test edilmesi için yapısal eşitlik modellemesi kullanılmıştır. Bu araştırmanın evrenini İstanbul ili Anadolu yakasında devlet okullarında görev yapan 44.599 eğitim yöneticisi ve öğretmen oluşturmaktadır. Örneklem grubunu belirlerken Anadolu yakasında bulunan 13 ilçe arasından Maltepe, Kartal, Pendik, Tuzla, Sultanbeyli ve Adalar ilçeleri basit tesadüfi örnekleme yoluyla seçilmiştir. Altı ilçeden toplam 553 yönetici ve öğretmen araştırmaya gönüllü katılmıştır. Araştırmaya katılan 553 katılımcıdan 282'sini kadın (%56) ve 222'sinin erkek (44); 84'ünün (%16.7) 30 yaş ve altında, 105'inin (%20.8) 31-35 yaş arası, 113'sinin (%22.4) 36-40 yaş arası, 87'sinin (%17.3) 41-45 yaş arası, 61'inin (%12.1) 46-50 yaş arası ve 54'ünün de (%10.7) 51 yaş ve üstünde olduğu görülmektedir. Çalışmaya katılan katılımcıların 400'ünün (%79.4) lisans mezunu olduğu görülürken 104'ünün (%20.6) lisansüstü eğitim mezunu olduğu görülmektedir. Katılımcıların 54'ü (%10.7) 5 yıl ve altı mesleki kıdeme sahipken, 139'u (%27.6) 6-10 yıl arasında, 101'i (%20) 11-15 yıl arasında, 68'i (%13.5) 16-20 yıl arasında, 89'u (%17.7) 21-25 yıl arasında ve 53'ünün de (%10.5) 26 yıl ve üstü mesleki kıdeme sahip oldukları görülmektedir. Katılımcıların 256'sı (%50) ilkokulda, 142'si ortaokulda (%28.2) ve 106'sı lisede (%21) görev yapmaktadır. Bu katılımcılardan 380'i öğretmen (%75.4) ve 124'ü (%24.6) yönetici olarak görev yapmaktadırlar.

Araştırmada veri toplamak amacıyla üç farklı ölçek ve kişisel bilgi formu kullanılmıştır. Kişisel bilgi formunda, katılımcıların cinsiyet, yaş, mezuniyet durumu, mesleki kıdem yılı, görev yapılan okul türü ve görevi türünden demografik değişkenlere yer verilmiştir. Diğer üç ölçek, entelektüel sermaye ölçeği, yenilikçi okul ölçeği ve öğrenen örgüt ölçeğidir. Veriler araştırmacı tarafından toplanmış, yönetici ve öğretmenler okullarında ziyaret edilmiş ve kendilerine ölçek uygulama süreci, gerekliliği ve amacı anlatılmıştır. Araştırmada elde edilen veriler SPSS paket programı kullanılarak analiz edilmiştir.

