

The Effect of Compliance with Corporate Governance Principles on Intellectual Capital Investments

Emre HORASAN ^a Ömer KOÇ  ^b

^a Kafkas University, Faculty of Economics and Administrative Sciences, Kars, Turkey, emrehorasan@gmail.com

^b Kafkas University, Vocational School of Social Sciences, Kars, Turkey, omer_koc36@hotmail.com

ARTICLE INFO	ABSTRACT
Keywords: Intellectual capital Corporate governance Borsa Istanbul VAIC™ Received 20 February 2023 Revised 10 November 2023 Accepted 20 November 2023 Article Classification: Research Article	Purpose – The purpose of the study is to research whether the level of compliance with corporate governance principles affects intellectual capital investments. Design/methodology/approach – In this study, the connection between the degree of conformity with corporate governance principles and intellectual capital investments for 21 companies in the BIST Corporate Governance Index (Borsa Istanbul XKURY) was tested, utilizing the Generalized Moments Method (GMM), one of the panel data analysis methods. Constituting the dependent variable of the study intellectual capital investments were calculated with the VAIC™ (Value Added Intellectual Coefficient) method developed by Ante Pulic. Findings – At the stage of determining the degree of conformity with corporate governance principles, which is the independent variable, it was observed there was no unity in the variables used, and the grades of conformity with corporate governance principles were accepted as an objective measurement unit and used as a measurement variable. As a result of the findings, it was concluded that the degree of conformity with corporate governance principles positively affects intellectual capital investments. Discussion – In conclusion, it can be said that corporate governance practices are truly related to intellectual capital, boost the efficiency of intellectual capital, and that corporate governance practices are a hidden force that improve the capability of businesses to captivate more intellectual capital.

1. INTRODUCTION

With the development of the modern understanding of the economy, information, in terms of its role and nature, began to be looked upon as a fundamental element of competition. It has also been one of the primal factors affecting economic development. In addition, the socio-economic, cultural, social, technological, etc., changes that have emerged in recent years are also based on the concept of knowledge and the transition to the knowledge economy. Closely related to each other, these changes have brought along the obligation of all public-private institutions and organizations, especially societies, to think and implement on a world scale. However, due to the developments in information and communication technologies, many new concepts and mindsets have emerged in the field of business administration, and some existing concepts have to be redefined in terms of structure and functioning. In this process, concepts of corporate governance and intellectual capital, in particular, have become concepts that need to be emphasized and become increasingly important for businesses.

When literature-related studies are investigated, it is claimed that it's the relation between corporate governance practices and intellectual capital investments is not adequately investigated, but rather the impacts of corporate governance practices on physical and financial capital are examined (Keenan & Aggestam 2001). In some studies, corporate governance practices and intellectual capital investments have been seen as important resources in gaining competitive advantage, whereas their relationship with financial performance has been investigated (Swartz & Firer, 2005). However, there aren't many studies that look at the connection between investments in intellectual capital and corporate governance applications (Cerbioni & Parbonetti, 2007; Abidin et al., 2009; Al-Musalli & Ismail 2012; Tulung et al., 2018).

Önerilen Atf/Suggested Citation

Horasan, E., Koç, Ö. (2023). The Effect of Compliance with Corporate Governance Principles on Intellectual Capital Investments, *İşletme Araştırmaları Dergisi*, 15 (4), 2609-2619.

In some of the studies, corporate governance practices and intellectual capital investments were seen as a mechanism to achieve maximum efficiency (Makki & Lodhi, 2014: 305). However, there are conceptual connections and common points between intellectual capital investments made to create intangible capital and benefit from the leverage effect, protecting the rights of all stakeholder groups and corporate governance practices that regulate the structure of the relationship between these stakeholders. Again, considering the creation logic of these two elements together, increasing the degree of conformity with corporate governance principles and making intellectual capital investments will benefit both companies and all stakeholder groups interacting with these companies.

However, it has been observed that while the achievement of the objectives of the enterprises depends on the management of their intellectual capital and the development of corporate governance practices, these concepts are ignored in most cases. However, as a result of the observations made, it has been observed that due to the different corporate governance indices of the countries, several different elements are tried to be generalized in measuring the degree of conformity to corporate governance principles and determining the variables. Observations have also shown that corporate governance indices have not been established in many countries. At this point, since corporate governance practices are country-specific, their impact on managerial decisions regarding intellectual capital investments will also differ from country to country. In Turkey, since the ratings of the degree of conformity to corporate governance principles are created to cover all of the components of corporate governance known as shareholders, stakeholders, public disclosure and transparency, and board of directors, the ratings are accepted as an objective unit of measurement and used as a measurement variable.

