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**Financial Aspects of the Construction Sector in Turkey  
- a Review of Current and Future Trends**

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**ABSTRACT**

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# INDEX

INTRODUCTION	1
1.	5
Theory of Construction Financial Management	4
1.1.1.	5
1.1.2.	6
1.2.	6
1.2.1.	7
1.2.2.	7
1.2.3.	7
1.3.	8
1.3.1.	8
1.3.1.1. Normal Financial Plans.....	7
1.3.1.2. Extraordinary Financial Plans.....	8
1.3.2.	9
1.3.3.	9
1.3.4.	9
1.3.5.	10
1.3.6.	10
1.4.	10
1.4.1.	10
1.4.2.	11
1.4.3.	11
1.4.4.	11
1.5.	11
1.5.1.	12
1.6.	12
1.7.	12
1.7.1.	12
1.7.2.	12
1.8.	13
1.9.	13
1.9.1.	13

1.9.2.	14	
1.9.3.	14	
2.		14
Development of the Construction Sector in Turkey		14
2.1.	14	
2.2.	17	
2.2.1.	18	
2.2.2.	19	
2.3.	20	
2.4.	21	
2.4.1.	22	
2.4.2.	22	
2.4.3.	23	
2.5.	23	
3.		24
Approaches to Financial Management of Construction Companies -		
3.1.	24	
3.2.	26	
3.3.	27	
RESULTS and DISCUSSION		28
PUBLICATIONS ON THE TOPIC OF THE DISSERTATION.....		31
DECLARATION OF ORIGINALITY AND AUTHENTICITY.....		32

## a. INTRODUCTION

The construction sector is one of the most strategically important economic sectors in the economy. Contributing significantly to both economic growth and employment, the sector has a leading role in the development processes of countries. The Turkish construction industry, which has grown rapidly in recent years, is one of the driving dynamics of the country's economy. The successful and sustainable functioning of companies operating in such a vital sector depends on effective financial management.

Financial decision-making processes and practices that form the basis of financial management have a direct impact on the performance of companies. Effective execution of factors such as availability of financial resources, risk management, liquidity management, accounting and financial reporting practices is of great importance for companies operating in the sector to maintain their competitive position. However, there are not enough academic studies on financial management approaches in construction companies in Turkey.

The construction sector plays a vital role in the economy through its contribution to investment, employment and growth. As one of the largest industries, the financial performance and management of construction companies has significant implications. However, little empirical research has been done to comprehensively profile and analyze the financial processes within this sector.

In this context, the aim of this study is to reveal the financial management approaches of construction companies operating in different sizes in Turkey and to contribute to existing literature and insufficient information in this field. In the study, the financial practices of both large capital stock exchange companies and SME level enterprises will be examined comparatively. In addition, qualitative data to be obtained through interviews will also be evaluated. Thus, a comparative analysis of the companies in the sector was made under different parameters.

This study aims to address this gap by empirically examining and theoretically analyzing the financial management approaches of construction companies in Turkey. Specifically, the objectives of this study are:

- To empirically investigate factors influencing the financial performance of listed construction firms, as measured by return on equity (ROE).
- To qualitatively analyze the diverse financing strategies, risk mitigation techniques, and control mechanisms employed across construction companies of varying sizes.
- To link the empirical findings to established theoretical frameworks of financial management and panel data modeling, in order to evaluate patterns across the sector.
- To synthesize both quantitative and qualitative evidence for a holistic understanding of best practices in financial oversight, budgeting, and crisis response adopted in the industry.

Through a mixed methods approach incorporating panel regression analysis and interviews, this study seeks to provide novel empirical insights into the under-researched financial processes of the construction sector. It aims to empirically profile and theoretically contextualize financial management in these companies to enrich the knowledge base on this economically important industry.

The results of the study are important in terms of increasing the current level of knowledge of the relevant parties about the sector. For both policy makers and management, the data to be obtained from the study will be useful in determining effective management practices for financial success. It may point to risk management and financial resource diversification strategies to ensure financial sustainability, especially in times of crisis. Therefore, the study aims to contribute to improving the financial performance of construction companies operating in the country.

Considering the growth dynamics of the construction sector and the difficulties in accessing financing, the importance of effective financial management is increasing. The thesis of this dissertation is that effective financial management is crucial for the sustainable development and dynamic growth of the construction sector.

Companies are expected to develop new methods, tools and models in this direction. The integration of rapid developments in technology into financial management

processes is also important. However, there are not enough academic studies on current practices and trends in this field.

In this context, the study is expected to fill the knowledge gap in the relevant field and provide guidance to industry stakeholders. The findings to be obtained by evaluating the results are expected to contribute to increasing the financial success levels of construction companies in Turkey. Thus, it may also contribute to the determination of strategies for the future development of the sector.

Through the panel regression analysis, it is expected that particular financial ratios have a statistically significant relationship with return on equity for listed construction firms. Identifying these key determinants of profitability provides novel empirical insights into factors influencing financial performance in the sector.

The interviews with managers of construction companies are anticipated to reveal a variety of financing strategies, risk management techniques, and internal control mechanisms employed in practice. These approaches are likely to differ depending on company size and contextual factors. However, common themes around budget oversight, crisis response plans, and the use of forecasting models may also emerge.

By linking the quantitative and qualitative findings, patterns in financial management across the industry are expected to emerge. Specifically, the relationships identified between firm-level determinants and return on equity can be understood in the context of approaches described by managers. Additionally, theoretical frameworks in financial management and panel data modeling can be expanded and verified through systematic comparison with empirical results.

Taken together, the mixed methods design of this study aims to profile and contextualize the financial processes of construction companies in Turkey in original and meaningful ways. It is expected to address current gaps in knowledge around this economically strategic sector, while contributing new empirical insights and theoretical understanding. The results can be said to provide valuable evidence to inform both academic research and industry practice going forward.



## **1. CHAPTER**

### **b. Theory of Construction Financial Management**

#### **1.1.1. The Concept of Finance**

In the past, finance was defined as finding the funds or money needed by an enterprise and using the funds owned by the enterprise correctly and effectively; today it is defined as the turning point of all kinds of plans and decisions to increase the market value of an enterprise.

Financing shows a continuous change, development and expansion in parallel with the technical, economic and social structure in enterprises. In the early days, only the function of "finding capital" was defined as financing. However, in today's enterprises, "management of money" has also been included in the concept of financing.

Entrepreneurs usually start with some equity, but this is often insufficient to carry out their activities and additional financing is needed. The financing needs of small businesses are especially high in the start-up phase. Because the entrepreneur has to make expenditures such as rent, machinery, equipment, stock, wage payment, advertising, license and establishment. Financing is provided from two main sources: equity and attracted resources. In financing through equity, the source of funds of the firm is its shareholders. Newly established firms obtain their first funds through their equity. The amounts invested by the shareholders in return for their shares constitute a part of the funding sources of the enterprise. Businesses can be financed not only during the establishment period but also in later periods through new partner purchases, capital increases or autofinancing.

