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THE RELATIONSHIP BETWEEN FINANCIAL PERFORMANCE AND EXISTENCE OF MEMBERS WITH ACCOUNTING OR AUDIT BACKGROUND IN THE BOARD OF DIRECTORS: EVIDENCE FROM TURKISH BANKING SECTOR

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Abstract

The relationship between financial performance and structure of board of directors (BoD) of enterprises is among the research topics in the literature. In this study, the relationship between financial performance and existence of members with accounting or audit background in the BoD of banks, which has not been studied in previous academic literature is analyzed. Dependent variables are chosen as ROA and ROE and the ratio of members with accounting or audit background in the BoDs of banks is chosen as the independent variable. Two distinct periods are used to test the existence of the relationship, which are 2017-2021 and 2016-2020. In the analysis, Kruskal-Wallis H test and Mann-Whitney U test are applied. As a result, a significant difference in bank performances depending on the presence of members with accounting or audit background in BoD is identified in both ROE and ROA with different extends.

Keywords: *Accounting, Audit, Board of Directors, Bank Financial Performance*

Jel Classification: *M40, M41, M42*

FİNANSAL PERFORMANS VE YÖNETİM KURULLARINDA MUHASEBE VEYA DENETİM GEÇMİŞİ OLAN ÜYELERİN BULUNMASI ARASINDAKİ İLİŞKİ: TÜRK BANKACILIK SEKTÖRÜ ÖRNEĞİ

Öz

İşletmelerin finansal performansı ve yönetim kurullarının yapısı arasındaki ilişki literatürdeki araştırma konuları arasında yer almaktadır. Bu çalışmada, daha önceki akademik çalışmalarda araştırılmayan, bankaların yönetim kurullarındaki muhasebe veya denetim geçmişi olan üyelerin dahil edilmesi ile bankaların finansal performansları arasındaki ilişki araştırılmıştır. Çalışmanın bağımlı değişkeni olarak özkaynak kârlılığı ve aktif kârlılığı, bağımsız değişken olarak ise bankaların yönetim kurullarında yer alan muhasebe veya denetim geçmişine sahip üyelerin oranı seçilmiştir. İlişkinin mevcudiyetini test etmek için iki farklı dönem, 2016-2020 ve 2017-2021 kullanılmıştır. Analizlerde, Kruskal-Wallis H testi ve Mann-Whitney U testi uygulanmıştır. Sonuç olarak, yönetim kurullarında muhasebe veya denetim geçmişi olan üyelerin bulunmasına bağlı olarak, ROE ve ROA'de farklı seviyelerde, banka performansları açısından anlamlı bir farklılık bulunduğu belirlenmiştir.

Anahtar Kelimeler: *Muhasebe, Denetim, Yönetim Kurulu, Banka Finansal Performansı*

Jel Sınıflandırması: *M40, M41, M42*

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1. Introduction

Businesses operate to achieve their goals and create value for their stakeholders. In their activities, different bodies play predefined roles in meeting the vision and goals of companies. One of the bodies created in the business organization is the board of directors (BoD). The main responsibility of the board of directors is to ensure that the activities of the enterprises are carried out on behalf of the shareholders. Boards of directors are the governing bodies where critical decisions regarding the activities of the institutions are made. It is the highest-level authority responsible for the management, administration and supervision of businesses and the reporting line between management bodies and shareholders. From this point of view, it is thought that the success and design of the activities of the board of directors may have a direct impact on the financial performance of the enterprises.

Banks are one of the main actors of the economy. Their high financial performance contributes to the proper functioning of the country's economies and ensures long-term economic stability. On the other hand, trust in banks is a critical factor for depositors and this is the core of the loan allocation mechanism, which is the main role of the banking system. Boards of directors in banking companies are responsible for establishing internal systems (namely internal audit, internal control and risk management), securing financial reporting processes, and determining responsibilities and authorities, among other responsibilities given by regulatory authorities (Banking Law, 2005). Considering the duties and responsibilities of the board of directors, they have significant effects on the financial performance of banks.

There are studies in both national and international literature examining the effect of the structure of the board of directors on the performance of banks. In addition to similar studies in the literature, the main purpose of this study is to determine whether the accounting or auditing expertise of the members of the board of directors of banks is related to financial performance. It is though that capabilities of the board members and overall suitability of the board in understanding business affairs and emerging risks are key for the success of this body and also with the financial results of the companies. To the best knowledge, there is no academic study in the literature examining the relationship between the expertise of board members and financial performance from this point of view. Another purpose of this study is to emphasize the importance of accounting and auditing professions and expertise in these fields. Since this may be a pioneering study in its subject, it may lead researchers to study this subject with different methods and approaches.

Standing point of the research is comprise from the different theories, as agency theory, resource dependency theory and resource-based view. In the theoretical background section, these theories are explained, and research base is defined. Following this first section, an institutional setting part is presented by analysing legal and regulatory background of the working principles of the boards. In order to perform this duty, banking regulations are examined. After that, literature regarding the topic review is summarized. Simultaneously, hypothesis used in the research part are defined. The research part starts with discussions on objective, methodology and limitations of the study. Finally, all findings are presented, and conclusions are summarized.

2. Theoretical Background

Board structure, characteristics of the members of the board, their diversity and their relationship with business performance are discussed within the scope of three main theories: agency theory, resource dependence theory and resource-based view. Explanations of these theories are given in the following sub-sections.