In addition, the main criterion for sample selection was the availability of corporate governance principles compliance ratings of the relevant companies. However, due to the small number of companies listed on BIST and included in the XKURY and the lack of ratings of some companies for previous periods, the sample was limited to 21 companies. While selecting these 21 companies, a range of years was chosen to maximize the numbers of ratings, companies, and the time frame. In this context, since the selected companies operate in different sectors, their intellectual capital investments will be realized at different levels. It is important to note that manufacturing companies have lower levels of intellectual capital than telecommunication or finance companies. In general, if a company has limited net assets due to excess liabilities, its capital employed efficiency (CEE) will be low or close to zero. For the aforementioned reasons, the aggregate value of the Value Added Coefficient of Intellectual Capital (VAIC™) is used, since measuring intellectual capital investments on an element-by-element basis may lead to biased results. As a matter of fact, similar situations have been encountered in some studies (Paknezhad ve Ahmadvani, 2012, Svanadze ve Kowalewska, 2015, Appuhami ve Bhuyan, 2015, Meressa, 2016, Faisal vd, 2016, Gülcemal ve Çitak, 2017, Jamei, 2017, Arachchi, ve Niwarthana 2021, Bhattu-Babajee, ve Seetanah, 2022, Achim vd, 2023).

Therefore, in this study, which seeks to identify the impact of the degree of conformity with corporate governance principles on intellectual capital investments, "corporate governance principles compliance rating" is considered as an objective measurement unit and utilized as a measurement variable in the assesment of corporate governance practices. As mentioned, it has been observed that several different elements have been tried to be generalized as corporate governance measurement variables, especially in foreign literature. The purpose of this study is to contribute to the literature by using corporate governance ratings, that the corporate governance index comprises and accepted as a more objective measurement variable.

Again, although many studies have been conducted on the subject in foreign literature, as can be seen there are limited number of studies in Turkey. In this sense, it is thought that the use of objective measurement variables such as ratings and intellectual capital coefficient will significantly advance the field of domestic literature by investigating the connection between the degree of conformity with corporate governance principles and intellectual capital investments, which are two similar concepts in terms of their results.

2. LITERATURE REVIEW

In today's world, the matter of increasing the level of compliance with intellectual capital investments and corporate governance principles has begun to be examined in both developed and emerging market countries. When the benefits of these two elements are considered together, the implementation of corporate governance

principles and the optimum management of intellectual capital assets will contribute to the enterprise's value creation, competitive advantage, and improving/developing its financial performance. Due to the fact that the aforementioned elements are steadily more important for businesses, studies on the subject have been coincided in the literature review and these studies are summarized below.

In a study conducted by Keenan & Aggestam (2001), an attempt was made to identify the responsibility of corporate governance practices at the point of revealing, using, and developing the intellectual capital in the enterprise. It was ascertained that there are important connections between intellectual capital, which focuses on the identification and use of intangible elements in the structure and processes of the organization, and corporate governance practices that affect managerial decision-making and focus on the interests of all stakeholders. Accordingly, it aimed to create multi-faceted value for the benefit of stakeholders and to increase corporate wealth in both elements mentioned.

Cerbioni & Parbonetti (2007) examined the connection between corporate governance variables and company disclosures about intellectual capital investments in a biotechnology company located in Europe. Disclosures related to intellectual capital investments were accepted as a multi-dimensional and complex concept and it was concluded that corporate governance variables have a noteworthy impact on the quantity of information released.

Öztürk & Demirgüneş (2008) examined the role and characteristics of corporate governance in businesses in connection with the concept of intellectual capital. As a result, corporate governance has been seen as the element that activates and manages intellectual capital elements of the enterprise at the point of achieving its goals. In this context, corporate governance was evaluated as an intellectual capital element owned by the entire enterprise and includes intellectual capital.

Safieddine et al., (2009) investigated the connection between corporate governance practices and intellectual capital investments in universities. Thus, it was concluded that the lack of corporate governance practices could lead to inadequacy in attracting and retaining intellectual capital at universities. Faculty members stated that corporate governance is a critical component that ensures the flow of intellectual capital to universities.

Ramadan & Majdalany (2013) examined the relation between corporate governance practices and intellectual capital components in the banking sector. The findings indicated that board size and ownership structure, used as corporate governance measurement variables, had a minimal impact on intellectual capital. It was also ascertained that with the absence of intellectual capital regulations, the degree of conformity with corporate governance principles increases the transparency level.

