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The Mediating Role of Organizational Innovation in the Implementation of Intellectual Capital and Blue Ocean Strategy for Higher Education Sustainability

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Abstract

The study investigates the possible positive impact of organizational innovation (OI) on Intellectual Capital (IC) and blue ocean strategy (BOS) relationship in sustainable higher education. The study was carried out by emailing questionnaires to 76.616 academicians working in universities throughout Turkey and analyzing data collected from 497 samples. Due to a large population, quantitative analysis was used in this study. SPSS 24.0 and AMOS 24.0 software were used for the statistical analysis of the data. Pearson test was used to determine the correlation between the points obtained from the IC, OI and BOS scales, and the structural equation model was used in mediation analysis. The results obtained from the above-mentioned methods verify the full mediation impact of OI in the connection between IC and BOS. Making use of all previous studies this research is the first to examine the mediation impact of OI on IC and BOS connection in universities.

Keywords: Sustainability in higher education, leadership, intellectual capital, blue ocean strategy, organizational innovation.

Introduction

Sustainability, which draws attention in development, has become the focus of academic research in the higher education sector (Karatzoglou, 2013). Today, many policies need to be implemented in the adaptation process of sustainability in the field of education. At this point, the leadership of employees in the higher education sector, which is one of the biggest economic areas of our time, plays an important role (Djordjevic & Cotton, 2011). In this context, the lack of management skills and practices with a strong management support creates an important problem functionally (Freel, 2000; Spender & Kessler, 1995). Intellectual Capital is a critical information store for innovation. Thanks to the knowledge and skills of highly skilled and qualified employees, it is possible to capture new market and technological opportunities and turn them into innovative products and processes (Hsu & Sabherwal, 2012; Lee ,Swink, & Pandejpong, 2011; Un & Asakawa, 2015). Applying this knowledge talented and skillful employees may improve the impact of university knowledge on innovations (Aboelmaged, 2014; Maietta, 2015). In this regard which methods and strategies would allow universities to accelerate their IC in the current field of sustainable higher education? Any leading and sustainable university should question the impact of IC as well as the fields where BOS could be applied. In this sense, our H1 hypothesis was created. As a result of the rapid development of technology and knowledge-based economies, academic institutions have recognized even more the significance of creating scientific knowledge and have turned into organizations that could cooperate with both academic and private industries. To obtain competitive advantage universities also cooperate with various universities throughout the world (Tseng, Huang, & Chen, 2018).

Concerning the aforementioned, blue oceans in higher education can be created as a result of changes in service and finance, management structure, education, teaching and learning areas (Aktan, 2009). This condition brings forward the need for leadership in every stage of the institution which predetermines a vision that acts as a bridge between its past and its future (Bennis & Nanus , 1985). In this sense, one should question the applicability of OI in BOS. Thus, our H2 hypothesis was created. In recent years researchers have

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examined the contribution of IC in the corporate success of knowledge-based advanced economies. IC and innovative policies could provide organizations with competitive superiority and sustainability (Chahal & Bakshi, 2015). The fact that value creation skills of institutions are related to knowledge creation and implementation skills provides them with a competitive market position (Martelo-Landroguez & Cepeda-Carrión, 2016). Universities, as knowledge-based institutions, promote the creation, development and dissemination of knowledge through their academic studies (publishing, patent, etc) and support the development of the country and the economy (Ahmed, Lodhi, Zaman, & Naseem, 2017; Fullwood & Rowley, 2017; Tan, 2016). The aforementioned shows the need for innovation ability in products and services that could provide a competitive advantage for the organization (Allocca & Kessler, 2006). Therefore, universities should question the scope of impact OI has on the implementation of IC and BOS to obtain a competitive advantage**.** For this reason, our H3 hypothesis was created.

Findings obtained in this study show that OI has a direct impact on the IC and BOS. The research methods verify the full mediator impact that OI has on the IC and BOS relationship. For this reason, we felt the need to fill in a gap in the literature referring to the lack of studies dealing with the impact of OI on the IC and BOS relationship at the university level. If our study is successful it will convince universities to emphasize OI in the IC and BOS relationship as a means to obtain sustainability in the higher education industry. In order to reach our goal we will start by offering definitions for IC, OI and BOS. We will continue by presenting model, research hypotheses and variables and explain the ability to measure the relationships between the variables. This will be followed by empirical analysis carried out by using the structural equation modeling (SEM) technique and finally the arguments and conclusions in the study will offer suggestions for any future studies.

Intellectual Capital

Intellectual capital is the information obtained by the employees in an organization, and it refers to the sum of information stored in structural capital and emerging in social relations (Hsu & Sabherwal, 2012; Subramaniam & Youndt, 2005). Daniel Andriessen defines IC as the sum of all intangible assets that provide the sustainability of the industry activities (Andriessen, 2003). Subramaniam and Youndt, classify the IC into human capital, structural capital and social capital (Subramaniam & Youndt, 2005).

Human Capital; according to Nick Bontis human capital is the sum of the worker`s skills, experience, capabilities, education and tacit knowledge (Bontis, 1998). The human resources department deals with and protects people who possess the right skills by creating efficient solutions and creative ideas thus, offering value to the organizations (Hejase, Hejase, Tabsh, & Chalak, 2016).

Structural Capital; Structural capital contains everything employees leave behind at the end of their shifts. Structural capital embodies equipment, software, organizational structure, database, trademarks and patents which are appropriated by the organization and are used in its activities (Bontis, 2000).