2.1. Agency Theory

This theory was first introduced by Berle & Means (1932) and developed by Jensen & Meckling (1976). The relationship that emerges within the scope of agency theory is an agreement in which principals transfer their rights to perform certain tasks and make decisions on their behalf to agents. Agents, who are the representatives of principals (shareholders of the enterprises), will be able to act in their own interests rather than the interests of shareholders or the institution (Jensen & Clifford, 2000: 97). Agents have more information about business activities than principles who elect them. This situation emerges as an information asymmetry problem. However, it is a separate problem to determine whether principal uses the fact that he has more information than the agent himself or not (Osnabrugge, 2000: 93).

Agency problem, which arises within the scope of the agency theory, can be stated simply as the conflict of aims and interests of principals and agents (Demski & Feltham, 1978: 336-359). Agency problem can be categorized in two main categories as adverse selection and moral hazard. Adverse selection problem emerges as a result of one of the parties hiding a needed information before the contract is signed. Moral hazard, on the other hand, arises from hiding the results of the activities that occur after the contract is signed (Mesjasz, 2008: 133).

Agency theory emphasizes separation of ownership and management in organizations. Agency relationship between principals and agents reveals three main problems by causing performance of businesses to be adversely affected. The first one is whether the directors make necessary effort to look after the interests of the shareholders. The second problem arises as a result of the possibility of directors misappropriating business assets. The last problem emerges from the difference in risk preferences of shareholders and directors (Alp ve Kılıç, 2014: 40).

In order to reduce the costs incurred as a result of the principal-agent relationship; diversifying the structure of the BoD and making it effective will have a positive effect on the financial performance of the enterprises (Tan & Bal, 2021: 39). In the structure of the BoDs, factors such as occupational and professional diversity of members, total number of members in the board, number of independent members, number of foreign members, and number of female members are in relationship with financial performance of the business (Karoğlu, 2016: 66).

2.2. Resource Dependence Theory

According to the resource dependency theory, business directors will be able to influence structural and environmental conditions. This theory focuses on the relationship of the enterprise with its environment on the axis of strength-dependence. Each enterprise is a part of the network within which it is located in other organizations. Businesses are dependent on resources such as capital, raw materials, labor, technology, etc. in order to maintain their existence. They have to communicate with different organizations in order to obtain these resources (Ergyun, 2013: 18). BoD is the most important decision body of organizations in terms of providing the resources needed for the continuation of the enterprise and providing communication with the environment of the enterprise (Zahra and Pearce, 1989).

BoDs manage the relations of businesses with their environment and play a decision-making role in this process (Hillman, Cannella, & Paetzold, 2000). When evaluated from this point of view, considering the dependence of enterprises on external resources, it turns out that BoDs are extremely important for enterprises. Therefore, diversity, expertise and experience of the members of the BoD play important role in ensuring the continuity of the enterprise's access to external resources (Karslıoğlu, 2014: 8).

2.3. Resource-Based View

Resource-based view explores the reasons for the competitive advantage and performance differences between businesses (Monticelli et al., 2017: 359). This view has been taken as a theoretical argument in study areas such as family businesses, international business strategies, entrepreneurship, technology management, relational management, corporate diversification (Peng et al., 2018: 4).

Resource-based view attributes the secrets of sustainable competitive advantage and sustainability for companies to the valuable, rare, non-substitutable and inimitable resources of companies and the heterogeneous distribution of these resources among companies, taking into account internal factors rather than the external ones (Peteraf, 1993; Wernerfelt, 1984; Barney and Hesterly, 1999). Resource-based view includes two basic assumptions based on the resources and capabilities of organizations. First, resources and capabilities show a heterogeneous distribution among organizations. Second, this distribution is non-transferable and describes the essence of resource-based view (Barney & Hesterly, 1999).

When evaluated in terms of BoDs, valuable, rare, inimitable and non-substitutable resources that this theory suggests for businesses can also be applied to human resources in the BoD. It is very difficult to imitate the characteristics of board members such as knowledge, experience, professional background and education. Therefore, structure of the BoD will enable businesses to achieve sustainable competitive advantage. This theory also emphasizes that board members can play an important role in providing businesses with unique resources (Madhani, 2017: 17). According to this view, diversity of the board, knowledge and experience of the directors are sources of competitive advantage that lead to higher board performance (Kakabadse et al., 2001). These resources serve as support for the success, existence and sustainability of the company (Madhani, 2017: 18).

To conclude, all three theories mentioned above emphasize the importance of BoDs in terms of existence, continuity, success, financial performance and competitive advantage of businesses. The importance of the BoD comes from its fundamental responsibilities in corporate governance structure (Tepegöz and Ala, 2019: 209). Structure of the BoDs along with occupational or professional diversity of the members directly affect the decisions taken within the enterprises and the performance of the company. It is thought that presence of members with accounting or audit backgrounds in the BoDs will provide a different diversity to the boards in this sense and contribute positively to the performance of the board and thus the company. The main reason of this inference is that members with such a background have the potential to add value to board meetings and business activities, with their dominance of financial statements, their ability to read and interpret financial or non-financial data, the importance they attach to risk, compliance and control issues, and their knowledge of legal regulations and markets. From this point of view, statistical analyzes are carried out in the analysis part of the study, taking the stated perspective and theoretical framework as the basis.

3. Institutional Setting

Different legislative provisions in our country regulate the structure of the board of directors and some of the features that the members should have. In this respect, the first legal regulation that came to the fore in our country is Turkish Commercial Code numbered 6102. Turkish Commercial Code regulates that the responsibility of the BoD in organizing the systems for accounting, audit and financial planning cannot be delegated. Banking Law numbered 5411 regulates that;

- BoD cannot be constituted with less than five members.
- The authority of allocating loan limits is given to the BoD.