Alizadeh et al., (2014) assessed the impact of corporate governance applications on intellectual capital investments. The findings indicated that the number of board members, audit committee, and non-executive directors used as corporate governance measurement variables didn't have a noteworthy impact on intellectual capital investments.

In the Hatane et al., (2017) study, the effect of corporate governance practices on intellectual capital investments and firm value was comparatively examined in Indonesia and Malaysia. Results differed between the two countries. It was determined that management ownership, which is used as a corporate governance measurement variable, has a noteworthy effect on intellectual capital investments in each country. Moreover, board size and the proportion of independent directors on the board had a noteworthy impact on intellectual capital in Malaysia, but not in Indonesia.

In the Musleh Al-Sartawi (2018) study, corporate governance is seen as an element that improves financial statements through disclosing information on intellectual capital at the point of managing assets of businesses and demonstrating their values. Findings showed that a negative and weak connection between corporate governance practices and intellectual capital investments.

Dashtbayaz et al. (2020) assessed the effect of corporate governance practices on intellectual capital investments in companies registered on the Tehran Stock Exchange. A negative relation was found between the board of directors' independence, financial expertise, audit committee size, and relational capital, which are used as corporate governance measurement variables, and a positive relation between audit committee independence and relational capital. Moreover, a positive relation was found between the board of directors' independence and human capital and a negative relationship between audit committee size and human

capital. In addition, positive and negative effects of audit committee size and independence on structural capital were respectively observed.

Widiatmoko et al., (2020) mentioned that intellectual capital is a crucial source in providing advantages for businesses in terms of value and competition, and the effects of corporate governance practices of companies in the Indonesian Corporate Governance Forum on intellectual capital investments in the period of 2015-18 were examined. The findings showed that corporate governance practices have a positively impact on intellectual capital investments.

3. METHODOLOGY and DATA

Analysis of panel data is used to ascertain the impact of the degree of conformity with corporate governance principles on intellectual capital investments. The most important stage of econometric analysis methods, which have recently become increasingly important, is to determine the variables to be used and to collect data suitable for these variables. In addition to the correct collection of the collected data from reliable sources, the suitability of the model will affect the reliability of the econometric analysis. In this context, three types of data can be mentioned: time series, horizontal cross-section, and panel data (Yerdelen Tatoğlu, 2020a: 1).

In addition, panel data is more favored above cross-sectional and time series data because it offers efficient parameter estimation by having more data and degrees of freedom, facilitates the estimation of complex models, and provides more consistent estimates by controlling unobservable variables with time dimension and information on units (Hsiao, 2007: 2-6).

Panel data models can be broadly classified into two categories: dynamic panel models and static panel models. Dynamic panel data models are divided into two groups: panel data models with distributed lags and autoregressive panel data models. At this point, since economic and financial behaviors are affected by past behavior patterns, lagged values of variables should also be used as explanatory factors in determining the relationships. Thus, dynamic panel data models in which the lagged value of the dependent variable is treated as an independent variable are called autoregressive panel data models (Yerdelen Tatoğlu, 2020b:115-116).

$$Y_{it} = \alpha Y_{i,t-1} + \beta X_{it} + u_i + v_{it} \quad i:1,\dots,N \quad t:1,\dots,T \quad (1)$$

In the relevant one-lag autoregressive panel data model, $Y_{i,t-1}$ represents the dependant variable's one-period lagged value, u_i is the unit effect and v_{it} is the error term. Since Y_{it} is a function of u_i in the model and $Y_{i,t-1}$ is a function of u_i , $Y_{i,t-1}$ and u_i are correlated. Therefore, the exogeneity assumption is violated and the estimators are biased and inconsistent. Due to the presence of the aforementioned correlation, LSDV (Least Squares Dummy Variable) and FGLS (Feasible Generalized Least Squares) are also biased and inconsistent. At this point, when the literature is analyzed, it is concluded that the use of time instrumental variables would be correct. Thus, heterogeneity (u_i), where both fixed and random factors are present, can be eliminated by taking the first difference of the model (Greene, 2003: 308).

$$Y_{it} - Y_{i,t-1} = \alpha(Y_{i,t-1} - Y_{i,t-2}) + \beta(X_{it} - X_{i,t-1}) + (v_{it} - v_{i,t-1}) \quad (2)$$

However, despite the first difference equation, the correlation the error term and the dependent variable's lagged value is still present. Because in both fixed effect and random effect dynamic panel data models the lagged value of the dependent variable is correlated with the error term, instrumental variable estimators have been created. (Greene, 2003: 308).