Financial management involves the management of economic values in an enterprise and making analyzes, plans and financial decisions to increase the welfare of shareholders. For this reason, those who implement financial management should also carry out their activities by considering financial objectives. In the most general terms, financial objectives are to increase the company's earnings and increase the market value of the company. Failure to implement financial management well may even lead to the bankruptcy of the business. For this reason, the strategic financial decisions to be taken by SME owners or managers and their practices in this direction are the basic elements



that can lead their businesses to success or failure.

### 1.1.2. Objectives of Financial Management

The main purpose of financial management and financial management behaviors is to maximize the desired financial benefits in line with the goals set, regardless of whether they are individual or organizational. According to Hira (1997), most individuals develop a behavioral financial model through trial and error while developing a specific financial management behavior, and that these behavioral models are shaped by the experiences and training received over time.

### 1.2. Financial Planning

Financial planning is a financial function that aims to determine the future course of action according to the current financial situation and objectives of an enterprise, to formulate policies in this context and to review these strategies according to developing events. The purpose of financial planning is to harmonize cash inflows and outflows in terms of time and amount and to protect and maintain the financial balance created in this way. Firms should overlap both their basic objectives and their planning objectives while planning. These objectives cannot be far from each other .

Good financial planning is crucial for companies to achieve sustainable growth and competitive advantage. Financial planning provides the following benefits to companies:

- Analyzing future financial statements: This allows the company to anticipate future financial risks and opportunities.
- Resource management: Thanks to the financial plan, the company can better manage its cash flow, investments and financing needs.
- Budgeting: Through budgeting, the company can balance its expenditures and revenues.
- Strategic decision-making: Through financial planning, the company can better evaluate strategic decisions such as product/service development, new market searches, acquisitions, etc.

- Risk management: Financial planning enables the company to identify possible future financial risks and take measures against these risks. Thus, the company can minimize financial risks.
- Resource procurement: Thanks to the financial plan, the company can more easily obtain financing from investors, banks and other organizations.
- Performance evaluation: Financial planning allows the company to evaluate past performance and review future goals and strategies. Thus, the company can continuously improve.

A well-prepared financial plan strengthens a company's strategic management, risk management, performance evaluation and resource management. Therefore, financial planning is critical for companies to gain competitive advantage and achieve sustainable growth.

#### 1.2.1. Subject of Financial Planning

The amount of payments to be made at any given time and for a certain period of time constitute the subject of financial planning.

#### 1.2.2. Process of Financial Planning

Rather than being a process in which the risk ratio is tried to be minimized, the financial planning process includes the efforts to decide which risks will be preferred. In addition, the plans should be able to adapt to possible changes in objectives and social changes.

Financial planning starts with the prediction of the income and expenses that will arise from the fulfillment of all business activities by determining the goals (main objectives) of the enterprise, that is, financial forecasting or forecasting. With the preparation of financial forecasts, the result of financial planning is clearly and precisely revealed.

The second stage of financial planning is to implement alternative plans in financial terms, that is, to draw road plans to achieve their goals.

#### 1.2.3. Supervision of Financial Planning

Measures to increase the profitability and efficiency of business activities

determined through financial analysis can only be achieved through financial audit. In order to conduct audits and take corrective measures, financial planning is required. Therefore, the main tools of financial audit are forecast statements and budgets.

Within the scope of audit, necessary information about the status of business activities is obtained as a result of a comparison of the objectives in financial planning and the results of implementation. This information forms the basis for the measures to be taken for the enterprise. If there are significant differences between actual results and budgets, it is investigated where the deviation originates and how to correct it. Otherwise, financial auditing becomes difficult.

### 1.3. Types of Financial Plans

Grouping financial plans is useful in terms of short and long term financing forecasts, budgeting and the creation of proforma tables. Financial plans are generally classified in two different groups according to the "purpose of making" and "time covered".

#### 1.3.1. Financial Plans by Objectives

According to their purpose, financial plans are divided into two as normal financial plans and extraordinary financial plans.

##### 1.3.1.1. Normal Financial Plans

The plans made by the entity to carry out its normal activities are normal financial plans. Normal financial plans can be made in order to harmonize income and expenses related to business activities.

A normal financial plan should include the following information;

- Short and long term fund inflow and outflow balance of the enterprise, suggestion of resources
- Determination of surplus funds for future periods and alternative investment proposal
- Compatibility of cash solvency and cash balance in terms of time and amount in the short term.

##### 1.3.1.2. Extraordinary Financial Plans

Extraordinary financial plans are plans prepared by finance managers for purposes

other than their ordinary daily activities such as capacity increase, renewal, modernization and new investment.

#### 1.3.2. Financial Plans by Time

In terms of time, financial plans can be classified in two groups: short-term, medium-term and long-term. If the planning period is shorter than one year, it is referred to as short-term, and if it is longer than one year, it is referred to as medium and long-term. Short-term plans are prepared in detail. Medium and long-term plans are based on more general figures. While pro forma balance sheets are used for long-term financial decisions, cash budgets are used for short-term financial decisions.

#### 1.3.3. Financial Management Needs Specific to the Construction Industry

The construction sector is more uncertain and riskier than other sectors. Many factors such as the length of project durations, weather-related delays, fluctuations in material and labor costs, legal regulations and technical difficulties make the financial management of construction projects more complex. Therefore, it is important to use financial management strategies and techniques specific to the construction sector.

- a. Project Duration and Timing
- b. Weather and Natural Disasters:
- c. Fluctuations in Material and Labor Costs:
- d. Legal Regulations and Permits:
- e. Technical Challenges and Complexity
- f. Subcontractor and Supplier Management.
- g. Occupational Health and Safety:
- h. Sustainability and Environmental Costs:
- i. Quality Management:
- j. Financial Risk Management:

Successful and sustainable completion of construction projects can be achieved by considering the financial management needs specific to the construction industry.

#### 1.3.4. Basic Concepts Specific to Construction Industry

The main objectives of construction financial management are:

- Accurately estimate and budget project costs.

- Identify financing needs and secure appropriate sources of funding.
- Manage revenues and expenditures and arrange collections and payments.
- Assess and manage financial risks.
- Monitor the financial performance of the project and optimize its profitability.

#### 1.3.5. Construction Project Cost Estimate

Cost estimation in construction projects aims to accurately predict and evaluate the costs of the project. Cost estimates should be updated regularly at the start and throughout the duration of the project. The main methods used in construction project cost Unit Price Estimation: This method is based on estimating the unit costs of each work item in the project.

- Parametric Estimation: This estimation method, using data from past projects and statistical analysis, may be suitable for large-scale and similar projects.
- Analog Estimation: This method is based on estimating the costs of new projects using cost data from similar completed projects.
- Expert Opinion: This method relies on the opinions of experienced experts in the industry to estimate the costs of the project.

#### 1.3.6. Construction Project Budgeting

Construction project cost estimation and budgeting plays a critical role to ensure the financial success of the project. A good cost estimating and budgeting process contributes to achieving the financial objectives of the project, managing financial risks and project sustainability. Therefore, the understanding and application of this field is of great importance for professionals and academics working in the construction industry. Construction financial management theory will help to manage these processes effectively and ensure the successful completion of projects.