Furthermore, regulations for companies subject to capital market legislation are regulated by the Capital Markets Board. According to the Capital Markets Law numbered 6362, preparing and presenting financial statements and accuracy of the financial data are the responsibility of the BoD in capital market instrument issuing companies.

When the structure, duties, responsibilities and qualifications of the members of the board of directors are evaluated in terms of banks, regulations have been made within the scope of different legislations. The primary legislation that banks are subject to is the Banking Law. According to the Banking Law, the Audit Committee is formed consisting of at least two non-executive members of the BoD and this specialized committee, on behalf of the BoD, is responsible for:

- Monitoring the bank's internal systems,
- Monitoring accounting and reporting systems,
- Monitoring independent audit firms' activities.

In addition to the Banking Law, various legal regulations made by the Banking Regulation and Supervision Agency (BRSA) reveal the expectations of BRSA, which is the regulatory legal authority for the banking sector, for the BoDs of banks. According to the Regulation on the Banks' Internal Systems and Internal Capital Adequacy Evaluation Process which is announced by the BRSA, BoD is responsible for;

- Establishing and operating internal systems,
- Having capable of obtaining accurate data from accounting and financial reporting system,
- Taking measures to correct the errors and deficiencies,
- Having information about potential risks,
- Defining the risk appetite,
- Monitoring the effectiveness of the internal systems.

In addition, the principles regarding the corporate governance mechanisms that should be established within the banks were also regulated by BRSA with a different legislation. BRSA's Regulation on the Banks' Corporate Governance Principles states that;

- Banks' BoD should define the vision and the mission of the bank and announce them to the public.
- The BoD should monitor achieving targets, operations and performance of the bank effectively and continuously.

Moreover, in Regulation on the Banks' Accounting Practices and Document Retention Rules and Principles, a regulation for banks' accounting practices published by BRSA, it is stated that the BoD is responsible for;

- Financial reporting system including the accounting of activities, preparing, approving, auditing and reporting financial statements,
- Defining roles, authorities, and responsibilities,
- Having information systems at a capable level,
- Monitoring the practices.

As explained above, BoD has the ultimate responsibility in accounting and audit related issues as mentioned in regulatory framework in Turkey. Although any specific definition for the qualifications of members does not exist in the regulations, a need can be considered that some of the members of the BoD can have special knowledge or experience in these fields for proper execution of their responsibilities. On the other hand, execution of these responsibilities via BoD members who have accounting/ audit backgrounds can have positive effects on the financial results of the banks by considering the role of the BoD in company level.

4. Literature Review & Hypothesis Development

Financial performance of both financial and non-financial enterprises and the factors affecting their financial performance have a wide application area in national and international literature. When evaluated in terms of factors affecting performance, the effect of financial data or corporate governance variables on company performance is one of the prominent issues. In terms of corporate governance variables, structural features and composition of the BoDs and the relation between the members' expertise and business performance appear as frequently researched subjects.

In this section, studies in both national and international literature that analyze the relation between BoD structure and members' expertise with financial performance of companies are included. Literature review results are presented in Table 1 below.

Table 1: Literature Review: Accounting/Audit Background

Study / Sample	Related Dependent and Independent Variables	Related Results
Güner et al. (2008) Sample of publicly traded companies (1988-2001)	Panel A: Director Summary: Female, insider, uutsider, tenure, number of other directorships, age Panel B: Firm Summary: ROA, ROE, Altman's Z-score, BoD independence Panel C: Industry Groups	Finance experts affect finance and investment policies.
Minton et al. (2011) 198 investment banks, commercial banks and S&Ls (2003-2008)	Panel A: All commercial banks; Panel B: Large Commercial banks % Financial expert among independent directors, % independent directors	In crisis period, firm value and stock performance of large banks are worse that have more independent directors with financial expertise. Level of financial expertise has positive relation with risk taking.
Qiao et al. (2018) S&P 500 firms (2005-2012)	Dependent Variable: Dividend payment level; Independent Variables: Existence of accounting experts on the audit committee, Existence of management experts on the audit committee,	Companies with accounting experts on their BoDs maintain lower dividend levels than the others. Accounting expertise of the Audit Committee members ensures smooth dividend payments. The study emphasizes the importance of the advisory roles of directors with professional expertise.
Aebi et al. (2012) 372 banks (2006)	ROE, ROE (lagged), CRO in executive BoD, BoD independence, % of directors with finance background, % of directors older than 72, Income diversity	Relationship between bank performance and non-executive directors' financial expertise is found negative.
Niazi et. al (2021) 220 listed non-financial companies (2008-2017)	Dependent Variable: ROE; Independent Variables: Director financial expertise	Director's financial expertise supports the negative relation between political connection and return on equity.
Defond et al. (2005) 850 outside directors for 592 firms (2002-2003)	Dependent Variables: Total assets, market capitalization, market-to-book, leverage, ROA; Independent Variables: Accounting financial expert, non-accounting financial expert, non-financial expert	Accounting financial expertise of audit committee members improves corporate governance only if the member and the company facilitate the use of such expertise.
Firth et al. (2016) Regulatory enforcement cases (2003-2010)	Panel A: By regulatory institution; Panel B: By types of violation, Panel C: By sanctions on fraud firms, Panel D: By sanctions on directors	Independent directors of the BoD having accounting expertise are more likely to be penalized by securities regulatory commission. Insider directors suffer more severe penalties than the independent directors.