At this point, in the Generalized Method of Moments (GMM) estimator of Arellano and Bond (1991), Δ stands for the difference, and if the difference is taken;

$$\Delta Y_{it} = \alpha \Delta Y_{i,t-1} + \beta \Delta X_{it} + \Delta v_{it} \quad i:1,\dots,N \quad t:2,\dots,T \quad (3)$$

In the model, the values of Δv_{it} and $\Delta Y_{i,t-1}$ are correlated, while Δv_{it} and $Y_{i,t-2}$ do not correlate or the dependent variable's lagged values from previous terms.

$$E(\Delta v_{it} Y_{i,t-j}) = 0 \quad j:2,\dots,t-1 \quad t:3,\dots,T \quad (4)$$

Thus, provided that as instrumental variables for $\Delta Y_{i,t-1}$, $j \geq 2$, $Y_{i,t-j}$ and its combines can be employed with the Arellano-Bond estimator in the GMM method.

In addition, the proposed Sargan (1958)/Hansen (1982), Arellano-Bond autocorrelation, and Wald tests are utilized to determine the accuracy of the model. The exogeneity of the instrumental variables is tested using the Sargan J test with the H_0 hypothesis "there is no correlation between the instrumental variables and the error term in the differenced model", while the Arellano-Bond autocorrelation test tests the correlations in the error terms for AR(1) and AR(2) with the H_0 hypothesis "there is no first/second order serial correlation in the differenced error term". The Wald test also tests the significance of independent variables with the H_0 hypothesis 'the independent variables as a whole are insignificant'.

In sum, with the (GMM) approach, valid instrumental variables can be used to consistently estimate dynamic panel data models, first developed by Hansen (1982) and then applied to these models by Holtz-Eakin, Newey & Rosen (1988) and Arellano & Bond (1991). Moreover, GMM estimators developed by Arellano & Bond (1991), Arellano & Bover (1995), and Blundell & Bond (1998) are commonly utilized in the estimate of the dynamic panel data model.

In this study, which was conducted to determine the effect of the level of compliance with corporate governance principles on intellectual capital investments, the (GMM) estimator belonging to Arellano & Bond (1991) was used. With this method, to solve the auto-correlation problem, the first difference model is transformed using the instrument variable matrix, and then this transformed model has to be estimated by the Least Squares Method. Thus, the Arellano & Bond "Difference GMM" estimator is obtained.

The reasons for using this estimator can be listed as follows (Gözüör & Pişkin, 2011: 130; Gökdeniz & Kılınç, 2018: 4888):

- Widely used in the estimation of dynamic models,
- It is used in the estimation of the relations between the variables in the panel data set where the time is relatively more than the number of units,
- Unlike least squares or maximum-likelihood estimator methods, information about the data distribution isn't required.
- More consistent and stronger results compared to the EKK method

$$VAIC_{it}^{TM} = \alpha_0 + \beta_1 VAIC_{it-1}^{TM} + \beta_2 KYDN_{it} + \beta_3 LEVERAGE_{it} + \beta_4 AGE_{it} + u_{it} \quad (5)$$

The econometric model based on the Difference GMM method is presented above. The presented model was analyzed and the results were interpreted. Thus, all possible lag values of the dependent variables and different lag values of the independent variables were used as instrumental variables.

In the econometric analysis, annual data from several industries' companies traded in the BIST and included in the XKURY between 2012 and 2019 were used. However, the sample was limited to 21 companies due to the small number of companies in the index and the lack of corporate governance ratings of some companies from previous periods.

Since the number of companies with corporate governance ratings is low and doesn't follow a regular course, the year range in which rating grades, number of companies, and time period can be maximized has been chosen to collect data suitable for analysis.

Since the rating grades of the companies were determined as the main criterion in the selection of the sample, the literature was examined and it was seen there was no unity in the variables used in the measurement of corporate governance. At this point, since the shareholders, stakeholders, public disclosure and transparency, and the board of directors are all taken into consideration while creating the degree of conformity with corporate governance principles, rating grades are accepted as an objective measurement unit and used as a measurement variable.

When the literature on the measurement of intellectual capital is examined, it is noticed that different approaches and measurement methods are used to deal with the matter. Thus, the measurement indicator was determined by scanning foreign literature material, taking into account the "most used" criterion. As a result of the examination, since intellectual capital was measured using the VAICTM method developed by Ante Pulic, intellectual capital was measured using the specified method in the study. Moreover, leverage degree and company age were used as control variables. The categorical classification of the dependent, independent, and control variables used in the study, the method of calculation and the sources from which the data were obtained are presented in Tables 1 and 2.