### 1.4. Construction Project Finance

The success and sustainability of construction projects is largely related to the provision and management of project financing.

#### 1.4.1. Construction Project Financing Sources

The main sources of financing that can be used to finance construction projects are as follows:

- a. Equity:
- b. Bank Loans
- c. Private Equity:
- d. Government Assisted Financing:
- e. Development Banks and International Financial Institutions:

#### 1.4.2. Construction Project Financing Processes

A good financing process contributes to achieving the financial objectives of the project, managing financial risks and project sustainability. Therefore, the understanding and application of this field is of great importance for professionals and academics working in the construction industry. Construction financial management theory will help to effectively manage the financing processes of construction projects and help in the successful completion of projects.

#### 1.4.3. Construction Project Revenue Sources

The revenue sources of construction projects may vary depending on the type, scale and financing model of the project. The main sources of revenue are:

- a. Sales Revenues:
- b. Rental Income:
- c. Service Revenues:
- d. Government Incentives and Subsidies:
- e. Subsidiaries and Joint Ventures:

#### 1.4.4. Construction Project Revenue Management Processes

Construction project revenue management is critical to the financial success and sustainability of projects. A good revenue management process contributes to achieving project revenue targets, managing revenue-related risks and project sustainability.

#### 1.5. Construction Project Expenditure Management

. Construction project expenditure management aims to effectively control project costs and expenditures, optimize expenditures and achieve the financial objectives of the project.

#### 1.5.1. Construction Project Expenditure Planning and Budgeting

For the success of construction projects, it is essential that the costs and expenditures of the project are accurately planned and budgeted at the outset. This process should be updated regularly at the start and throughout the duration of the project. The construction project budget helps to set the financial objectives and spending limits of the project.

#### 1.6. Construction Project Risk Management

Construction projects are complex and full of uncertainties. Therefore, risk management is critical to the success and sustainability of construction projects. Construction project risk management aims to effectively manage the risks and uncertainties of the project, minimize risks and achieve project objectives.

#### 1.7. Construction Project Performance and Profitability Analysis

Construction projects require continuous monitoring and evaluation of performance. This process should be carried out at the start of the project and on a regular basis throughout its duration. Performance evaluation helps to measure the achievement of project objectives and the success of the project in terms of time, cost and quality.

##### 1.7.1. Construction Project Profitability Analysis

For the financial success of construction projects, it is important to continuously analyze and evaluate the profitability of the project. Profitability analysis helps to compare the revenues and costs of the project and measure the achievement of the project's financial objectives.

##### 1.7.2. Improvement and Optimization Strategies

The results of construction project performance and profitability analysis can be used to develop improvement and optimization strategies to achieve the time, cost and quality objectives of the project. These strategies can help improve the efficiency and financial success of the project:

- c.** Cost optimization: In construction projects, it is important that costs are reduced and managed effectively.
- d.** Time optimization: In construction projects, it is important to complete the project on time and meet time targets.
- e.** Quality improvement: In construction projects, it is important to continuously

improve the quality of the project and customer satisfaction.

Construction project performance and profitability analysis is critical to the success and sustainability of projects. A good performance and profitability analysis process contributes to achieving project objectives, ensuring the financial success of the project and successful completion of the project in terms of time, cost and quality.

#### 1.1. Construction Financial Management Software and Tools

Construction financial management software is used to manage and track the financial processes of projects. This software helps to effectively manage the budgeting, cost estimation, financing, revenue management, expenditure management and risk management processes of projects. Budgeting and cost estimating tools

- Financing management and monitoring tools
- Revenue and expenditure management tools
- Risk management and analysis tools
- Performance and profitability analysis tools
- Reporting and visualization tools
- Integration and data exchange features

#### 1.2. Current Trends and Future Outlook in Construction Financial Management Theory

New technologies and approaches are constantly being adopted in construction financial management, shaping the future of the industry.

#### 1.7.3. Sustainability and Green Construction

Considering climate change and environmental degradation, it is of great importance that the construction sector is sustainable.

Construction financial management theory is increasingly emphasizing sustainability and green construction. Environmental and financial sustainability of projects is ensured by considering the financial impacts and benefits of sustainable construction practices such as energy efficiency, environmentally friendly materials and waste management. It is expected that the green construction approach will become a standard in the sector in the future.



#### 1.7.4. Modular Construction and Prefabrication

Modular construction and prefabrication techniques hold potential for significantly improving construction project timelines and costs through off-site manufacturing principles. Modular construction involves the construction of complete three-dimensional modules or modular units that serve as entire rooms, apartments or even multi-storey building segments. These modules are manufactured under controlled factory conditions and transported to the construction site where they are assembled together rapidly.

#### 1.7.5. Remote Collaboration and Virtual Reality

Construction financial management theory offers strategies to stay up-to-date with new technologies and approaches in the ever-changing and evolving construction industry and to increase the financial success of projects. In the future, construction financial management theory will become even more important by adapting to technological and managerial innovations in the industry and contributing to the realization of sustainable and financially successful projects.

## **2. CHAPTER**

### **f. Development of the Construction Sector in Turkey**

Globally, the construction sector is one of the locomotive sectors that shape the economy. The construction sector makes significant contributions specially to developing economies. In this section, Turkey's construction sector is discussed and analyzed in terms of structure, role and development in the last decades.

#### 1. 2.1.Historical Development of Construction Sector in Turkey

The first important works in the construction sector in Turkey took place during the adoption of the Republican regime (1923-1926). In this period, it was observed that the construction sector activities were focused on Ankara, which would become the capital in the future, and efforts were initiated to transform the city into a modern structure with limited means. In the years following the proclamation of the Republic, the steps taken to achieve significant developments in the agriculture, industry and transportation sectors constitute the basis of the history of the construction sector. In general, construction activities started to become a sector after World War II. Factors such as wars and earthquakes that significantly affected countries necessitated a new structuring process and Turkey was also affected by this change.

In this period, State Hydraulic Works (DSİ) and Turkish Republic Highways organizations were established in order to carry out infrastructure and highway works within the framework of certain plans and programs. With these organizations investing with the support of the state, the construction sector recorded a new development. However, the lack of planned urbanization in big cities, inadequate building inspections and the inability to meet the intense housing demand led to the spread of slum-type construction. Despite all the negativities, it is a fact that the construction sector was one of the leading sectors contributing to the economy in this period.

With this development, the solution to the urbanization and housing problems inherited from previous periods was sought in mass housing production. Legal arrangements were also made by the state in order to realize mass housing production and revitalize the housing market. These legal arrangements addressing the problems of the period included the establishment of the Mass Housing Fund to provide loans for housing construction, the enactment of the Mass Housing Law and the establishment of the Housing Development Administration (TOKİ). Turkish construction companies searched for other markets and started to carry out projects in the independent states established after the collapse of the Soviet Union in the 1990s.