Table 1 (Continued): Literature Review: Accounting/Audit Background

Study / Sample	Related Dependent and Independent Variables	Related Results
Arioğlu & Arioğlu Kaya (2015) 290 firms for 2012 and 287 firms for 2013	Panel A: Firm Properties: CEO duality, BoD business, BoD size, number of independent BoD members Panel B: Director Characteristics: Number of directors, female, foreigner, educated abroad, finance expert, accounting expert, lawyer, professor, agebusy director, independent director	Board business and advising quality do not affect financial performance.
Dionne & Triki (2005) 347 observations from gold mining firms	Dependent variable: Delta of the risk management portfolio / Expected production Independent Variables: Audit committee member with financial education, Audit committee member with accounting background, Unrelated directors, Audit committee member with financial activity	Audit committee member with financial education

More studies containing results on the relationship between diversification of board members and financial performance can be found in Appendix section. Combined results of the studies in both financial expertise and diversity on financial performance can be listed as below:

- When studies in the literature are examined, it is seen that one or more of the variables such as ROA, ROE, Tobin's Q, net interest margin, capital adequacy ratio and NPL are selected as the dependent variable. On the other hand, in the determination of independent variables, different approaches are followed by the studies. Size and composition of the BoDs, nationality, gender diversity, political affiliation, tenure, age, presence of independent and non-executive or non-executive members are among the analyzed independent variables.
- In addition to the independent variables, the audit committee members' accounting background in relation to the expertise of the BoD or audit committee members, ratio of independent or other members of the BoD with financial expertise, number of members with industry expertise, presence of members having economics or business degrees and the information technology expertise of the members on financial performance are investigated.
- Studies reported different results on the relationship between the expertise of the members of the BoD or the audit committee and financial performance. In crisis period, as Minton et al. (2011) reported, firm value and stok performance of large banks which have more independent directors with financial expertise are worse than the smaller ones, indicating a positive relationship between the financial expertise and financial performance. Mojambo et al. (2020), determined a positive relation between IT expertise of BoD members and bank's capital adequacy ratio, while Aebi vd. (2012) identified a negative relationship between financial expertise of non-executive members of the BoD and bank performance. Topaloğlu and Ege (2018) cannot report a significant relationship between sector expertise of the members of the BoD and bank performance. In their study on gold mining enterprises, Dionne and Triki (2005) reported a significant relationship between presence of audit committee members with finance education background and delta of the risk management portfolio/ expected production.

Depending on the results obtained from the literature review, studies can be classified into different categories. Some studies find a positive relationship, while some others are reporting negative relationship between the defined variables. Others cannot report the sign of the relationship but find a significant relationship. Rest of the studies cannot report a relationship. Depending on the results, and considering the aim of the study, hypotheses are formed as follows:

H_0: There is no difference among the profitability of the banks grouped depending on the weight of the members with accounting/audit background in the BoD.

H_1: There is a difference among the profitability of the banks grouped depending on the weight of the members with accounting/audit background in the BoD.

At the further stage, Mann-Whitney U test is decided to be performed to identify if any difference can be reported between comparing group pairs. The test hypotheses are formed as follows:

H_0: There is no difference between the profitability of selected two groups in which banks are categorized by the weight of the members of the BoD with an accounting/audit background.

H_1: There is a difference between the profitability of selected two groups in which banks are categorized by the weight of the members of the BoD with an accounting/audit background.

5. Research Design

5.1. Objective of the Study

As discussed in the theoretical background and regulatory framework, BoD has the ultimate responsibility in organizing accounting and audit systems in the banks. The objective of this study is to analyze the relation between expertise of BoD members and bank performance. This study is important in terms of analyzing the relationship between accounting and audit expertise and financial performance. In addition, it is thought that the study emphasizes the importance of accounting and audit professions and expertise in these fields by raising awareness on this issue.

By examining the relationship between performance of banks and background of BoD members, the need in BoD levels for these specialized areas is aimed to be understood. If such a need can be defined in the first stage, as a second step, the degree of this necessity is planned to be analyzed within the majority vote concept, by comparing two groups. BoDs in which more than 50% of members have accounting/ audit background and BoDs in which less than 50% of members have accounting/ audit background (but have at least one member). When any difference among the group performances cannot be reported within these percentiles, 70% concentration in members with audit/ accounting background is also tested.

The following criteria are taken into account in determining whether members of the BoD have accounting or audit background. Members meeting at least one of these criteria are considered to have the required expertise.

- Work experience: Members have previous work experience as an internal auditor, independent auditor, accountant, accounting unit manager/ staff, certified public accountant or sworn-in certified public accountant in either private or public sector organizations.
- Professional certificates: Members hold at least one of the generally accepted accounting or audit related professional certificates such as CPA, sworn-in CPA, Certified Internal Auditor, Certified Information Systems Auditor, Certified Fraud Examiner, etc.
- Education: Members hold undergraduate or postgraduate degrees in accounting or audit.
- Academic Research Field: Members have an academic title in the field of accounting or audit.

5.2. Methodology

In line with the objectives of the study, one dependent variable and one independent variable are selected. Both variables are obtained from the annual reports of Turkish banks. In order to analyze the dependent variable within the scope of the model, 5-year data of banks for the period 2017-2021 are used. Businesses have short and long-term goals and these goals are determined by the BoD. Short-term goals are up to two and long-term goals are up to five years. For this reason, the emergence of the effects of these targets on businesses may extend up to a period of 5 years (Eren, 2013: 17). From this point of view, it is concluded that a 5-year interval would be appropriate during the selection of the review period. Another period, which is 2016-2020 is also used to check the validity of the results found from the period 2017-2021. The variables are analyzed by using SPSS software and the proper statistical methods are selected before the conclusion.