Table 1: Variables and Calculation Forms

	Variable Codes	Calculation Forms	Data Source
Dependent Variable	VAIC TM	Table 2	Table 2
Independent Variable	KYDN (corporate governance rating grades)	These are the ratings given by the rating agencies authorized by the Capital Markets Board (CMB).	Corporate Governance Association of Turkey (TKYD)
Control Variables	LEVERAGE	Total Liabilities / Total Assets	Income Statement, Balance Sheet, and Finnet Analyze Expert Database
	AGE	Current Year – Foundation Year	Public Disclosure Platform

Table 2: VAICTM Method and Calculation

Formula Headings	Formula Headings	Data Source
VA (Value Added) VA = OP + EC + D + A	OP = Operating Profit	Income Statement and Finnet Analyze Expert Database
	EC = Personnel Expenses	Annual Report Details (*) 1. Cost of Sales 2. Research and Development Expenses 3. Marketing, Selling and Distribution Expenses 4. General Administrative Expenses 5. Financial Expenses
	D = Depreciation and Depletion Expenses	Annual Report and Finnet Analyze Expert Database
	A = Amortisation	Annual Report and Finnet Analyze Expert Database
HC (Human Capital)	HC = EC (Calculation) HC = Total Wages and Salaries = Personnel Expenses	Annual Report Details (*)
SC (Structural Capital)	SC (Calculation) SC = VA - HC	-----
CE (Capital Employed)	CE (Calculation) CE = Long-term Liabilities + Equity or Net Working Capital + Fixed Assets	Balance Sheet
Calculation of Efficiency Coefficients		
HCE (Human Capital Efficiency)		HCE = VA / HC
SCE (Structural Capital Efficiency)		SCE = SC / VA
CEE (Capital Employed Efficiency)		CEE = VA / CE
VAIC TM (Value Added Intellectual Coefficient)		VAIC TM = HCE + SCE + CEE

Tablo 3: Descriptive Statistics of the Data Set

	KYDN	VAIC™	LEVERAGE	AGE
Mean	91.45679	3.408180	52.72927	48.78571
Median	91.79500	3.129678	54.41116	45.00000
Maximum	96.50000	13.75323	87.39836	127.0000
Minimum	76.75000	-2.423530	8.007880	17.00000
Standard Deviation	3.386496	1.747082	21.06264	23.37565
Skewness	-1.668034	2.177490	-0.296981	1.472714
Kurtosis	6.998601	15.26796	1.982290	5.713532
Jargue-Bera	189.8271	1186.282	9.719667	112.2717
Probability	0.000000	0.000000	0.007752	0.000000
Number of observations	168	168	168	168

According to descriptive statistics, the average of the corporate governance rating grades (KYDN) used to assess the degree of conformity with corporate governance principles is 91. This situation shows that the enterprises in the sample comply largely with corporate governance principles.

In the calculation made using the VAIC™ method, the average of intellectual capital investments was approximately 3.40. This means that for every ₺1 investment made, a value of ₺3.40 will be obtained at the end of the 8th year.

4. EMPIRICAL RESULTS

Table 4 shows the estimation results of the model created to measure the effect of the degree of conformity with corporate governance principles, represented by corporate governance rating grades on intellectual capital investments.

Table 4: Corporate Governance and Intellectual Capital Model Estimation Results

Dependent Variable VAIC™				
Independent Variable	Coefficient	Standard Error	t-statistic	p-value
VAIC™(-1)	0.475182	0.015778	30.11766	0.0000
KYDN	0.426401	0.021306	20.01336	0.0000
LEVARAGE	-0.039802	0.009671	-4.115652	0.0001
AGE	-0.157219	0.019453	-8.081953	0.0000
Number of Observations: 168	AR(1) p-value	0.0360	AR(2) p-value	0.2369
Sargan/Hansen J Sta. (p-value)		0.329785	Wald Sta. (p-value)	
			0.0000	

When the results were examined, it was ascertained that the VAIC™ method was affected by its lagged value and its one-term lagged value was positive and statistically significant at the 1% significance level. This result shows that the dependent variable has long-term effects and includes the effects of the past period. Therefore, it can be said that VAIC™ from the previous period has an increasing effect on the VAIC™ method.

When the findings of the independent variable are evaluated, At the point of explaining the dependent variable, it is evident that the independent variable is significant. A statistically significant and positive relationship has been observed between KYDN and the VAIC™ method at the 1% significance level. Accordingly, the increase in the degree of conformity with corporate governance principles has an increasing impact on intellectual capital investments.