In Turkey, important construction companies have been involved in the sector since the 2000s. The Housing Development Administration made significant contributions to the construction process. During this period, the number of multi-storey buildings increased rapidly. The construction sector has become one of the locomotive sectors of Turkey, especially in the 2000s, and has created significant employment opportunities. Figure 1.1. shows the economic growth and construction sector growth rates for Turkey after 1999. Turkey's GDP and construction sector suffered severe contractions due to the crisis in 2001. GDP contracted by 5.75%, while the construction sector contracted by 20.13%. In 2004, the construction sector started to grow thanks to the extension of loan maturities, new housing financing systems and falling interest rates in line with inflation.

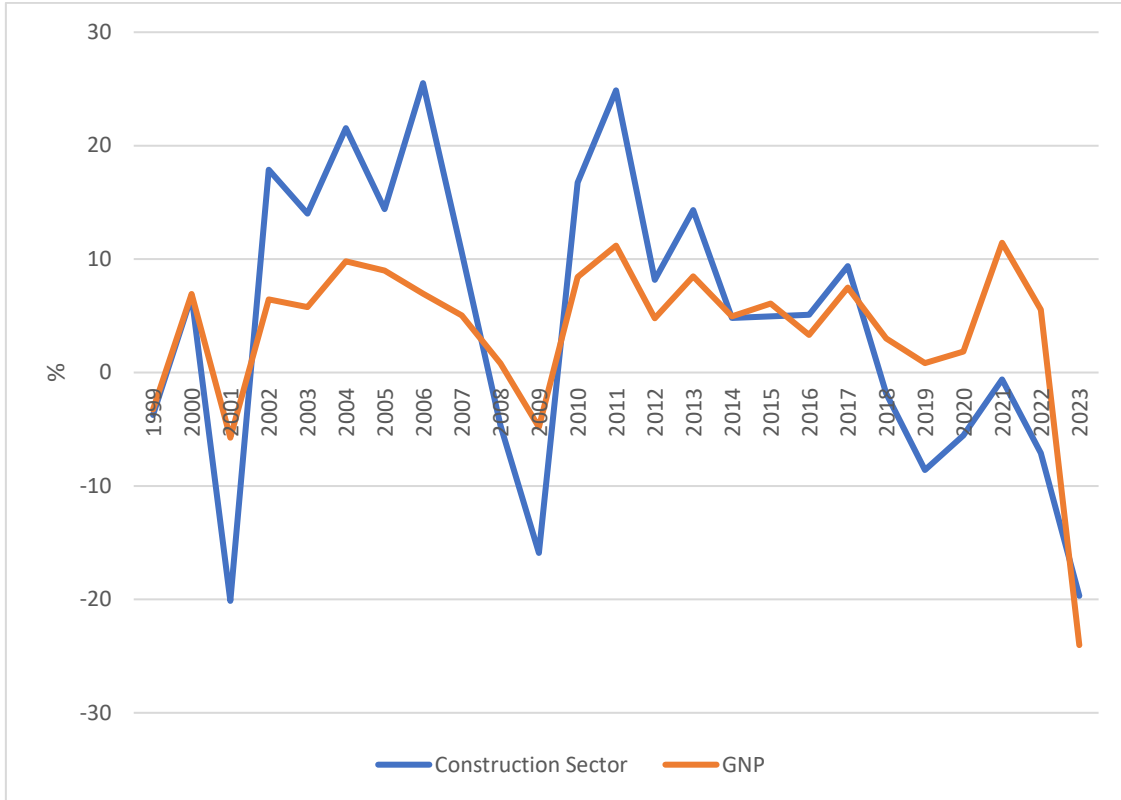


Figure 1.1. Turkey's Economic Growth and Construction Sector Growth Rates

In 2009, in parallel with the economic measures taken to minimize the effects of the global crisis, the sector, which had contracted compared to the previous year, experienced a high growth rate in 2010.

Following the stagnation in 2012, the construction sector made a significant breakthrough in 2013 and recorded a revival above expectations. during this period, the tax rate on houses was reduced from 18% to 8% for houses larger than 150 square meters and to 1% for houses smaller than 150 square meters. Therefore, the realization of the sector's growth was driven by the recently accelerated urban transformation efforts covering 6,000,000 houses and the change in VAT rates.

In 2016, infrastructure investments in ports, high-speed rail, metro and highway projects gained momentum

According to the report published by İNTES in 2019, 2018 was an economically troubled period for all countries of the world and the economic, political and social developments in other countries had a significant impact on Turkey. Against the backdrop of the political situation in Turkey, the Turkish lira depreciated against many currencies

and high inflation rates began to be observed So much so that Turkey became a country with a current account surplus in the last quarter of 2018. As mentioned earlier, the construction sector, which was rapidly affected by these events and situations due to its direct relationship with other sectors, shrank by 5.3 percent as of the third quarter of 2017 (İNTES, 2019).

## 2. 2.2. Construction Sector in Turkey

Especially in the periods following the crises, investments in the construction sector were accelerated in order to catch the growth trend in the economy. Since the foundation of the Republic, Turkey's ever-growing population and the ever-increasing needs for housing, infrastructure, bridges, roads, etc. have ensured that the construction sector has a dynamic impact on the economic structure. Moreover, since the construction sector is a labor-based sector, its contribution to employment is also significant. The fact that the sector affects more than 200 sub-items to which it is connected has indirectly affected economic growth and employment positively.

Number of Houses and Total Buildings is shown in Figure 1.3. An analysis of the development in the number of dwellings and total number of buildings in Turkey over the years reveals significant changes. While the number of single-family houses decreased between 2002-2005, it increased significantly between 2006-2013. On the other hand, the number of multi-apartment dwellings has been on a continuous upward trend, especially since 2007. Buildings in the 2000s is remarkable. This can be said to indicate that the demand for the construction sector in Turkey has been continuously increasing.