Social Capital; this concept was first defined by Lyda Judson Hanifan in 1916. Hanifan defines social capital as “goodwill, fellowship, mutual sympathy and social intercourse among a group of individuals and families which make up a social unit” (Breuskin, 2012). Putnam defines social capital as “ties among individuals, active relations, social networks and reciprocity and reliability norms that derive from them” (Roberts , 2013). Conceptualization of social capital dimensions as structural, relational and cognitive which asserts to expedite the exchange and combination of resources in organizations are mostly referred to when discussing social capital dimensions (Carr, Cole, Ring, & Blettner, 2011; Nahapiet & Ghoshal, 1998).

Intellectual capital in higher education

Intellectual capital and university knowledge is a critical interior and exterior knowledge for companies. Through the knowledge and skills of a highly qualified and good quality employee it is possible to gain new markets and technological possibilities and turn them into innovative products and processes (Hsu & Sabherwal, 2012; Lee, Swink, & Pandejpong, 2011; Un & Asakawa, 2015). By increasing the companies` intellectual capital value, universities, at the same time, provide supplementary knowledge and skills which enable a creative implementation of the existing knowledge (Sherwood & Covin, 2008). University knowledge enables small and medium size enterprises to use the intellectual capital creatively and increase the significance of local innovations. Researchers claim that companies integrate external knowledge into their data base easier (Zahra & George, 2002). The acknowledgment, protection, management and use of intellectual property in higher education made way for the establishment of intellectual property offices, offices for transfer of technology,

technology license offices within universities (Sine, Shane, & Di Gregorio, 2003).

Organizational Innovation

According to Schumpeter, innovation is to add new features to a new product or an existing product, to create a new production process, to create a new market, or to find new resources for raw materials or semi-finished products (Yılmaz, 2010). Innovation is also perceived as transforming ideas and knowledge into economic or social benefits (Özsağır, 2013). Innovation can include activities such as developing new products or processes, creating new distribution channels, or developing new organizational structures or methods (Hisrich, Peters, & Shep, 2017). Evaluating innovation from a holistic perspective, he classified innovation as product-service innovation, process innovation, market innovation, behavioral innovation and strategic innovation (Wang & Ahmed, 2004).

Organizational innovation in higher education

The rapid development of knowledge-based economies universities, in terms of their respective countries, turned into a significant source of knowledge flow (Hu & Mathews , 2009). Talented and skilful employees can increase the impact of university knowledge on innovation through defining, incorporating and implementing university knowledge (Aboelmaged, 2014; Maietta, 2015). The fact that universities, with each passing day, take a central position in terms of social knowledge production system diversifies their task in the context of innovation. As a result of such a task universities support faculty academicians and students to participate in enterprising activates and to provide university – industry cooperation (Huang & Chen, 2017).

Within the framework of knowledge production research and development expenses are expected to contribute to technological innovation patents or number of products (Goldfarb, 2008). In their publications researchers bring forward new ideas, practices and findings. These research publications may be considered as a significant path in terms of university – industry interaction for the purpose of discussing and developing the implementation of academic innovations (Chang, 2012; Huang, 2009). Besides these publications universities make use of technological innovations or patents (Goldfarb, 2008). To this end they generally manufacture their innovations directly and do the marketing. According to the university-industry cooperation, universities, with regards to license fees, copyright sharing, publications and consulting agreements, make transfer of technology to private companies and create an economical difference and make a contribution to the product innovation in the market (Agrawal, 2005). Auranen and Nieminen; in their research compared the financial resources of universities in eight countries and examined the possible impact of competitive financial resources on the number of publications. The results show that in terms of universities, external financial resources have greater impact on technological innovations than competition-based incentives (Auranen & Nieminen, 2010).

By gaining advance level of expertise in producing in depth and complex knowledge through their presentations and publications academicians have been able to provide small and medium sized enterprises different and wide technological knowledge (Ahrweiler , Pyka , & Gilbert, 2011; Un & Asakawa, 2015). Companies, which cooperate with universities in the field of research and development, show progress in new knowledge and innovation (Zhang, Lettice, & Pawar, 2019). It defends the notion that selecting appropriate channels to obtain knowledge from universities can increases the innovation (Alexander & Childe, 2013). It discovered that in this context cooperation in the field of research and development contribute to product and process innovation and increase the knowledge variety and innovation (Ahrweiler, Pyka, & Gilbert, 2011; Un & Asakawa, 2015; Un, Cuervo-Cazurra & Asakawa, 2010).

It is confirmed that geographic proximity of universities to the companies has positive impact on the increase of product innovation in terms of innovation development and it results (Maietta, 2015). In conclusion, universities with the mediation of sponsor companies have improved and strengthened their cooperation with the industry and gained strategic advantages (Chen, Wu, & Wu, 2013), and opened courses, programs and workshops in the meaning of entrepreneurship and sponsorship within university-industry projects (Huang & Chen, 2017). It is asserted to have a supporting role in turning the management internal structure, decision making mechanisms, education and research activities into socio-economic output (Guerrero, Urbano, Cunningham & Organ, 2014). Structural management is needed to control behavioral and innovation outputs and research and development inputs in the context of university – industry (Thune & Gulbrandsen, 2011).