When the findings of the control variables were evaluated, it was found that the leverage ratio was negative and statistically significant at the 1% significance level. Accordingly, it can be said that an increase in total debts in enterprises or a decrease in total assets while the total debts are fixed affect the intellectual capital investments in a decreasing way. Another control variable, the age of the enterprise, was found to be negative and statistically significant at the 1% significance level. Accordingly, it can be said that the increase in the age of the business has a decreasing effect on intellectual capital investments.

According to the Arellano & Bond Autocorrelation Test AR(1) value, there is first-order auto-correlation in the model. However, this situation is considered natural due to the structure of the dynamic model. According to the AR(2) value, it seems there is no quadratic auto-correlation and the estimators are consistent.

According to the J (Sargan) value, which tests whether the independent variables are correlated with the error term (internality), it was ascertained that the instrumental variables used in the model are valid (external); in other words, there is no internality (correlation between the 'error' term and explanatory variables) problem in the established model.

According to the Wald test result, which shows the power of the independent variables to explain the dependent variable and the significance of the model as a whole, it was ascertained that the independent variables are sufficient at the point of explaining the dependent variable and the established model is statistically significant.

When the obtained results were evaluated, it was concluded that the independent variable had the power to explain the dependent variable, there was no auto-correlation problem and there was no correlation between the error terms.

5. CONCLUSION AND DISCUSSION

With the transition to the information economy, multi-dimensional and comprehensive transformations have been experienced in the field of business administration. It can be said that factors such as the adoption of transparency at the enterprise level; activities carried out to increase the trust in the enterprises; differences in information and ability in the use of information are influential based on these changes. To ensure institutional transparency, sharing information about the business and using the talents of intellectual assets in the production process and business relations will favorably influence the growth of enterprises and innovations. Thus, the issue of using and effectively managing the knowledge of intellectual assets is intertwined with the comprehension of corporate governance.

When in fact, in definitions made by some authors, the relationship between these two concepts is expressed as follows. Corporate governance is a structure that is responsible for mobilizing and managing the intellectual capital elements arising from the internal and external structure in the stage of achieving enterprise objectives. Thus, corporate governance can be examined as an intellectual capital element that includes intellectual capital owned by the entire enterprise (Yılmaz, 2010: 9).

In addition, there are conceptual links and important commonalities between intellectual capital investments, which are considered as a strategic resource for businesses to create intangible capital and benefit from the leverage effect of this capital, and corporate governance practices that regulate the protection of the rights of all interest groups and the structure of relations between these parties. Both intellectual capital investments and corporate governance practices have identified value creation as the main objective of enterprises. However, the literature review concluded that, theoretically, corporate governance practices can affect the decisions made regarding intellectual capital investments and that intellectual capital migration is mostly caused by weak corporate governance practices.

Therefore, in this study, which aims to determine the level of compliance with corporate governance principles and the mentioned benefits of intellectual capital investments and to determine the relationship between these two concepts, first of all, aims to determine the measurement variables and a detailed literature research has been conducted for this purpose. Then, the sample was selected among the companies included in the XKURY. While selecting the companies, the year range in which the ratings, the number of companies, and the time period can be maximized was chosen.

When the model constructed to determine the stated relationship is evaluated as a whole, the relationship

between these two concepts is positive, statistically significant, and consistent with the literature within the framework of theoretical expectations. Thus, the findings obtained support the results of studies conducted by authors such as Safieddine et al. (2009), Wahid et al. (2013), Makki and Lodhi (2014), Hatane et al. (2017), Dashtbayaz et al. In this context, increasing the degree of conformity with corporate governance principles will increase intellectual capital investments.

Moreover, increasing the degree of conformity with corporate governance principles will contribute to the measurement, improvement, development, and optimum intellectual capital assets management. In addition, when the benefits of both the degree of conformity with corporate governance principles and intellectual capital investments are considered together, implementation of corporate governance principles and optimum management of intellectual capital assets are bound to contribute to the enterprise's value creation, competitive advantage and most importantly, improving/developing its performance. Thus, it can be said that these two concepts have similar effects in terms of their results.

Furthermore, it's a well-known fact that the management quality and financial performance of enterprises that implement corporate governance principles are increased. Therefore, by removing unproductive activities, the effective use of intellectual assets can result in competitive ideas, enhance the manufacturing process, and lower delivery times and costs. This situation supports the assumption that corporate governance applications have a significant effect on intellectual capital productivity.