In determining the number of members with accounting/ audit backgrounds among the members of the BoD, which are considered as the dependent variable, the resumes of the members are obtained from the annual reports or web sites of the banks.

5.3. Limitations

Dependent variables ROA and ROE are calculated by using the numbers obtained from the balance sheets of the banks. This kind of calculation requires an approximation which is related with the nature of the figures. Equity level is a stock variable that represents a value related to a particular moment, a date, but return is the presentation of performance for a pre-specified period, a year, or the like. Average equity levels can be used for more accurate calculations to align both variables converting a stock value to a periodic value. On the other hand, for the purpose of the study, which is a comparison, the figures from the year-ends are considered useable and satisfactory. For this reason, instead of making extra calculations such as averaging quarter-end levels, year-end financial figures are taken into consideration.

Independent variable, ratio of number of members with accounting/ audit backgrounds to the total, is calculated by the data obtained from annual reports. The criteria chosen for determining accounting/ audit background are experience, professional certifications, education and academic research field in these specific areas. On the other hand, information presenting in annual reports regarding the experience and certifications of the members of the BoD may be incomplete. Data accuracy is limited to what is presented in these reports.

Limitations of the statistical method used can be considered when evaluating the limitations of the study. Besides, in commenting on the statistical results in conclusion section, other potential factors which affect bank performance, and the roles other than the BoD in governance and management of the bank that directly or indirectly affect financial results can be taken into consideration.

5.4. Findings

In the model, 37 banks operating in Turkey (excluding those transferred to the Savings Deposit Insurance Fund due to the financial and operational results and those for which no data could be obtained) are included for all the years 2017-2021 and 185 observations are obtained. As dependent variables, both return on asset (ROA) and return on equity (ROE) are chosen. The same method is performed for the period 2016-2020 to test the reliability of the results gathering from the period 2017-2021. The list of the banks included in the study is depicted in Table 2 below.

Table 2: Turkish Banks Included in the Study

Halk Bankası	Odea Bank
Yapı ve Kredi Bankası	GSD Yatırım Bankası
Akbank	Turkland Bank
Anadolubank	Nurol Yatırım Bankası
Fibabanka	Aktif Yatırım Bankası
Şekerbank	Bank of America Yatırım Bank
Ziraat Bankası A.Ş.	JPMorgan Chase Bank
Türk Ekonomi Bankası	BankPozitif
Alternatifbank	İller Bankası
Arap Türk Bankası	İstanbul Takas ve Saklama Bankası
Bank Mellat	Garanti Bankası
Denizbank	Pasha Yatırım Bankası
Vakıflar Bankası	QNB Finansbank
Intesa Sanpaolo	Standard Chartered Yatırım Bankası Türk
Habib Bank	Türk Eximbank
HSBC Bank	Türkiye Kalkınma ve Yatırım Bankası
ICBC Turkey Bank	Türkiye Sınai Kalkınma Bankası
İş Bankası	Diler Yatırım Bankası
Deutsche Bank	

First, ROA results are analysed for the period 2017-2021.

Bank's BoDs are grouped according to the number of members with accounting/ audit background, and a triple classification is performed as those who have no members with accounting/ audit background in the BoDs, those with a weight of 0 to 49% in the accounting/ audit background, and those with accounting/ audit backgrounds weighing more than 50%.

During the analyzes, Kolmogorov-Smirnov Test is used and it is identified that these data classes cannot provide the normality tests. Descriptive statistics are depicted in the following table.

Table 3: Data Groups Descriptive Statistics

Ranks

	BoD	N	Mean Rank
ROA	0%	9	56,28
	1%-49%	142	94,56
	50%-100%	34	96,19
	Total	185	

As can be seen from Table 3, 9 out of 185 observations are the banks that do not have an accounting/ audit background member on their BoD, and 142 of total are banks that have accounting/ audit background members with a weight below 50%, while for 34 banks a weight of accounting/ audit background members in total members are greater than 50% that represents majority of votes for these banks. When ROAs are compared for the groups, it can be observed that ROA is the highest in the group with at least half of the members have accounting/ audit background and the lowest in the group in which any accounting/ audit background member is not present in the BoD.

Due to the non-parametric data design and considering the number of groups, the implementation of Kruskal-Wallis test is chosen. By performing this statistical analysis, it is tried to be understood if the difference of ROA mean values are meaningful.

The results of the test performed are given in Table 4.

Table 4: Kruskal-Wallis Test Results

Test Statistics[a,b]

	ROA
Chi-Square	4,474
df	2
Asymp. Sig.	,107

a. Kruskal Wallis Test

b. Grouping Variable: BoD

According to the test result, the H_0 hypothesis cannot be rejected. This result shows that the difference in the performance of the banks grouped according to the weight of the members with accounting/ audit background in the BoD is not significant.

After that, grouping criteria 50% is changed to 70% to analyze the differences among bank groups' performances. The same procedure is applied. Data ranks are shown in Table 5.

Table 5: Data Groups Descriptive Statistics

Ranks

	BoD	N	Mean Rank
ROA	0%	9	56,28
	1%-69%	170	94,75
	70%-100%	6	98,58
	Total	185	

Kruskal-Wallis test results are reported as shown in Table 6 below.

Table 6: Kruskal-Wallis Test Results

Test Statistics[a,b]

	ROA
Chi-Square	4,479
df	2
Asymp. Sig.	,107

a. Kruskal Wallis Test

b. Grouping Variable: BoD

As test results show, any significant difference between the bank groups with different weights of audit/ accounting background of members in their boards cannot be reported.