Blue Ocean Strategy

BOS is a type of strategy that came forward with W. Chan Kim and Renee Mauborgne's book "Blue Ocean Strategy – How to Create Uncontested Market Space and Make the Competition Irrelevant published in 2004 (Becker, 2013; Lindic, Bavdaz, & Kovacic, 2012). Writers established a way these industries can free themselves from their environment by applying strategic activities of sample industries and by teaching this strategy they established postgraduate programs to groom blue ocean strategists (Mohammed, 2009). The logic behind the Blue Ocean Strategy refers to innovative thinking, unidentified market space, creating new demand, rendering competition irrelevant, creating a potential market, discovering new opportunities (Chang, 2010).

W. Chan Kim and Renee Mauborgne, explain the steps of the blue ocean road map as following: "Discover uncontested new markets, make the competition irrelevant, create and grab new demand, go outside of value – cost balance, realize all the activities of the industry by creating balance between differentiation and low cost" (Kim & Mauborgne, 2005). Grow stronger to face the threats of the competition by thoroughly analyzing their strengths in the industry and create moves that will give you an advantage against their strategic moves (Alam & Islam, 2017; Caldwell & Anderson, 2017). Based on this, blue ocean solution for the increasing number of companies involved in these activities and the need for rapid response to customer demand is creating new demand, getting out of the value cost balance, and making the competition irrelevant (Kim & Mauborgne, 2014). One of the most significant elements of BOS is creating innovative value. Disruptive innovation theory, creating shared value, design-driven innovation and blue ocean strategy are strategies used in creating new value (Güneş, 2011). It is the cornerstone of value regeneration strategy. "Value regeneration is created in areas where activities are taken by industry can positively affect both the cost structure and the customer presentation" (Kim & Mauborgne, 2005).

Four actions framework" is used as a tool to create a new value curve and restructure buyer value elements. As seen in Table 1 it is named as ERRC (Eliminate, Reduce, Raise and Create) grid.

Table 1. **ERRC (Four actions framework) Grid**

Eliminate Which factors should be eliminated that the industry sees as a guarantee? Eliminate if necessary.	Raise Which factors should be raised well above the industry's standard? Raise the bar.
Reduce Which factors should be reduced well below the industry's standard? Produce less.	Create Which factors should be created that the industry has never offered? Create new values.

(Gündüz, 2018; Kim & Mauborgne, 2005).

Four stages of creating BOS are: abandon industries that create no buyer interest or value, reduce industries that create no buyer value, raise the industries that are above the standard and satisfy customers and create new demand in industries never offered before (Kim, Yang, & Kim, 2008; Yang & Yang, 2011). Thus you will avoid imitating companies that use innovation and creativity as the principle (Chang, 2010). In this sense, senior executives should concentrate on value regeneration (Leavy, 2010). Moreover, these are the principles managers and leaders should follow when preparing and developing blue ocean strategies (Leavy, 2005):

- Keep the market boundaries wide,
- Reach beyond existing demand,
- Believe in a value-cost trade-off,
- Focus on the big picture,
- Get the strategic sequence right,
- Overcome key organizational hurdles,
- Execute the selected appropriate strategy.

With regards to the aforementioned, BOS is a whole system approach that encircles all organizational activities to provide a lasting and durable strategy. Therefore, it is realized by keeping all the functional and operational activities of the organization together (Kim & Mauborgne, 2005).

Blue ocean strategy in higher education

In the higher education industry, the state of progress and stagnation environment completion should be solved by adopting and implementing blue ocean strategy mindset (Selskab, 2017). Therefore, in higher education if all the stakeholders in the context of university-state and industry create work models directed towards blue ocean mindset could have a positive impact and create drive in the collaboration (Bragança, 2016).

In this context, blue oceans in higher education can be created as a result of changes in the form of service and finance, management structure, education and training style (Aktan, 2009). It should focus on the central competition variables and question the investment and the resulting contributions. These actions define the factors such as eliminate, reduce, develop and innovate (Selskab, 2017, p. 34).

Closing of department that are not preferred by students is an example of blue ocean`s "Eliminate" implementation. With regards to e-learning, keeping universities open to any type of access by students could be considered as blue ocean strategy (Cohen, Snyder, Ackerman, Dringus & Syler, 2015). Reverse mentoring applied by Maltepe university rector towards students in the management field as well as students towards academicians is considered as one of blue ocean strategy implementations (Gündüz & Akşit, 2018). When Leland Stanford founded the Stanford University in 1891 it laid the foundation for Silicon Valley and selling the neighboring land to technology companies turned the region into world technology center (Toptalent, 2018). This university-industry cluster could also be considered as blue ocean strategy. Sabanci University in Turkey with its activities within university – industry cooperation and providing work opportunities for its students can be considered as an example for blue ocean strategy (Gündüz, 2018).

Some universities accept the fact that despite the new client mobility, technological innovations and financial reality it is difficult to make a transformation based on the retrospective infrastructure (Dennis & Lynch, 2015). First of all, taking into consideration al the stakeholders, universities should plan and prepare a sustainable internationalization. Afterwards they could reach their goals by supporting and encouraging innovative enterprises and taking solid regulatory measures. And finally, in order to provide internationalization universities, need powerful leadership (Timol & Kinser, 2017).

Model and Hypotheses

To analyze the mediating effect of organizational innovation on the relationship between intellectual capital and blue ocean strategy, we propose the model shown in Figure 1. Three hypotheses are derived from this model.