In a study conducted by the American University of Beirut (AUB) that examines the influence of corporate governance practices on intellectual capital, it was determined that the absence of corporate governance led to an incompetence to captivate and sustain intellectual capital. Furthermore, it was determined that factors such as unfair promotion/reward systems, lack of authorization, and authority uncertainty reduce the satisfaction of intellectual capital elements and accelerate intellectual capital migration (Safieddine et al., 2009). In conclusion, it can be said that corporate governance practices are truly related to intellectual capital, boost the efficiency of intellectual capital, and that corporate governance practices are a hidden force that improve the ability of businesses to attract more intellectual capital.

Finally, considering the results of the studies, it is observed that these two concepts have similar effects/results. Therefore, managers/businesses should give the necessary importance to intellectual capital elements and take measures to develop, grow, and enhance the quality of these elements. In addition, intellectual capital investments should not be seen as a cost element and investments should be made for the training of individuals. Again, within the framework of the basic objective of maximizing the enterprise value, intellectual capital investments and corporate governance practices should be integrated and an organizational culture should be created to ensure its continuity. In addition, corporate governance practices and intellectual capital investments should be integrated with the core activities that create financial capital and tangible value to ensure competitive success.

To overcome the limitations of the research, a wider time period can be taken and more companies can be included in the sample. In addition, the relationship between variables can be revealed by using different analysis techniques. Again, other factors affecting intellectual capital investments can be taken into consideration and used as measurement variables in future studies.

REFERENCES

- Abidin, Z. Z., Kamal, N. M., & Jusoff, K. (2009). Board structure and corporate performance in Malaysia. *International journal of economics and finance*, 1(1), 150-164.
- Achim, M. V., Rus, A. I. D., ve Capraş, I. L. (2023). The Impact of Corporate Governance on Intellectual Capital. Empirical Evidence from Romanian Companies. *European Journal of Interdisciplinary Studies*, 15(1), 156-174.
- Alizadeh, R., Chashmi, S., & Bahnamiri, A. (2014). Corporate Governance and Intellectual Capital. *Management Science Letters*, 4(1), 181-186.
- Al-Musalli, M. A. K., & Ismail, K. N. I. K. (2012). Intellectual Capital Performance and Board Characteristics of GCC Banks. *Procedia Economics and Finance*, 2, 219-226.

- Appuhami, R., & Bhuyan, M. (2015). Examining the influence of corporate governance on intellectual capital efficiency: Evidence from top service firms in Australia. *Managerial Auditing Journal*, 30(4/5), 347-372.
- Arachchi, I. M., & Niwarthana, H. D. S. (2021). Impact of Corporate Governance on Intellectual Capital Efficiency: Evidence from Sri Lanka. *Global Review of Accounting and Finance* Vol.12 . No.1. July 2021 Issue. Pp. 28-42
- Arellano, M. ve Bond, S. (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, *The Review of Economic Studies*, 58 (2), 277-297
- Arellano, M. ve Bover, O. (1995). Another Look at the Instrumental Variable Estimation of Error-Components Models, *Journal of Econometrics*, 68 (1), 29-51.
- Bhattu-Babajee, R., ve Seetanah, B. (2022). Value-added intellectual capital and financial performance: Evidence from Mauritian companies. *Journal of Accounting in Emerging Economies*, 12(3), 486-506.
- Blundell, R. ve Bond, S. (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Model, *Journal of Econometrics*, 87 (1), 115-143.
- Cerbioni, F., & Parbonetti, A. (2007). Exploring the Effects of Corporate Governance on Intellectual Capital Disclosure: An Analysis of European Biotechnology Companies. *European Accounting Review*, 16(4), 791-826.
- Dashtbayaz, M. L., Salehi, M., Mirzaei, A., & Nazaridavaji, H. (2020). The Impact of Corporate Governance on Intellectual Capitals Efficiency in Iran. *International Journal of Islamic and Middle Eastern Finance and Management*, 13(4), 749-766.
- Faisal, M., Hassan, M., Shahid, M. S., Rizwan, M., ve Qureshi, Z. A. (2016). Impact of corporate governance on intellectual capital efficiency: evidence from KSE listed commercial banks. *Scientific International*, 28(4), 353-361.
- Gökdeniz, İ, & Kılınç Y. (2018). The Relationship Between Institutional Investors Ownership and Brand Value: An Application. *Journal of Social and Humanities Sciences Research (JSHSR)* 5(31), 4884-4893.
- Gözgör, G. & Pişkin, A. (2011). Unemployment and Trade: Generalized Method of Moments-Dynamic Panel Data Approach for Regions of Turkey. *Business and Economics Research Journal*, 2(3): 121-138.
- Greene, W. H. (2003). *Econometric Analysis*, Pearson Education, New Jersey
- Gülcemal, T., ve Çitak, L. (2017). Entelektüel katma değer katsayısı yöntemi ile ölçülen entelektüel sermayenin firma performansı üzerindeki etkisi. *Cumhuriyet Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 18(1), 35-55.
- Hansen, L. P. (1982) Large Sample Properties of Generalized Method of Moments Estimators, *Econometrica*, 50 (4), 1029-1054.
- Hatane, S. E., Djajadi, A. T., ve Tarigan, J. (2017). The Impact Of Corporate Governance On Intellectual Capital And Firm Value: Evidence From Indonesia And Malaysia Consumer Goods (*Doctoral dissertation, Petra Christian University*).
- Holtz-Eakin, D., Newey, W. ve Rosen, H. S. (1988). Estimating Vector Autoregressions with Panel Data, *Econometrica*, 56 (6), 1371-1395.
- Hsiao, C. (2007). Panel Data Analysis-Advantages and Challenges, *Test*, 16 (1), 1-22.
- Jamei, R. (2017). Intellectual capital and corporate governance mechanisms: Evidence from Tehran stock exchange. *International Journal of Economics and Financial Issues*, 7(5), 86.
- Keenan, J., & Aggestam, M. (2001). Corporate Governance and Intellectual Capital: Some Conceptualisations. *Corporate Governance: An International Review*, 9(4), 259-275.
- Makki, M. A. M., & Lodhi, S. A. (2014). Impact Of Corporate Governance on Intellectual Capital Efficiency and Financial Performance. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 8(2), 305-330.
- Meressa, H. A. (2016). The effect of corporate governance on intellectual capital performance of commercial banks in Ethiopia: An analysis of random effects. *Journal of Economics and Sustainable Development*, 7(15),