As a last step, differences in performance of the bank groups with at least one member with audit/ accounting background and the case of none of the members with this expertise are examined. Data ranks can be seen from Table 7.

Table 7: Data Groups Descriptive Statistics

Ranks

	BoD	N	Mean Rank	Sum of Ranks
ROA	0%	9	56,28	506,50
	>0%	176	94,88	16698,50
	Total	185		

Since number of the groups is limited, Mann-Whitney U test is applied, and the following results are obtained as shown in Table 8.

Table 8: Mann Whitney U Test Results

Test Statistics[a]

	ROA
Mann-Whitney U	461,500
Wilcoxon W	506,500
Z	-2,109
Asymp. Sig. (2-tailed)	,035

a. Grouping Variable: BoD

Since the test result shows a significant difference between the groups, it can be commented that bank group having at least one audit/ accounting background member in their board and bank group consists of the banks not having this member in their board show performance differences, if ROA is considered for the period 2017-2021.

The same tests are applied to the other dependent variable, which is ROE.

In this case, first, 50% critical level is taken. Since the group criteria is identical with the data used in ROA as a dependent variable, the rank table will not be repeated in this section and only test results will be reported.

Kruskal Wallis test results are found as shown in Table 9.

Table 9: Kruskal-Wallis Test Results

Test Statistics[a,b]

	ROE
Chi-Square	1,913
df	2
Asymp. Sig.	,384

a. Kruskal Wallis Test

b. Grouping Variable: BoD

Any significant difference among the groups cannot be reported for the cases with no member and 50% minus and 50% plus weights in the board. In order for further analysis, 70% is applied once instead of 50%. In this case, Kruskal Wallis test results are reported as shown in Table 10.

Table 10: Kruskal-Wallis Test Results

Test Statistics[a,b]

	ROE
Chi-Square	2,771
df	2
Asymp. Sig.	,250

a. Kruskal Wallis Test

b. Grouping Variable: BoD

Again, a significant difference cannot be found among the groups. In the last step, inclusion of at least one member with audit/ accounting background to the board is tested from the performance point of view. Mann Whitney U test results regarding these two groups are reported in Table 11.

Table 11: Mann-Whitney Test Results

Test Statistics[a]

	ROE
Mann-Whitney U	605,000
Wilcoxon W	650,000
Z	-1,193
Asymp. Sig. (2-tailed)	,233

a. Grouping Variable: BoD

Any significant difference between the groups cannot be reported. Thus, with performance criteria ROE, any significant difference cannot be reported among the bank groups for the period 2017-2021.

If we summarize the results from 2017-2021 data, although a significant difference in ROA results can be reported between the bank groups with and without audit/ accounting background members in their boards, when at least one member is included to the board, the weight of similar board members in entire board do not make any difference in the bank performances. If ROE is taken into consideration, any significant difference in bank performances for bank groups with any level of the weight cannot be shown.

The same analysis is reperformed with another 5-years period, 2016-2020. The purpose of doing this is to test the results obtained from the period 2017-2021 with another data set.

First, ROA is used. When the critical value is taken as 50% the ranking becomes as shown in Table 12.

Table 12: Data Groups Descriptive Statistics

Ranks

	BoD	N	Mean Rank
ROA	0%	9	40,06
	1%-49%	139	94,74
	50%-100%	37	99,35
	Total	185	

Kruskal Wallis test results are depicted in Table 13.

Table 13: Kruskal-Wallis Test Results

Test Statistics[a,b]

	ROA
Chi-Square	9,465
df	2
Asymp. Sig.	,009

a. Kruskal Wallis Test

b. Grouping Variable: BoD

Since a significant difference reported among the groups, for further analysis, Mann Whitney U tests will be used for different pair combinations. The results of Mann Whitney tests are summarized in Table 14 below.

Table 14: Mann Whitney Test Results

Ranks

	BoD	N	Mean Rank	Sum of Ranks
ROA	0%	9	33,50	301,50
	1%-49%	139	77,15	10724,50
	Total	148		

Test Statistics[a]

	ROA
Mann-Whitney U	256,500
Wilcoxon W	301,500
Z	-2,961
Asymp. Sig. (2-tailed)	,003

Ranks

	BoD	N	Mean Rank	Sum of Ranks
ROA	0%	9	11,56	104,00
	50%-100%	37	26,41	977,00
	Total	46		

Test Statistics[b]

	ROA
Mann-Whitney U	59,000
Wilcoxon W	104,000
Z	-2,977
Asymp. Sig. (2-tailed)	,003
Exact Sig. [2*(1-tailed Sig.)]	,002[a]

Ranks

	BoD	N	Mean Rank	Sum of Ranks
ROA	1%-49%	139	87,58	12174,00
	50%-100%	37	91,95	3402,00
	Total	176		

Test Statistics[a]

	ROA
Mann-Whitney U	2444,000
Wilcoxon W	12174,000
Z	-,463
Asymp. Sig. (2-tailed)	,643

The results show that a significant difference between (0%) and other two groups can be reported. Thus, when ROA is considered for the period 2016-2020, if the banks are grouped as with and without audit/accounting background in their boards, a significant difference between these bank groups' performances can be reported.

After this result, any need for further analysis with 70% distinction is not considered.

Thus, ROE is also taken as dependent variable. Since the number of observations for each case are identical with ROA case, ranks tables will be presented again in this section.