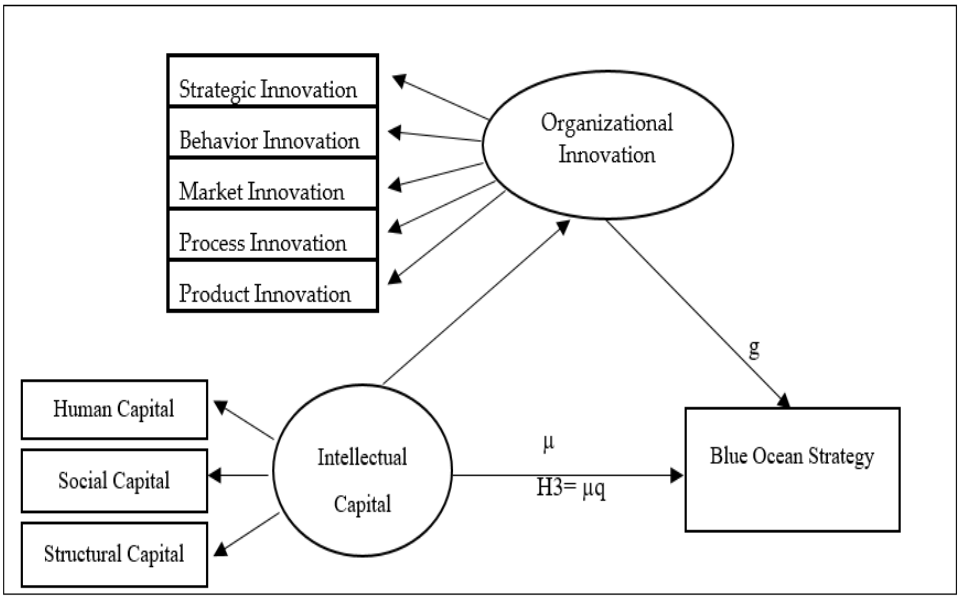


Figure 1**. Research Model**

Hypotheses: H1= μ, H2= g, H3= μq,

H1: There is a positive relationship between IC and BOS.

H2: There is a positive relationship between OI and BOS.

H3: OI has a mediating impact on IC and BOS relationship.

Methodology

Sample and data collection

We started our research in February 2019 by emailing questionnaires using Google Drive to 76.616 academicians (professors, associate professors, and assistant professors) employed in universities throughout Turkey. We collected the

data in June 2019 and limited the number of samples to 497 persons. We used quantitative analysis to analyze the data. SPSS 24.0 and AMOS 24.0 software were used for the statistical analysis of the data. According to the demographic characteristics of the academicians, the average, standard deviation, maximum and smallest values for the scores of the Intellectual Capital, Organizational Innovation and Blue Ocean Strategy scales were shown. In the determination of the tests, the normal distribution of the scores was examined with the Kolmogorov and Smirnov test, QQ plot, and kurtosis-skewness values, and it was found that they comply with the normal distribution. T test was used in data analysis, and analysis of variance (ANOVA) was used in comparisons where the independent variable had three or more categories, and Tukey test was used as a post-hoc test. Pearson test was used to determine the correlations between the scores of Intellectual Capital, Organizational Innovation, and Blue Ocean Strategy scales, and structural equation models were used in mediation analysis.

Variable measurement

IC scales. The "Intellectual Capital Scale" developed by Subramaniam & Youndt was used in the research (Subramaniam & Youndt, 2005). Intellectual Capital Scale is a quantitative tool designed as a 7-point Likert, which has three sub-factors: "Human Capital, Social Capital, and Structural Capital" and measures 14 norm groups. The Turkish validity-reliability study of the scale was conducted by Özdemir and Taşcı (Özdemir & Taşcı, 2017). Cronbach Alpha Coefficient of 0.86 is at a high reliability level.

Organizational Innovation Structure Scale; In the study, "Organizational Innovation Structure Scale" developed by Wang and Ahmed was used (Wang & Ahmed, 2004). Cronbach's Alpha values seem to be 0.909 in accordance with the reliability standards. There are 5 factors that explain the factor analysis of the Organizational Innovation Structure. These factors have been named Product Innovation, Process Innovation, Market Innovation, Behavioral Innovation, and Strategic Innovation. The scale consists of 20 statements and a 7-point Likert-type assessment.

Blue Ocean Strategy Scale; The questions used in the research were drawn from the book "Blue Ocean Strategy" written by Kim & Mauborgne in 2005 (Kim & Mauborgne, 2005). The "Blue Ocean Strategy Scale", whose validity and reliability study were carried out by these expressions Öztürk, which were used as the basis for many studies (Öztürk, 2015). Cronbach's Alpha values were determined to be 0.798 in accordance with the reliability standards. According to the factor analysis results applied, the Blue Ocean Strategy Scale consists of 5 statements and a 7-point Likert-type rating scale.

Data Analysis

According to the data obtained from 497 people participating in the study, it consists of 128 female and 369 male participants (Table 2). Again, as shown in Graph 3, 413 of the participants are from state universities and 84 from foundation universities. It consists of 143 persons for 1-5 years, 139 for 6-10 years, 58 for 11-15 years, and 157 persons for 16 years and above, depending on the term of office of the participants (Table 3). The hypotheses were tested with SEM to test the causal relationships between multiple variables in the model in a simultaneous situation and to correct measurement errors that cause problems in behavioral studies. When table 2 was examined, no statistically significant difference was found in the comparison of the scores they got from the Intellectual Capital, Organizational Innovation and Blue Ocean Strategy Scale according to the t test results of the academicians within the study.