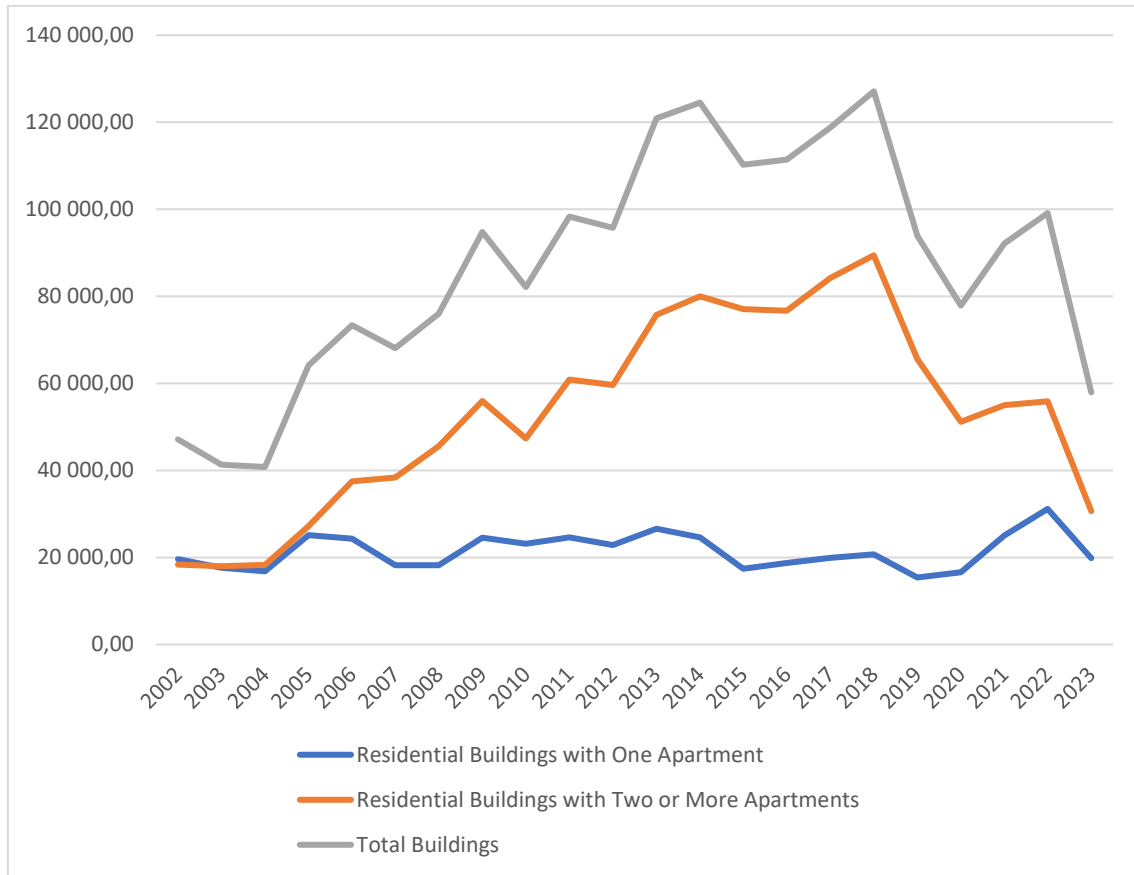


Figure 1.2. Number of Houses and Total Buildings

An analysis of the number of buildings for industrial production facilities and storage areas reveals that although there was a contraction between 2002 and 2005, there has been a steady upward trend since then. In general terms, it can be said that there has been an increasing demand trend in the construction sector in Turkey since 2002, but a short-term contraction occurred in 2009 due to the global economic crisis.

Today, the construction sector, which has become a pillar of the economy with globalization, assumes an important role. Meeting the needs that arise due to economic and social transformations and changes around the world has caused the construction sector to act as a key sector in this sense (İNTES Report, 2016).

### 3. 2.1.1. Construction Industry Overview

In order to analyze the general situation of the construction sector in Turkey, it would be appropriate to examine the GDP and the overall contribution of the construction sector to the economy. These values are given in Table 2.1. The table shows that the share of the construction sector in GDP declined from 5.62% in 2009 to 4.84% in 2022. The

sector's contribution in absolute terms, on the other hand, has continuously increased, reaching its highest level in 2022 with TL 720.5 billion.

While the peak in the percentage increase in the 2013-2017 period indicates the sector's intensive growth, its share in GDP falls below 2009 levels by 2022. Overall, it can be said that the construction sector has a significant share in the Turkish economy, but its proportional weight in GDP has been declining over time. The faster growth of other sectors in the economy seems to have led to a decline in the share of the construction sector in GDP. Indeed, in the 2021-2022 period, the ICT sector grew by 32%, banking by 10.4% and furniture by 17.5%.

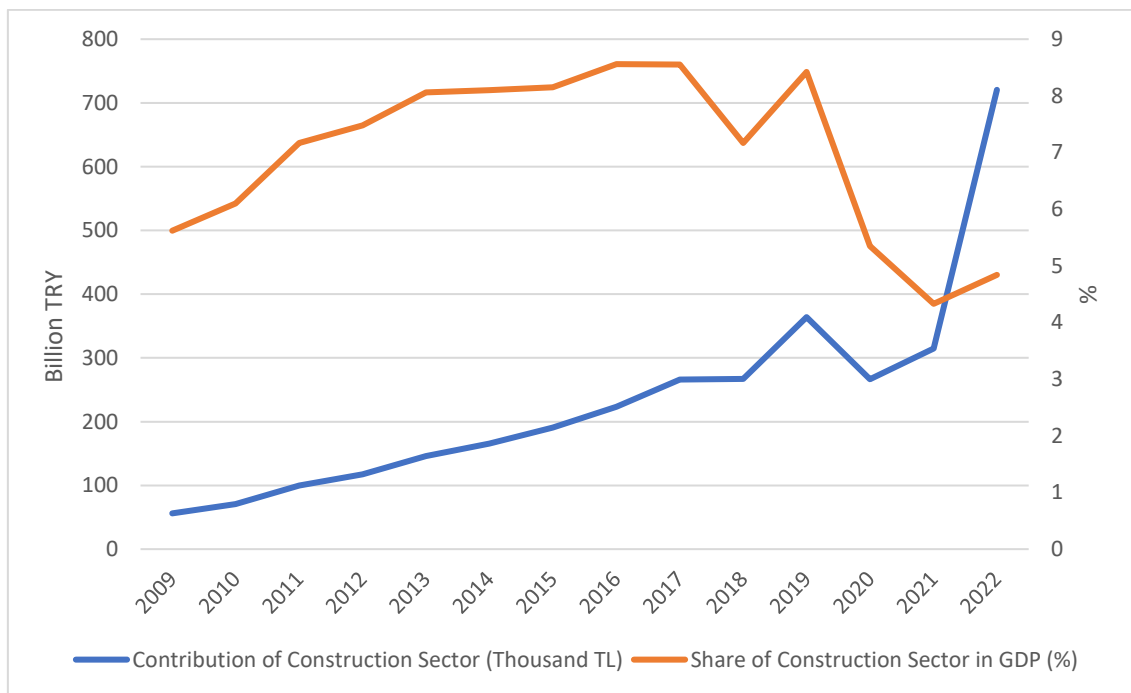


Figure 1.3. Contribution of Construction Sector to the Economy (2009-2022)

#### 4. 2.2.2.Overseas Contracting Activities

Overseas projects also create employment in the country. During the planning, construction, operation and maintenance phases of the projects, personnel are needed in different fields. This creates new job opportunities in the construction and engineering sector.

Turkey also provides important contracting services abroadThe emergence of Turkish contractors in the world started in 1972 with the construction of Tripoli Port in

Libya. From 1972 until 2022, Turkey has been involved in 10,274 projects in 127 countries, generating a total of 588 billion dollars in revenues.

In line with the estimates made in line with this development, it is expected that the revenues obtained within the scope of these activities will reach 650 billion dollars in 2023 and 750 billion dollars in 2030 (Overseas Contracting Sector Evaluation Report, 2020: 1).

5. 2.3.SWOT Analysis of the Turkey Construction Sector

The word SWOT stands for Strength, Weakness, Opportunity, Threat.