Kruskal Wallis test results are depicted in Table 15.

Table 15: Kruskal-Wallis Test Results

Test Statistics[a,b]

	ROE
Chi-Square	4,659
df	2
Asymp. Sig.	,097

a. Kruskal Wallis Test

b. Grouping Variable: BoD

Test results do not support any significant difference among the bank groups' performances. The same procedure is applied by using 70% as critical value.

With 70% distinction, Kruskal-Wallis test results are found as depicted in Table 16.

Table 16: Kruskal-Wallis Test Results

Test Statistics[a,b]

	ROE
Chi-Square	7,808
df	2
Asymp. Sig.	,020

a. Kruskal Wallis Test

b. Grouping Variable: BoD

A significant difference among the bank group performances is reported. Further analysis is performed to understand differences among group pairs. The hypothesis is tested for the pairs of data groups using Mann Whitney U Test, i.e., banks having no members with accounting/ audit background in the BoDs and banks having a weight of 0 to 69% in members with the accounting/ audit background in the BoD; banks having no members with accounting/audit background in the BoDs and banks having a weight of more than 70% in members with the accounting/audit background in the BoD; banks having a weight of 0 to 69% in members with the accounting/audit background in the BoD and banks having a weight of more than 70% in members with the accounting/ audit background in the BoD.

Test results obtained from different bank group pairs can be found in Table 17.

Table 17: Mann Whitney Test Results

Ranks

	BoD	N	Mean Rank	Sum of Ranks
ROE	0%	9	56,22	506,00
	1%-69%	166	89,72	14894,00
	Total	175		

Test Statistics[a]

	ROE
Mann-Whitney U	461,000
Wilcoxon W	506,000
Z	-1,932
Asymp. Sig. (2-tailed)	,053

Ranks

	BoD	N	Mean Rank	Sum of Ranks
ROE	0%	9	6,11	55,00
	70%-100%	7	11,57	81,00
	Total	16		

Test Statistics[b]

	ROE
Mann-Whitney U	10,000
Wilcoxon W	55,000
Z	-2,276
Asymp. Sig. (2-tailed)	,023
Exact Sig. [2*(1-tailed Sig.)]	,023[a]

Ranks

	BoD	N	Mean Rank	Sum of Ranks
ROE	1%-69%	166	85,45	14184,00
	70%-100%	7	123,86	867,00
	Total	173		

Test Statistics[a]

	ROE
Mann-Whitney U	323,000
Wilcoxon W	14184,000
Z	-1,988
Asymp. Sig. (2-tailed)	,047

Combining the results from Table 17, 70% is found as critical value since significant differences are found between the bank group pairs (0%) vs. (70% to 100%) and (1% to 69%) vs. (70% to 100%) while any significant difference cannot be found between (0%) and (1% to 69%).

The summary of the results can be found in Table 18. The term 'weight' represents ratio of the number of the BoD with accounting/audit background to the number of all members. The symmetrical results are eliminated for simplified presentation.

Table 18: The Summary of Results

	Weight = 0	0 < Weight <70%	Weight >70%
Weight = 0		No	Yes
0 < Weight <70%			Yes
Weight >70%			

According to these results, until 70%, the weight of audit/accounting background members in the board does not make any difference in the banks' performance. In other words, when ROE is considered for the period 2016-2020, bank group performances with at least 70% weight of audit/accounting background members in their boards differ with the bank group with a lower weight.

As a last case regarding ROE, two different groups are selected for analysis: having or not having member(s) with audit/accounting background in their boards. The rankings for these groups are as depicted in Table 19 below.

Table 19: Data Groups Descriptive Statistics

Ranks

	BoD	N	Mean Rank	Sum of Ranks
ROE	0%	9	57,33	516,00
	>0%	173	93,28	16137,00
	Total	182		

Mann Whitney test results are found as reported in Table 20.

Table 20: Mann Whitney Test Results

Test Statistics[a]

	ROE
Mann-Whitney U	471,000
Wilcoxon W	516,000
Z	-1,996
Asymp. Sig. (2-tailed)	,046

a. Grouping Variable: BoD

A significant difference is found between the group of banks with and without audit/accounting background members in their board.

Considering all test results, it is resulted that, for the period 2016-2020, ROE differs between the groups with and without audit/accounting background members in their boards and when this weight is higher than 70% again ROE differs.

6. Conclusion

BoDs are the main governing bodies in the governance structure of companies and with the additional regulations made on a sectoral basis, the expectations from the BoDs in the banking sector are much more than in other sectors. Some of the most important responsibilities of the BoD require special knowledge or experience. Accounting and audit are special areas when the responsibilities of the BoD are taken into account. Therefore, the question of how the BoD will be organized with this special knowledge is of key importance especially for banks. Financial literacy is important not only for BoD members to give strategic direction to companies, but also for being alert to emerging risks.

In this study, the presence of the relationship between qualification of the BoD members and financial performance are examined. In order to meet the objective of the study, Turkish banks' ROAs and ROEs and the weight of accounting/ audit experienced members in the BoDs are selected as variables. After grouping the banks by the weight of accounting/ audit experienced members, statistical tests are implemented to observe significant differences in ROAs and ROEs, if any.

The results of this study are summarized below:

- Bank group having at least one audit/accounting background member in their board and bank group consist of the banks not having this member in their board show performance differences, if ROA is considered for the period 2017-2021.
- When ROA is considered for the period 2016-2020, if the banks are grouped as with and without audit/accounting background in their boards, a significant difference between these bank groups' performances can be reported.