Table 2. **Comparing the points obtained by academicians in terms of intellectual capital, organizational innovation and blue ocean strategy scales, according to their gender (n=497)**

	Gender	n	$\bar{x}$	s	t	p
Intellectual Capital Scales	Women	128	4,30	1,20	1,457	0,146
	Men	369	4,12	1,16		
Organizational Innovation Scales	Women	128	3,80	1,14	1,658	0,098
	Men	369	3,60	1,17		
Blue Ocean Strategy	Women	128	3,55	1,13	0,519	0,604
	Men	369	3,48	1,16		

As a result of the t-test, when analyzing Table 2 and comparing the points participants obtained in terms of IC, OI and BOS scale according to their gender, statistically speaking, no significant difference has been determined (p>0,05).

Table 3. **Comparing points obtained by academicians in terms of intellectual capital, organizational innovation and blue ocean strategy scales according to their university status (n=497)**

	University status	n	$\bar{x}$	s	t	p
Intellectual Capital Scales	State University	413	3,99	1,13	-7,970	0,000**
	Foundation University	84	5,04	0,98		
Organizational Innovation Scales	State University	413	3,48	1,11	-7,426	0,000**
	Foundation University	84	4,47	1,06		
Blue Ocean Strategy	State University	413	3,35	1,10	6,546	0,000**
	Foundation University	84	4,22	1,15		

**p<0,01

Table 3 contains the results of the t-test conducted to compare participants` points in terms of IC, OI and BOS scale according to the university status. When analyzing Table 3 and comparing the points participants obtained in terms of IC, OI and BOS scale according to their university status, statistically speaking, a significant difference has been determined (p<0,01). Points obtained by academicians working in state universities have been significantly lower than those working in foundation universities.

Table 4. **Comparing points obtained by academicians in intellectual capital, organizational innovation and blue ocean strategy scales according to the duration of their tenure (n=497)**

	Tenure	n	$\bar{x}$	s	Min	Max	F	p
Intellectual Capital Scales	1-5 years	143	4,25	1,24	1,40	7,00	0,422	0,737
	6-10 years	139	4,10	1,17	1,43	6,70		
	11-15 years	58	4,21	1,10	1,28	6,07		
	16 years and more	157	4,13	1,14	1,15	6,15		
Organizational Innovation Scales	1-5 years	143	3,75	1,19	1,00	6,85	1,829	0,141
	6-10 years	139	3,62	1,21	1,00	6,45		
	11-15 years	58	3,86	1,21	1,00	6,70		
	16 years and more	157	3,51	1,07	1,00	6,00		
Blue Ocean Strategy	1-5 years	143	3,47	1,13	1,00	7,00		
	6-10 years	139	3,49	1,27	1,00	7,00		
	11-15 years	58	3,76	1,23	1,00	6,80		
	16 years and more	157	3,44	1,02	1,00	6,00	1,206	0,307

p>0,05

Table 4 contains the results of the ANOVA variable analysis conducted to compare participants` points in terms of IC, OI, and BOS scale according to the duration of their tenure. According to the analyzed data and points obtained by the participants in IC, OI, and BOS scales, statistically speaking, there is no significant difference (p>0,05). Regardless of the duration of the tenure participants have obtained similar points in IC, OI, and BOS scales.

Measurement Model

When using Cronbach's alpha the standard indicator downloads should be equal to or higher than 0,70. All structures had acceptable values. The composite reliability indicator should be higher than 0,8 which is met by all structures (Nunnally, 1978).

Table 5. **Correlation among the points obtained by academicians in terms of intellectual capital, organizational innovation and blue ocean strategy scales**

		1	2	3	4	5	6	7	8	9	10	11
Human Capital	r	1										
Social Capital	r	**0,783***	1									
Structural Capital	r	**0,647***	**0,712***	1								
Intellectual Capital Scales	r	**0,899***	**0,927***	**0,874***	1							
Product Innovation	r	**0,480***	**0,459***	**0,543***	**0,549***	1						
Process innovation	r	**0,498***	**0,540***	**0,608***	**0,610***	**0,758***	1					
Market Innovation	r	**0,484***	**0,481***	**0,519***	**0,549***	**0,774***	**0,814***	1				
Behavioral Innovation	r	**0,485***	**0,554***	**0,597***	**0,607***	**0,692***	**0,794***	**0,728***	1			
Strategic innovation	r	**0,247***	**0,281***	**0,330***	**0,318***	**0,438***	**0,457***	**0,453***	**0,499***	1		
Organizational Innovation scales	r	**0,526***	**0,556***	**0,622***	**0,631***	**0,870***	**0,916***	**0,898***	**0,893***	**0,639***	1	
Blue Ocean Strategy	r	**0,368***	**0,382***	**0,416***	**0,432***	**0,527***	**0,565***	**0,608***	**0,531***	**0,449***	**0,632***	1

*p<0,01

Table 5 shows the correlations among latent variables and descriptive statistics. All correlations among the latent variables have a positive tendency and show medium to high power. The most powerful correlation is between IC and SC (0,927, p <0, 01) and the correlation between OI and PI (0,916, p<0, 01) remains very close to it. From a statistical point of view, correlations among all of the variables are significant. The correlation between HC and SI draws attention as the weakest correlation (0,247, p<0, 01).