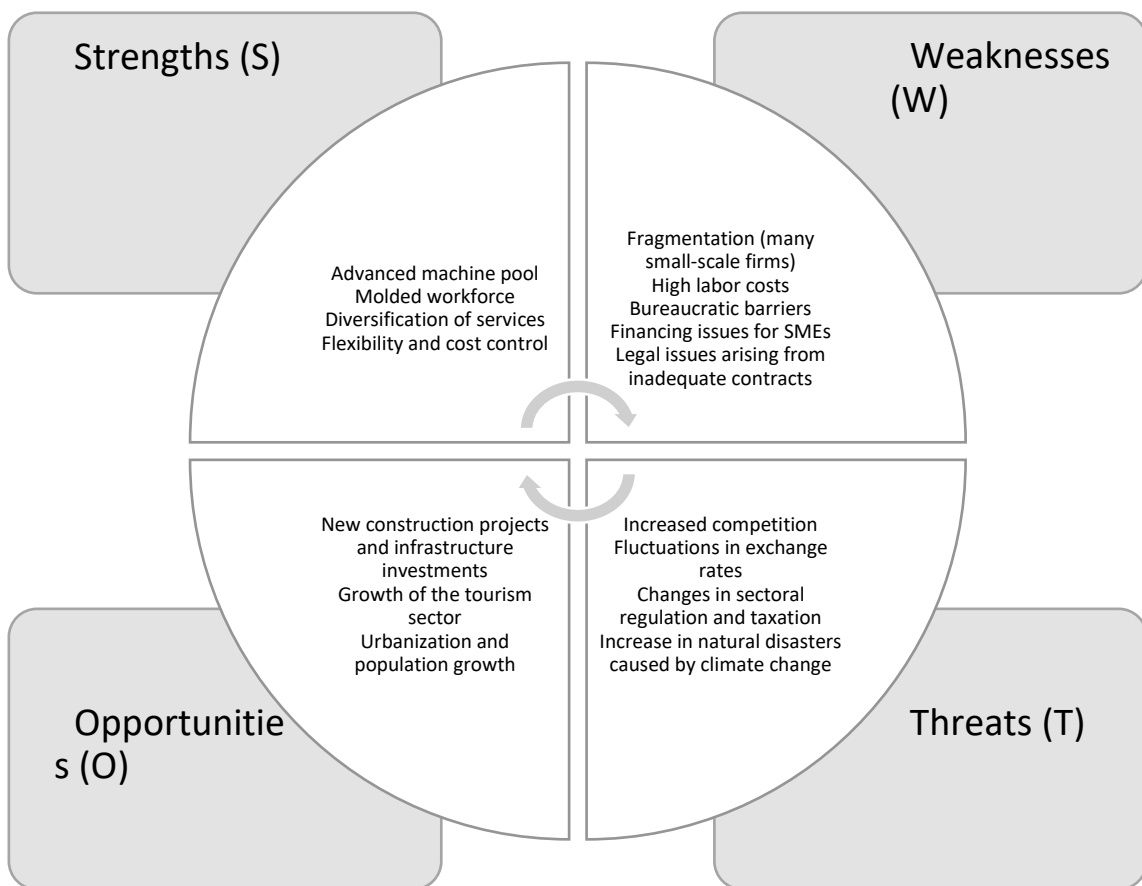


Figure 1.4. SWOT Analysis of the Turkey Construction Sector

The SWOT analysis of Turkey's construction sector reveals both the strengths and

weaknesses, opportunities and threats of the sector. The analysis reveals that although there is a significant level of development in the sector, there are also some structural weaknesses. Turkey's ongoing urbanization, infrastructure and tourism investments offer great opportunities for the construction sector. It can be concluded that the sector will achieve sustainable growth in the period ahead if it can capitalize on its existing strengths, overcome its weaknesses and effectively capitalize on the opportunities it faces.

#### 6. 2.3. Areas of the Construction Sector in Turkey

Table 1. presents statistical data on building permits and dwelling units in Turkey from 2009 to 2022. Examining the trends over time, we can draw a few conclusions. In the late 2000s, both building permits and new units saw steady increases year-over-year, peaking in 2010 at over 139,000 permits and 907,000 units respectively. However, the numbers then declined sharply in the aftermath of the 2008-2009 global financial crisis. New construction activity fell over 10% year-over-year in both 2008 and 2011. Housing output remained subdued through much of the late 2000s recovery period.

Table 1. Building permits and rates of change, 2009-2022

Year	Number of building	Annual change (%)	Number of dwelling units	Annual change (%)
2009	92 342	-3,0	518 475	3,0
2010	139 616	51,2	907 451	75,0
2011	101 900	-27,0	650 127	-28,4
2012	107 816	5,8	771 878	18,7
2013	121 754	12,9	839 630	8,8
2014	139 541	14,6	1 031 754	22,9
2015	125 741	-9,9	897 230	-13,0
2016	134 099	6,6	1 006 650	12,2



2017	161 921	20,7	1 405 447	39,6
2018	104 509	-35,5	669 165	-52,4
2019	55 717	-46,7	319 720	-52,2
2020	96 169	72,6	555 132	73,6
2021	138 556	44,1	724 544	30,5
2022	127 745	-7,8	695 246	-4,0

Gradually, the numbers rebounded in the early-to-mid 2010s as economic growth strengthened. Permits and units rose by double digits most years between 2010-2015. This indicates the recovery was taking hold in the housing sector. More recently, the data exhibits higher volatility. Significant annual percentage changes - both positive and negative - are evident from 2018 onwards. This fluctuation may correspond to shifting market conditions over this period, including rising interest rates and policy changes.

#### 7. 2.4.1. Infrastructure and Transportation Facilities

In order for a state to provide effective services, it must protect its citizens and meet their basic needs. Here, infrastructure services such as electricity, water, natural gas and sewage are used to provide the basic needs of people. Infrastructure services can be explained as construction works that include many service items such as dams, wastewater treatment plants, drinking water, sewage works, electricity generation plants, railways, roads, communication, drainage and irrigation facilities. It is clear that infrastructure works consider public benefit rather than investment. For this reason, the value of infrastructure construction works is extremely high. The size of the projects is quite costly in this context

#### 8. 2.4.2. Housing Development Administration (TOKI)

The Housing Development Administration (TOKI) started its activities in 1984 and in this context, an autonomous Housing Fund was established under the Housing Law No. 2985. The main purpose of the establishment of this administration was to respond to the need for housing arising from rapid urbanization and population growth.

A total of 854,616 housing units were produced by TOKI in this period. The highest

number of housing units was produced in the "Low- and Middle-Income Group" with 392,917 units between 2003 and 2022. This is followed by "Slum Transformation" (150,689 units), "Resource Development" (115,463 units) and "Disaster Housing Implementation" (37,734 units). In annual housing production, 57,006 units were produced in 2020, 20,057 units in 2021 and 32,790 units in January-August 2022. In 2020, there was an increase in housing production; however, there was a slight decline in 2021.

#### 9. 2.4.3.Public-Private Cooperation

PPP refers to the cooperation between the private and public sectors in order to provide a project or service provided by the public sector in general. Structurally, PPP provides certain advantages to both public and private sector firms.