*Araştırmanın Bulguları:* Bu çalışmada, bağımsız, aracı ve bağımlı değişkenler arasındaki ilişki örüntüsünü ortaya çıkarmak amacıyla teorik bir model önerisinde bulunulmuş ve model, korelasyon, regresyon ve sonrasında yapısal eşitlik modeli kullanılarak test edilmiştir. Regresyon analizlerine başlanmadan önce analizi yapılacak olan üç değişkenin tek değişkenli ve çok değişkenli normal dağılımları, olası uç değerleri ve yordayıcı olarak kullanılacak olan değişkenler arasında çoklu doğrusallık durumları incelenmiştir. Üç değişkenin tek değişkenli normal dağılım için çarpıklık (skewness) ve basıklık (kurtosis) değerleri Tabachnick ve Fidell (2007) tarafından belirlenen -1,5 ve +1,5 değerleri dikkate alınarak değerlendirilmiştir. Üç değişkenin tek değişkenli normal dağılımlarının belirtilen değerler arasında kaldığı görülmüştür. Bu durumda üç değişkeninde tek değişkenli normal dağılım gösterdiği kabul edilmiştir. Araştırmada elde edilen veri setinde regresyon analizlerini etkileyecek herhangi bir uç değer ile karşılaşılması. Model test edilmeden önce değişkenlerin normallik dağılımlarına bakılmış, korelasyon ve regresyon hesaplamaları yapılmıştır. Yönetici ve öğretmenlerin öğrenen örgüt ve inovasyon odaklı örgüt ve entelektüel sermaye algıları arasındaki ilişkiyi ortaya koyabilmek için Pearson momentler çarpımı katsayısı analizi yapılmış ve üç değişken arasında ortanın biraz üstü, anlamlı ve pozitif ilişkiler gözlemlenmiştir. Öğrenen örgüt ve yenilikçi okul arasındaki ilişki incelendiğinde iki değişken arasında paylaşılan varyans oranının %51,98 olduğu, entelektüel sermaye algısı incelendiğinde her iki diğer değişken ile aynı oranda ilişki sonucu ortaya çıkarmış ve entelektüel sermaye algısının her iki değişken ile paylaşılan varyans oranları %43,69 olmuştur. Yönetici ve öğretmenlerin öğrenen örgüt algılarının entelektüel sermaye algı düzeylerini yordamasına ilişkin doğrusal regresyon analizi çalıştırılmış ve açıklanan varyans değeri de %43,6 olarak bulunmuştur. Yönetici ve öğretmenlerin öğrenen örgüt algılarının inovasyon odaklı örgüt algı düzeylerini yordamasına ilişkin doğrusal regresyon analizi çalıştırılmış ve açıklanan varyans değeri de %51,9 olarak bulunmuştur. Yönetici ve öğretmenlerin entelektüel sermaye algılarının inovasyon odaklı örgüt algı düzeylerini yordamasına ilişkin doğrusal regresyon analizi çalıştırılmış ve açıklanan varyans değeri de %43,6 olarak bulunmuştur. Yönetici ve öğretmenlerin öğrenen örgüt algıları ile entelektüel sermaye algı düzeylerinin birlikte inovasyon odaklı örgüt algılarını yordamasına ilişkin doğrusal regresyon analizi çalıştırılmış ve açıklanan varyans değeri de %57,9 olarak bulunmuştur.

Yönetici ve öğretmenlerin öğrenen örgüt algılarının inovasyon odaklı örgüt algısı üzerinden entelektüel sermaye değişkeni tarafından yönlendirilip yönlendirilmediği Baron ve Kenny (1986) tarafından önerilen aracılık analizi basamakları uygulanmıştır.

Öğrenen örgütün inovasyon odaklı örgüte etkisinde entelektüel sermayenin aracı değişken olarak eklenmesiyle önerilen aracılık modeli yeniden test edilmiştir. Aracılık değişkeninin aracılık varyans oranının hesaplanmasıyla toplam etki, dolaylı ve doğrudan etki oranları hesaplanmış ve öğrenen örgütün, entelektüel sermayeye toplam ve doğrudan olumlu etkisi ( $\beta = .88$ ;  $p < .01$ ); entelektüel sermayenin inovasyon odaklı örgüt üzerinde anlamlı toplam etkisi ve doğrudan olumlu etkisi ( $\beta = .25$ ;  $p < .01$ ) bulunmaktadır. Öğrenen örgütün, inovasyon odaklı örgüte olumlu toplam etkisi ( $\beta = .90$ ;  $p < .01$ ), doğrudan olumlu etkisi ( $\beta = .70$ ;  $p < .01$ ) ve entelektüel sermaye yoluyla inovasyon odaklı örgüte dolaylı olumlu etkisi ise ( $\beta = .20$ ;  $p < .01$ ) olarak belirlenmiştir. Bu sonuçlara göre entelektüel sermaye algısı, öğrenen örgüt algısının inovasyon odaklı örgüt algısı üzerindeki etkisinin varyansının %20'sine aracılık ettiği görülmektedir. Üç değişken arasındaki yol katsayılarının da anlamlı olduğu görülmektedir ( $p < .01$ ). Bu aşamadan sonra modele ilişkin değerler ile uyum indeksleri karşılaştırılmış ve model test edilmiştir. Bu sonuçlara göre p değerinin anlamlı olduğu görülmüştür ( $p < .01$ ). Bununla birlikte Ki-Kare/Serbestlik Derecesine oranı ( $\chi^2/df$ ) hesaplanmış ( $92,894/24 = 3,87$ ) ve değer kabul edilebilir düzeyde olduğu görülmüştür. Modelin diğer uyum değerlerine bakıldığında, RMR = .016 ile mükemmel uyum, SRMR = .025 ile mükemmel uyum, GFI = .96 değeri ile mükemmel uyum, AGFI = .92 değeri ile mükemmel uyum, NFI = .97 ile mükemmel uyum, TLI = .97 değeri ile mükemmel uyum, CFI = .98 değeri ile mükemmel uyum ve RMSEA = .076 kabul edilebilir uyum düzeyinde olduğu tespit edilmiştir. Tüm kriterler birlikte değerlendirildiğinde önerilen teorik modelin toplanan verilerle uyumlu olduğu görülmüştür. Başka bir ifadeyle entelektüel sermaye değişkeninin öğrenen örgüt ve inovasyon odaklı örgüt değişkeni arasındaki ilişki kısmi aracı değişken olduğu söylenebilir.