110-118.

- Musleh Al-Sartawi, A. (2018). Corporate Governance and Intellectual Capital: Evidence from Gulf Cooperation Council Countries. *Academy of Accounting and Financial Studies*, 22(1).
- Öztürk, M. B., & Demirci, K. (2008). Kurumsal Yönetim Bakış Açısıyla Entellektüel Sermaye. *The Journal of Selçuk University Social Sciences Institute*, (19), 395-411.
- Paknezhad, M., & Ahmadkhani, A. (2012). Value added intellectual coefficient (VAIC): an empirical study. *Management science letters*, 2(3), 745-750.
- Ramadan, M., & Majdalany, G. (2013). The Impact of Corporate Governance Indicators on Intellectual Capital Disclosure: An Empirical Analysis from The Banking Sector in The United Arab Emirates. In *Proceedings of the International Conference on Intellectual Capital, Knowledge Management & Organizational Learning* (pp. 351-361).
- Safieddine, A., Jamali, D., & Noureddine, S. (2009). Corporate Governance and Intellectual Capital: Evidence from An Academic Institution. *Corporate Governance*, 9(2), 146-157.
- Svanadze, S., ve Kowalewska, M. (2015). The measurement of intellectual capital by VAIC method-example of WIG20. *Online Journal of Applied Knowledge Management*, 3(2).
- Swartz, N. P., & Firer, S. (2005). Board Structure and Intellectual Capital Performance in South Africa. *Meditari Accountancy Research*, 13(2), 145-166.
- Tulung, J. E., Saerang, I., & Pandia, S. (2018). The influence of corporate governance on the intellectual capital disclosure: a study on Indonesian private banks. *Banks and Bank Systems*, 13(4).
- Wahid, A., Abu, N. A., Latif, W. A., ve Smith, M. (2013). Corporate Governance and Intellectual Capital: Evidence from Public and Private Universities. *Higher education studies*, 3(1), 63-78.
- Widiatmoko, J., Indarti, M. G. K., ve Pamungkas, I. D. (2020). Corporate Governance on Intellectual Capital Disclosure and Market Capitalization. *Cogent Business & Management*, 7(1), 1750332.
- Yerdelen, Tatoğlu F. (2020a). Panel Veri Ekonometrisi (5. Baskı). İstanbul: Beta Yayıncılık
- Yerdelen, Tatoğlu F. (2020b). Ekonometri. İstanbul: Beta Yayıncılık
- Yılmaz, F. Ö. (2010). Corporate Governance in Banks-Relationship Between Intellectual Capital. *Journal of Selçuk University Social Sciences Vocational School*, 13(1-2), 1-12.