- For the period 2016-2020, ROE differs between the groups with and without audit/accounting background members in their boards and when this weight is higher than 70% again ROE differs.

These results support that bank performances differ in the case of inclusion audit/ accounting background members to the boards.

Although numerous determinants of the profitability in the banks can be listed, as the results of this study support, the composition of the BoD members can be determined considering increasing importance of the audit related issues and the ultimate responsibilities of the BoD in accounting systems. For the academicians who may want to perform further analysis in different sectors, this study can be the starting point, especially to who intends to use different statistical techniques to determine the direction and the magnitude of the relation.

AUTHOR CONTRIBUTION

Authors contributed equally to the entire study.

STATEMENT OF CONFLICT OF INTEREST

There is no conflict of interest with any institution, organization, or person.

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APPENDIX 1: Literature Review: Diversity

Study / Sample	Related Dependent and Independent Variables	Related Results
Lester et al. (2008) Outside director appointments (1988-2003)	Dependent Variable: Likelihood of the former government official appointing as an outside BoD member; Independent Variables: Depth of social-human capital, Breadth of social-human capital, deterioration	Depth, breadth and deterioration of social-human capital of former government officials' affect likelihood of their appointment as outside BoD members.
Ekadah & Mboya (2012) 12 commercial banks (1998-2009)	Dependent Variable: ROA; Independent Variables: % of female directors	Percentage of female directors (-)
Romano et al. (2012) 25 banks (2006-2010)	Dependent Variables: ROA, ROE; Independent Variables: % of non-executive/ independent directors, % of female BoD members	Percentage of female BoD members (+)
Hagendorff & Keasey (2012) 148 bank merger announcements (1996-2004)	Dependent Variable: Merger announcement returns; Independent Variables: Occupational diversity, tenure diversity, age diversity, gender diversity	Occupational diversity (+) Age diversity (-) Tenure diversity (-)
Jadah et al. (2016) 24 banks (2005-2014)	Dependent Variable: ROE; Independent Variables: BoD composition, BoD gender	BoD composition (+), BoD gender (-)
Ersoy & Aydın (2018) 27 deposit banks (2007-2013)	Dependent Variable: ROA; Independent Variables: % of independent directors, % of foreign directors	Percentage of independent directors (-), Percentage of foreign directors (-)
Topaloğlu & Ege (2018) 16 banks included in the BIST index (2007-2014)	Dependent Variables: ROA, ROE, Tobin's Q; Independent Variables: Number of female BoD members, Number of independent BoD members, BoD members with graduate degrees, National diversity, BoD experience, BoD industry expertise, BoD members having business or economics education	ROA: Number of independent BoD members (+); ROE: Number of female BoD members (-), Number of independent BoD members (+)
Özbek (2019) 11 banks included in the BIST index (2012-2017)	Dependent Variable: ROA; Independent Variable: Percentage of BoD members with graduate degrees	No significant relationship is reported.
Yağlı (2019) 22 deposit banks (2009-2016)	Dependent Variables: ROAA, ROAE, Earnings before tax/ Total assets; Independent Variables: % of female directors, Education levels of BoD members, % of independent directors, % of foreign directors	ROAA: % of female directors (+), Education levels of BoD members (+); ROAE: % of independent directors (-), % of female directors (+); Earnings before tax/ Total assets: Education levels of BoD members (+)
Khatib et al. (2020) 91 academic studies from 66 journels	Literature review on board diversity in financial institutions.	A literature review is employed covering the characteristics of diversity such as age, education, nationality, religion, tenure, ethnicity and experience. The study reveals the necessity of exploring board diversity characteristics other than gender diversity for financial institutions.

APPENDIX 1 (Continued): Literature Review: Diversity

Abdel-Azim & Soliman (2020) 21 banks (13 listed and 8 unlisted) (2012-2018)	Dependent Variables: ROA, Stock return volatility Independent Variables: BoD gender diversity, BoD nationality diversity, BoD independence	ROA: BoD nationality diversity (+), BoD independence (-), BoD gender diversity (+); Stock return volatility: BoD gender diversity (-), BoD independence (+)
Baker et al. (2020) 579 academic studies (1999-2019)	Bibliometric analysis on board diversity.	Academic studies on board diversity mainly focus on gender diversity. On the other hand, less attention is paid on professional experience, age, nationality, cognition and ethnicity.
Papadimitri et al. (2020) 1.618 firms in 39 countries (March 2018-March 2019)	Dependent Variable: S&P credit rating; Panel A: Firm specific and macroecenomic characteristics: Leadership education index, ROA; Panel B: CEO duality, number of BoD members, BoD independence, CEO's age, CFO's age, chair's age, board's average age,	Companies in which the key members of BoD are better educated receive better credit ratings.
Doğan & Ekşi (2020) 19 deposit banks (2012-2018)	Dependent Variables: NPL, ROA; Independent Variables: Independent directors, foreign directors	NPL: Independent directors (-), Foreign directors (+); ROA: Independent directors (+), Foreign directors (-)
Mojambo et al. (2020) 32 selected banks (2014-2018)	Dependent Variables: ROA, NPL, Capital adequacy ratio; Independent Variables: Functional background, Gender, Age, Level of education, IT expertise	ROA: Age (-); NPL: Gender (+), Age (+); Capital Adequacy Ratio: Age (-), IT expertise (+)
Topçu (2020) 14 commercial banks included in the BIST index (2007-2019)	Dependent Variables: ROA, ROE; Independent Variables: BoD independency, Female directors	ROA: Female directors, BoD independency (+); ROE: Female directors, BoD independency (-)