Table 5 contains the correlation among the points obtained by the participating academicians in terms of IC, OI, and BOS scales. According to the acquired data, the points obtained by participating academicians in terms of IC scales and all its sub-dimensions generally have a positive tendency, and significant correlations are determined when considered from a statistical point of view (p<0, 01). Therefore, whenever participants scored higher in IC scales, their human capital, soical capital and structural capital scores increased as well. Moreover, the points obtained by academicians in IC scales, OI scales, and BOS scales show positive correlations, and these correlations are statistically significant (p<0,01). In other words, whenever the participants scored higher in OI scales, their points in OI scales and BOS scales increased as well. Since we anticipate in view of this result that the increase in the IC level in universities will bring about an increase in the human, social, and structural capitals, we can say that the same increase could also be expected in the OI and BOS levels.

According to the correlation results stated in the Table 5, a positive tendency and a powerful correlation is established between the general points obtained by the participating academicians in the OI scales and the points obtained in the sub-dimensions of product innovation, process innovation, market innovation, behavioral innovation, and strategic innovation (p<0,01). Whenever participating academicians scored higher in the OI scales, their points in product innovation, process innovation, market innovation, behavioral innovation, and strategic innovation scales increased as well. A positive tendency and statistically significant correlations are detected between the points obtained in OI scales and IC and BOS scales (p<0,01). Therefore, whenever participating academicians scored higher in the OI scales, their scores in IC and BOS scales increased as well. Correlations between the points which were obtained by academicians and included in this analysis in BOS scales show a positive tendency, and they are quite significant statistically (p<0,05).

Structural model

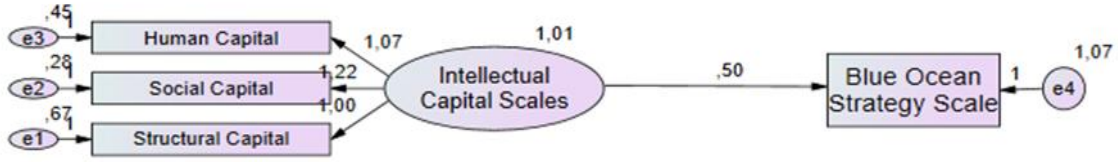
The structural model was tested by 'Structural Equation Modeling' using AMOS. Both the relationship between the structural model and the latent variables / structures, and how these variables affect each other are analyzed. Our aim is to investigate the relationships between the variables in a holistic perspective by analyzing the strength and significance of the relationships in the research model, which is conceptually designed, and the mutual interactions between variables (Meydan & Şeşen, 2011). This study uses Baron and Kenny`s criterion for analyzing the role of the mediating variable (Baron & Kenny, 1986). According to these criteria, the relationship between the predictor variable and the dependent variable should be significant. The relationship between the mediator variable and the predictor variable should also be significant. Whenever both the mediator variable and the dependent variable are put through a simultaneous regression analysis, the relationship between these two variables should be significant. Moreover, whenever both the mediator variable and the predictor variable are subjected to a simultaneous analysis, the previously significant relationship between the predictor and the dependent variables should no longer be significant or their previous level of significance should decrease. One way arrows are used instead of the two-way arrows which were utilized in the measurement model, reflecting the causal relationship (Hair, Black, Babin & Anderson, 2010). Figure 4 demonstrates the structural model used in our study. With this structural model, we will first analyze the model`s compliance and test the hypotheses. It will evaluate the relationships between IC, OI, and BOS, examine the OI`s mediator role in IC and BOS relationship, and analyze OI`s mediator impact on the relationship between IC and BOS. The summary of the hypotheses that will be tested is as follows:

H1: There is a positive relationship between the IC and BOS.

H2: There is a positive relationship between the OI and BOS.

H3: The OI has a mediating impact on the IC and BOS' relationship.

The mediating role which the Organizational Innovation Scale plays between the Intellectual Capital Scale and the Blue Ocean Scale was examined, and the findings are shown below:

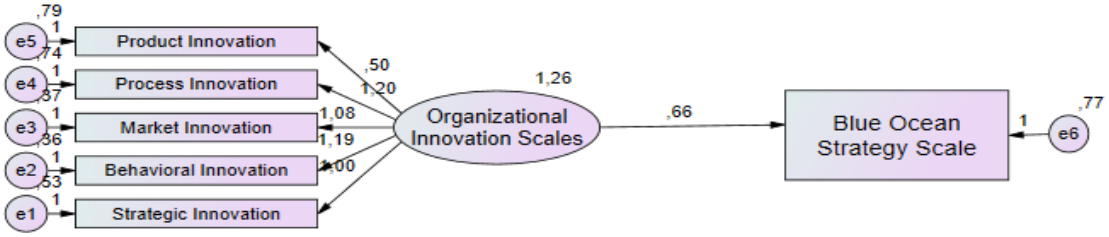


(**X²/sd**:5,669 **GFI**:0,989 **NFI**:0,988 **CFI**:0,990 **RMSEA**:0,097)

Figure 2. Predictive situation of the Intellectual Capital Scales points in regards to Blue Ocean Strategy points

Analyzing Figure 2 we determined that the goodness values of the fit indexes of GFI, NFI, and CFI of the IC scales points show perfect fit all by themselves in regards to BOS points and the values of X^2/sd and RMSEA are not within the acceptable limits in the predictive situation model.