. However, in order to ensure social benefit, transparency and fair competition conditions are of utmost importance. In this way, it will be possible to reveal and maximize the social benefit.

#### 10. 2.5.Housing Sector in Turkey

The housing sector has a significant share in the total real estate investment value in Turkey.

In general, it can be said that housing sales, which showed an upward trend between 2013 and 2017, started to shrink as of 2018. The recovery in 2020 was not stable.

Possible reasons for the uncertainties in the housing sector could be the following:

- Fluctuations in the economy and uncertainties in times of crisis affect the housing market.
- Increases in inflation rates may negatively affect housing prices.
- Increases in interest rates may reduce demand by raising credit costs.
- Possible increases in unemployment rates may weaken the purchasing power of housing.
- Political instability and uncertainty in economic prospects have a negative impact on investor confidence.
- Inconsistencies in urbanization policies may cause problems in the supply-demand balance.

- Slowdowns in urban transformation projects may increase uncertainties in the existing stock.
- Economic sanctions and restrictions may negatively affect housing sales.
- .
- Volatility in inflation rates may lead to fluctuations in housing prices.

Therefore, economic, political and social uncertainties often affect the housing market.

Various studies have been conducted on the housing sector in Turkey. The development of the housing sector in Turkey has been influenced by various factors. These factors include population growth rate, income distribution, house price index, number of foreigners with residence permits, economic and financial crises, and extraordinary events such as epidemics.

In conclusion, the chapter identifies that the development of the housing sector in Turkey has been influenced by various factors. These factors include population growth rate, income distribution, house price index, number of foreigners with residence permits, economic and financial crises, and extraordinary events such as epidemics. In addition, issues such as forecasting and analyzing housing sales, the impact of capital markets on housing prices, energy use, housing demand and identifying provinces with similar characteristics have also been investigated.

### **3. CHAPTER**

#### **1.8. Approaches to Financial Management of Construction Companies - Case Study of Purpose of the Study**

The main objective of the study is to determine the differences and similarities between the financial management approaches of companies of different sizes operating in the construction sector by analyzing the financial decision-making processes, risk management practices and the factors affecting their financial performance. Thus, the primary objective of the thesis is to provide an academic contribution to the shaping of financial management understanding in construction companies by providing comprehensive data that can overcome the current lack of information in the relevant field.

#### **2.1. Dataset**

The study mainly utilizes two separate data sets to examine financial management approaches in construction companies. The first data set is the data of real estate firms listed on the stock exchange. By using the data of these firms, the financial efficiency of real estate firms will be tried to be revealed. In this context, within the scope of the study, panel data analysis was conducted to determine the impact of the factors affecting the profitability of REITs. Within the scope of the study, REIT companies that are listed on the stock exchange and traded continuously in quarterly periods between 2018-2022 are.

Table 2. Listed Real Estate Companies Included in the Analysis

Stock Code	Firm
AGYO	Atakule Gayrimenkul Yatirim Ortakligi AS
AVGYO	Avrasya Gayrimenkul Yatirim Ortakligi AS
DZGYO	Deniz Gayrimenkul Yatirim Ortakligi AS
DGGYO	Dogus Gayrimenkul Yatirim Ortakligi AS
EKGYO	Emlak Konut Gayrimenkul Yatirim Ortak AS
HLGYO	Halk Gayrimenkul Yatirim Ortakligi AS
ISGYO	Is Gayrimenkul Yatirim Ortakligi AS
KLGYO	Kiler Gayrimenkul Yatirim Ortakligi AS
MRGBYO	Marti Gayrimenkul Yatirim Ortakligi AS
NUGYO	Nurol Gayrimenkul Yatirim Ortakligi AS
OZGYO	Ozderici Gayrimenkul Yatirim Ortaklig AS
PEGYO	Pera Gayrimenkul Yatirim Ortakligi AS
RYGYO	Reysas Gayrimenkul Yatirim Ortakligi AS
SNGYO	Sinpas Gayrimenkul Yatirim Ortakligi AS
TRGYO	Torunlar Gayrimenkul Yatirim Ortaklig AS
TDGYO	Trend Gayrimenkul Yatirim Ortakligi AS
TSGYO	TSKB Gayrimenkul Yatirim Ortakligi AS

In the study, quarterly data between the 2018-3 balance sheet period and the 2022-6 balance sheet period are used. In this case, 18 periods of data for 17 corporate firms listed on the BIST are used.

It can be said that the reason for using the return on equity ratio rather than the return on assets ratio (ROA) in the study is the characteristics of the sector. As a matter

of fact, real estate investment trusts have high capital utilization in their activities. In terms of capital structure, they have a significant amount of equity in their balance sheet. ROA profitability is measured according to total assets. However, real estate properties that have a large share in the assets of REITs may increase in value over time. This can make ROA misleading. ROE measures the firm's return on equity. The objective of REITs is to provide a high return on equity to their shareholders. Therefore, ROE is a more meaningful indicator in the comparative analysis of REITs. Therefore, ROE is used in this study.

The study also asked various interview questions to construction companies of various sizes. The purpose of this interview is to analyze and understand the current situation of construction companies in Turkey on important issues such as financial management practices, risk management processes and strategies in times of crisis.

The data obtained through the interview questions will provide information on the adaptation processes of construction companies to current economic conditions and changing regulations. By analyzing the responses, the challenges faced by the sector and the solution approaches developed to address them will be revealed

## 2.2. Methodology

Panel data, also known as longitudinal or cross-sectional time series data, is a data set in which the behavior of entities is observed over time. These entities can be states, companies, individuals, countries, etc. Panel data are data that contain observations about different cross-sections over time. Examples of groups that can form panel data series are countries, firms, individuals or demographic groups. Like time series data, panel data contain observations collected at a chronologically regular frequency. Like cross-sectional data, panel data contain observations of individuals.

An interview form was prepared and interviews were conducted with the senior managers of 10 companies of various sizes in the construction sector operating in the stock exchange in Turkey regarding the provision of financing, risk management, accounting, auditing, financial control and the strategies put forward for sales in times of crisis. Qualitative research method was used to evaluate the interviews conducted for this purpose. Semi-structured interviews were conducted with focus group interview technique. Interview questions were updated after the pilot application. Focus group

interviews were conducted using semi-structured questionnaires. The questionnaire questions were prepared in line with the literature review and expert opinions. The interviews lasted approximately 60 minutes and 7 main questions and their sub-questions were answered.

### 2.3. Interview Evaluation

As a matter of fact, all firms use equity capital as the main source of financing for construction projects. Bank loans also play an important role in the financing of projects. The most frequently preferred method is project finance loans. Interest rates, risk assessment and market conditions are important factors considered in the choice of financing method. During periods of credit constraints, pre-sales, short-term financing solutions and cash management are emphasized. Firms try to meet their needs by using both traditional and innovative financing instruments in a balanced manner.