*Araştırmanın Sonuçları ve Öneriler:* Bu araştırmadan elde edilen sonuçlara göre öğrenen örgüt ve inovasyon odaklı örgüt arasında pozitif yönde ve yüksek düzeyde, öğrenen örgüt ile entelektüel sermaye arasında pozitif yönde ve orta düzeyde, inovasyon odaklı örgüt ile entelektüel sermaye arasında pozitif yönde ve orta düzeyde anlamlı ilişki olduğu görülmektedir. Öğrenen örgüt, entelektüel sermayeyi pozitif yönde ve önemli ölçüde etkilemekte ve yordamaktadır. Buna sonuca göre eğitim örgütlerinin, öğrenen örgüt ve entelektüel sermaye kapasitelerini geliştirdiğinde inovatif kapasiteleri artacaktır. Öğrenen örgüt yapısı, inovasyon odaklı örgütü pozitif yönde ve önemli ölçüde etkilemektedir. Bu sonuç eğitim örgütlerinin öğrenen örgüt kapasitesi arttıkça, inovasyon odaklı örgüt kapasitesinin de önemli ölçüde artacağını göstermektedir. İnovasyonun getirdiği hızlı değişim sürecine örgütlerin uyum sağlayabilmeleri için öğrenen örgüt özelliği göstermesi gerektiği anlaşılmaktadır. Eğitim örgütlerinin entelektüel sermayesi, inovasyon odaklı örgütü pozitif yönde ve önemli ölçüde etkilemektedir. Eğitim örgütlerin entelektüel sermayesinin artırılması demek aynı zamanda inovasyon odaklı yapısının da güçlendirilmesi anlamına gelmektedir. Araştırmada elde edilen diğer önemli bir bulgu da entelektüel sermayenin öğrenen örgüt ile inovasyon odaklı örgüt yapısı arasındaki ilişki de kısmi aracılık ettiği sonucudur. Başka bir ifadeyle entelektüel sermaye, öğrenen örgüt ile inovasyon odaklı örgüt arasında kısmi aracı değişken özelliği göstermektedir. Kendi kendine öğrenen örgütler edindikleri bilgiyi etkin bir şekilde kullanarak ve paylaşarak etkili bir örgüt olabilmektedir. Bu sayede örgütlerin inovasyon kapasiteleri artacaktır.

Bu çalışmadan elde edilen sonuçlar birlikte değerlendirildiğinde, eğitim örgütlerinin öğrenen örgüt yapısının güçlendirilmesi, inovasyon odaklı yapısının geliştirilmesi ve entelektüel sermayelerinin güçlendirilmesi gerektiği anlaşılmaktadır. Bilginin dönüştürücü gücü göz önüne alınarak yönetim sistemlerinin paradigması yeniden sorgulanmalıdır. Açık bir sistem olarak eğitim örgütlerinin gelişimi ve ortak bir kalkınma vizyonunun sürdürülmesinde, proaktif role sahip tüm paydaşların ortak çalışmasının önemli olduğu görülmelidir. Bu nedenle eğitim örgütleri, şeffaf ve hesap verebilir olmalı, çalışanlarının niteliğini artırmalı ve çevreye duyarlı açık sistemler olarak inşa edilmelidir. Örgütler somut/maddi değerlerinin yanında soyut/görünmeyen ve maddi olmayan değerlerini de açığa çıkarmalı ve geliştirmelidir. Son olarak, bu alanda yapılan araştırmaları daha da ilerletmek ve doğrulamak için farklı değişkenler ve farklı örneklem gruplarıyla birlikte çeşitli çalışmalar yapılabilir.