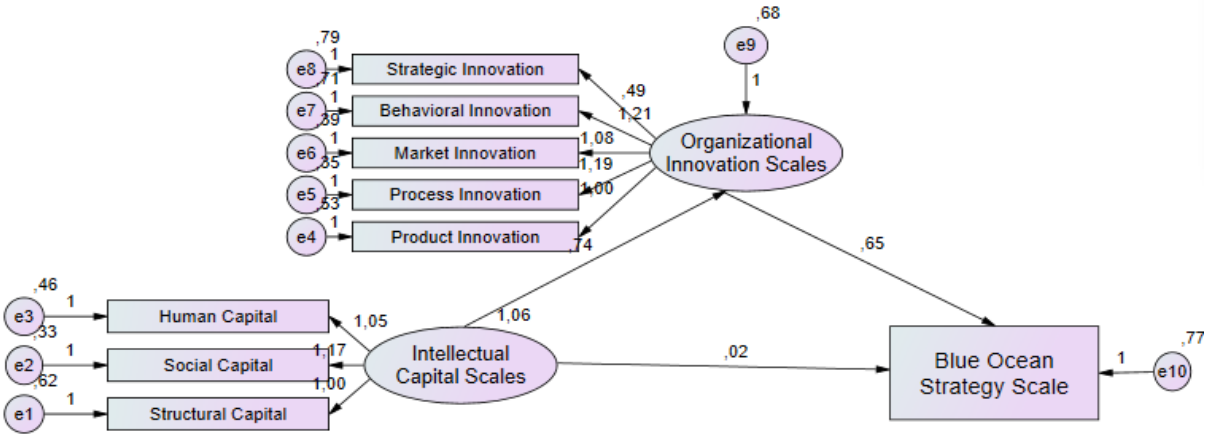
It is noticeable that the IC scales points make a positive and statistically significant prediction concerning the BOS points (β=0,50; p<0,05). Thereby, H1, which suggests that IC positively impacts the BOS studies, is verified.



(**X²/sd**:5,669 **GFI**:0,989 **NFI**:0,988 **CFI**:0,990 **RMSEA**:0,097)

Figure 3. **Predictive situation of the Organizational Innovation Scales points in regards to Blue Ocean Strategy points**

When the goodness of fit indexes of the model which was built to demonstrate the predictive status of the OI Scale scores shown in Figure 3 are examined, it can be seen that the X^2/sd and RMSEA values are not within the acceptable good fit limits, while the GFI, NFI and CFI values are within the limits of perfect fit. It is concluded that the OI scales points make a positive and statistically significant prediction concerning the BOS points (β=0,66; p<0,05). Hence, H2, which indicates that organizational innovativeness positively affects the blue ocean strategy studies, is confirmed.



(**X²/sd**:3,454 **GFI**:0,970 **NFI**:0,977 **CFI**:0,984 **RMSEA**:0,070)

Figure 4. **Intellectual Capital and Organizational Innovation Scales points` simultaneous predictive situation of Blue Ocean Strategy points**

In the light of Figure 4, where the Intellectual Capital Scale and the Organizational Innovation Scale simultaneously predict the Blue Ocean Scale scores, it is determined that the X^2/sd and RMSEA values of the model are within acceptable goodness of fit. While it is understood that Organizational Innovation Scale predicts Blue Ocean Scale positively and significantly ($\beta = 0.65$; $p < 0.05$), it is concluded that the Intellectual Capital Scale scores do not significantly predict Blue Ocean scale scores ($\beta=0,02$; $p>0,05$). In other words, the Organizational Innovativeness Scale is the full intermediary between the Intellectual Capital Scale and the Blue Ocean Scale. Therefore, H3, which points to the mediating effect of OI in the relationship between IC and BOS, is confirmed.

Discussion and Results

This paper examines the mediating role of OI between IC and BOS in the sustainable higher education sector. It underlines the importance of leadership in the impact of the IC structure on the BOS in universities. It also examines the impact of OI on BOS in the sustainable higher education sector. In this context, this study evaluates the hypotheses and presents the following results in regards to demographic data.

Tables 2 and Table 4 show that IC, OI and BOS points do not indicate any significant difference regarding the participants` gender or the duration of their tenure. Nonetheless, according to Table 3, the points obtained by academicians employed in state universities in IC, OI and BOS are significantly lower compared to those employed in foundation universities. Unlike state universities, financial resources and organizational structure of which are met by the state government, foundation universities are obliged to continuously strengthen their intangible sources and abilities such as the IC to ensure their sustainability and gain competitive advantage (Gallardo-Vázquez, Valdez-Juárez & Lizcano-Álvarez, 2019). The fact that foundation universities have external representatives in their management systems consolidates their economy and strengthens their ties to the society, enabling them to obtain more resources and contribute to their social development (Eurydice, 2000). The board of trustees, which is widely deployed in the management systems of higher education institutions all over the world, has had a very limited implementation in Turkey until now. In Turkey, the board of trustees system is implemented merely in foundation universities and has not been deployed in state universities (Kurt, Gür, & Çelik, 2017). In terms of development, it shows that the implementation of OI is more extensive in foundation universities. Thus, we can conclude that foundation universities are more successful in identifying opportunity gaps and implementing blue ocean strategies with their organizational innovation structure.