According to the ratios given, the distribution of the financing sources of construction companies operating in Turkey can be evaluated as follows: The equity capital utilization rate of 60% indicates that construction companies meet a significant portion of their financing needs with their own equity. However, this alone may not be sufficient. The fact that 80% of firms utilize bank loans indicates that bank loans are the most important external source for construction firms. Ease of access to credit and favorable cost may be the reason for preference. The share of pre-sales in financing is 40%, indicating that it is an important type of source. Supporting some of the projects with pre-sales may reduce risk. The fact that only 10% of firms utilize murabaha/participation banking indicates that this alternative source is not yet widespread. Overall, it can be said that equity capital, bank loans and pre-sales stand out among the financing sources of construction companies.

The proportion of companies that control costs is 80%, the proportion of companies that use financial instruments that take inflation risk into account is 50% and the proportion of companies that follow policies that hedge exchange rate risk is 30%. This may be because the construction sector is less exposed to exchange rate risk. In general, it can be said that cost risk is the risk that firms pay the most attention to, followed by inflation risk. Exchange rate risk, on the other hand, is considered to be the primary risk for the time being.

the rate of use of ERP (Integrated Resource Planning) software is 60% and constitutes the majority. The automation of business processes and increased efficiency of ERP systems are among the reasons for preference. The rate of companies using the method of pre-coding repetitive processes is 20%. In general, it can be said that in addition to the use of digitalization-oriented ERP in company accounting systems, the methods of standardizing workflows and ensuring data integrity are also effective. The importance of integration between systems is emphasized.

The fact that the rate of use of external audit firms is 50% indicates that more than half of the audit processes are carried out by professional audit firms. It is understood that an independent perspective is important. The rate of companies conducting audits through audit offices is 30%. The fact that 20% of the firms monitor the physical process shows that the method of monitoring and recording the production phase is preferred to a certain extent. In general, it can be said that it is common to utilize independent external audit services in the audit processes of construction companies, internal audit units are also used, but physical monitoring is less preferred.

80% of firms use the five elements of internal control (control environment, risk assessment, control activities, information-communication, monitoring activities). This shows that majority of firms' place emphasis on implementing a robust system of internal financial controls. 60% of firms follow budget realization. Preparing and monitoring budgets helps firms exercise financial planning and control over expenditures. 20% of firms prioritize risk management. A smaller portion view risk management and liquidity as distinct priorities within their control processes. Overall, firms appear to be cognizant of introducing standard control mechanisms for their financial management.

50% of firms applied discounts to sales during crisis. 40% of firms offered installment payment plans to customers. 20% of firms provided field models/show units for referrals. This allows leads to visualize products better and helps sales without physical visits. 10% of firms developed their online sales channels. 10% of companies stopped or slowed down sales activities. In summary, majority of firms adopted promotional pricing and payment flexibility to counter crisis-driven sales slowdown.

## **g. RESULTS and DISCUSSION**

Within the scope of the empirical analysis conducted in this study, it is aimed to determine the factors affecting the return on equity (ROE) of listed companies operating in the construction sector. The aim of the study was to determine the factors affecting the return on equity of construction companies and to form; the basis of management practices that will support the financial success of firms in the sector. Return on equity is an important indicator that reflects the future investment and growth capacity of companies. Thanks to the findings, both management and policy makers will have a better understanding of the dynamics affecting the profitability of the sector in question. Thus, the reported financial statements will also be analyzed in more depth.

The results of the study will contribute to identifying potential problem areas in the sector and developing solutions. To summarize, it can be said that this research contributes insufficient of information in the field for construction sector managers, investors and policy makers and guide the development of strategies for the future of the sector.

The test results indicate that construction companies need to effectively manage their net sales and balance their short-term debt burden in order to increase their profitability. For investors analyzing financial statements, these data are important factors to be taken into account in the company evaluation process.

In general, the analysis and test results of the study reveal that construction firms attach importance to sales performance and short-term debt management in order to increase their return on equity.

First of all, firms take care to control costs by minimizing uncertainties in project budgets. They make hedging transactions and develop forecasting models by monitoring variables such as exchange rates, interest rates and raw material prices. Thus, they aim to prevent budget overruns.

In times of crisis, sales strategies are made flexible and payment options are offered in advance and on deferred payment terms. Some firms follow a realistic pricing policy to avoid being affected by market fluctuations.

Firms improve their reporting systems to continuously improve their financial management policies and create flexible decision-making mechanisms by receiving field feedback.



With the digitalization of reporting and analysis systems, advanced systems that can make rapid forecasts are being established by making use of big data analytics. Thus, it is aimed to adapt to changing conditions instantly.

In general, adapting to changing economic conditions, minimizing risk exposure and adopting a flexible management approach are critical for the financial success of firms.

This study aimed to empirically examine and theoretically analyze the financial management approaches of construction companies in Turkey through a mixed methods approach. By utilizing panel data analysis on publicly listed real estate firms and conducting interviews with managers of construction companies of various sizes, it provided original empirical insights into their financing, risk management, accounting, auditing and control practices.

Theoretically, the findings were discussed within frameworks of financial management and panel data modeling. The analysis of the regression results contributed to understanding how specific determinants impact profitability in listed real estate firms.

The study made an original empirical contribution through its primary data collection on understudied financial topics. Concurrently, it advanced theoretical application by systematically linking empirical evidence to managerial concepts. By empirically profiling and theoretically contextualizing financial management in construction companies, the research addressed gaps and enriched the evolving knowledge base on this economically vital industry.

## **PUBLICATIONS ON THE TOPIC OF THE DISSERTATION**

1-[https://drive.google.com/file/d/13aJZ\\_Z2NYUQBmqww7oGG\\_b6rLVKUcDBR/view](https://drive.google.com/file/d/13aJZ_Z2NYUQBmqww7oGG_b6rLVKUcDBR/view)  
State regulation of the economy (Page 51-62), 01/2022, ISSN 2815 391X

2-[https://drive.google.com/file/d/1mmk\\_\\_pKofp-WDuGvOSjDsx\\_5lq7\\_5NGq/view](https://drive.google.com/file/d/1mmk__pKofp-WDuGvOSjDsx_5lq7_5NGq/view)  
Comparison between qualitative and quantitative analysis (Page 78-85), 02/2022, ISSN 2815 391X

3-<https://drive.google.com/file/d/1aGWA0sB20et9089jeX1cVa-EsISk0xPq/view>  
Budgeting The Construction Process (Page 20-30), 01/2023, ISSN 2534-9228

## **DECLARATION OF ORIGINALITY AND AUTHENTICITY**

I, the undersigned Murat Aytimur, PhD student at the department of Finance and Insurance, at VUZF , I declare that the dissertation submitted by me for defense on the topic: **Financial Aspects of the Construction Sector in Turkey - a Review of Current and Future Trends** for awarding the educational and scientific degree "Doctor" is an original work and contains original results obtained during scientific research carried out by me.

I declare that the results obtained, described and/or published by other scientists are properly cited in the bibliography, subject to copyright protection requirements.

I am informed that if plagiarism is detected in the submitted dissertation, the defense committee has the right to reject it.

I declare that this dissertation has not been submitted to other universities, institutes and other higher schools for the acquisition of an educational and scientific degree.

.../.../2024

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Murat Aytimur