This study deduces that there is a positive and powerful relationship between IC and human capital with its latent variables as well as the structural and social capitals in universities. IC, which is considered as one of the most important sources for universities to improve their competitive capacity, develop new strategies, and ensure their sustainability in the globalized world, is perceived as a driving force for innovations (Chen, Zhao & Wang, 2015; Li & Yu, 2018; Xu & Sim, 2017; Xu, Shang, Yu, & Liu, 2019). Universities should place emphasis on the human capital to increase their performance. Universities that have talented and experienced employees show a high value of social and structural capital. It is confirmed by numerous studies that investing in human resources increases the performance of the enterprise (Hurwitz, Lines, Montgomery & Schmidt, 2002). And in universities, it is the structural capital which enables employees to use their existing knowledge innovatively and gain new technological skills (Hsu & Sabherwal, 2012; Subramaniam & Youndt, 2005). Allowing employees to implement new knowledge in innovative processes helps increase their motivation and share more information (Sciarelli, Gheith & Tani, 2020; Abbas & Sağsan, 2019).

The study shows that IC makes a positive and statistically significant prediction of BOS ($\beta=0,50$; $p<0,05$). Therefore, investing in IC will provide universities advantage in the fields of innovation and creation of value. To ensure sustainability in universities, having an adequate infrastructure and sufficient administrative support especially gains prominence in this process. One needs structural management to control the behavioral and innovative outputs and R&D inputs in the university-industry context (Thune & Gulbrandsen, 2011)To this end, the relationship between structural capital and BOS raises to the occasion. In terms of sustainability, it is important to create eco-friendly and natural living quarters and campuses while organizing structural capital (Sobhani, Shahbuddin, Amran & Rahman, 2010). The solution for the intense competition and decreased motion and progress faced by universities is to adopt and implement a blue ocean strategy (Selskab, 2017). Thus, every university can distinguish itself and consolidate its strengths (Nomura & Abe, 2010).

This study infers that there are positive and powerful correlations between OI and product innovation with its latent variables, process innovation, market innovation, behavioral innovation, and strategic innovation. Consequently, universities should approach organizational innovation holistically and include all its sub-disciplines when conducting the relevant studies (Sethi, Smith, & Park, 2001; Wang & Ahmed, 2004). This study indicates that there is a powerful correlation between organizational innovation and product innovation in universities. Therefore, it is possible to turn R&D studies, which include the commercial activities of the universities, into innovative products and processes, to improve marketing activities by using new programs (Alegre & Chiva, 2008) and new products, and to seize new technological and market-related opportunities by taking advantage of the knowledge and skills of qualified employees (Lee , Swink & Pandejpong, 2011).

As OI's latent variable, structural innovation gains prominence with the strongest predictive ability that it displays. In terms of OI, internal transactions and processes of universities should demonstrate a dynamic structure and include reengineering (Otero-Neira, Lindman & Fernández, 2009). This study unveils that the cooperation between universities and R&D departments has a positive influence on product and process innovation (Un, Cuervo-Cazurra, & Asakawa, 2010; Un & Asakawa, 2015). In addition to their inventions, license fees, copyright sharing, publications, and consultancy agreements in the fields of market and product innovations, universities can also contribute to and make a difference in the field of economics by endowing private companies with technology (Agrawal, 2005). Thus, they can ensure their sustainability in higher education in terms of structural and technological innovativeness (Kaya & Sağsan, 2016).

This study states that OI has a positive and statistically significant predictive influence on blue ocean strategy (β=0,66; $p<0,05$). Innovation is the heart of educational sciences and the building block of education. To realize innovation in education and to improve educational elements, structure and management, a good vision and strategy is necessary (Ramirez-Montoya, 2020). Therefore, the studies and investments made in the field of OI play an important role in creating the BOS. In higher education, the blue ocean strategy can be created in consequence of the changes in the fields of service and finance, administrative structure and education, teaching, and learning (Aktan, 2009). This makes way to sustainable strategies in universities. Consequently, the working models which are based on BOS theories spiral and involve all the stakeholders in the university-state and industry create an additional force that has a positive influence on the status quo in the higher education industry (Bragança, 2016). The mediation of sponsor companies has allowed the universities to improve and strengthen their cooperation with the industry and created strategic advantages in the field of technology (Chen, Wu & Wu, 2013). In conclusion, we need to define, eliminate, reduce, and develop the innovative factors (Selskab, 2017). Creating OI and value innovation enables universities to create a sustainable strategy in the uncontested market.

The Structural Equation Model (SEM) used in this study shows that OI has a full mediating role between the IC and BOS. In other words, we can say that in a situation where OI is included as a mediator variable in the relationship between IC and BOS, the impact of IC upon BOS becomes insignificant, and the impact of OI on BOS increases. The fact that OI comes into prominence in the relationship between IC and BOS demonstrates the power of OI in interpreting BOS. Put differently, BOS is shaped by IC in sustainable universities, and as a result, the relationship between IC and BOS is formed in the context of OI.

In conclusion, we can state that IC plays a vital role in the creation of BOS in sustainable universities. However, it seems that organizational innovation takes a locomotive role in the implementation of the blue ocean strategy. Senior executives should appreciate OI in the above-mentioned context. Implementing IC and OI in universities will consequently lead to academic leadership as appropriate policies and strategies will be developed and promoted among the academic personnel. This will provide the opportunity to call strong leaders into being and create sustainable universities.

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