



**UNIVERSITY OF ANKARA
FACULTY OF SCIENCE
DEPARTMENT OF MATHEMATICS**

MTH4400 GRADUATION PROJECT REPORT

**ANALYSIS OF LOAN REPAYMENT TERMS OF
DIFFERENT BANKS USING EXCEL AND
SELECTION OF THE BEST OPTION**

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ETHICS

I accept and declare that the information contained in this project report, which I have prepared in accordance with the writing rules of Ankara University, Faculty of Science, Department of Mathematics Graduation Project, is scientific, that I have acted in accordance with the Ethical and Moral rules during the editing and production of the information, and that I have included all the references I have used in the Bibliography Section.

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İmza

ABSTRACT

This study aims to provide a comparative analysis of loan repayment plans for the same loan amount taken from different banks. Today, individuals and businesses use bank loans to meet various financial needs. However, banks differ in terms of interest rates, total repayment amounts, additional taxes, and annual cost rates. Therefore, determining the most suitable loan option is crucial for borrowers.

In this project, loan repayment plans offered by selected banks for a 100,000 TL loan with a 24-month term were created using Excel. Monthly installment amounts, interest costs, and total repayment amounts were calculated using the PMT function and other financial calculation methods.

As a result of this study, differences in total loan costs among various banks were identified, and the most advantageous loan option was determined. This analysis serves as a guide to help consumers make more informed financial decisions.

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1. INTRODUCTION

Today, individuals and businesses frequently take out loans from banks to meet their financial needs. Banks offer various loan options with different interest rates, repayment plans, and additional costs, providing customers with a range of choices. However, selecting the most suitable bank for a loan requires a careful analysis of total repayment amounts, interest rates, and payment structures.

In this study, loan repayment plans from six different banks - Halkbank, Ziraat Bank, enpara.com, Garanti BBVA, QNB Finansbank, and İşbank - were compared for a 100,000 TL loan. By evaluating the interest rates, repayment terms, and total costs of these loans, the most advantageous option was determined.

As part of the research, monthly payment tables were created for each bank, detailing how the loan installment payments are distributed between interest and principal amounts. Additionally, to visualize the impact of interest payments over time, graphs comparing "Amount to Interest" and "Amount to Principal" were generated. Finally, a comparison table of "Total of Payments" (Total Repayment Amount) and "Interest Rate" was prepared to provide a more comprehensive evaluation of the loan options offered by these banks.

The loan calculations in this study were performed using Excel's PMT function and other financial formulas. Some of these formulas were sourced from YouTube financial education videos, while interest rate data was obtained from the loan calculation tools available on the official websites of the banks.

This comparative analysis aims to help determine which bank offers the most cost-effective loan option. The findings of this study will assist individuals in making more informed decisions when selecting a loan.

2. METHODOLOGY

In this study, the loan repayment plans of six different banks -Halkbank, Ziraat Bank, enpara.com, Garanti BBVA, QNB Finansbank and İşbank- were compared for a 100,000 TL loan.

2.1. Data Collection Process

The interest rates and number of payments used in this study were obtained from the official websites of the banks through their loan calculation tools. These data include the interest rates set according to current market conditions.

2.2. Methods Used

In this study, several Excel formulas and functions were used to construct the repayment tables and perform financial calculations accurately. The key method used for determining the monthly installment amount is the PMT function.

The **PMT function** is essential for calculating equal loan installment payments over a fixed period. The formula used is:

$$=PMT((Interest\ Rate\ \%)*(1+ KKDF\ Rate + BSMV\ Rate), No.\ of\ Payments, -Loan\ Amount)$$

This formula takes into account the monthly interest rate, additional taxes such as the Resource Utilization Support Fund (KKDF) and Banking and Insurance Transactions Tax (BSMV), and calculates the fixed monthly payment required to repay the loan.

To calculate the effective monthly cost of the loan, the **Monthly Cost Rate** is computed with the following formula:

$$=Interest\ Rate*(1 + KKDF\ Rate + BSMV\ Rate)$$

This rate represents the true cost of borrowing on a monthly basis after accounting for mandatory taxes.

To determine the loan's cost on an annual basis, the **Total Annual Cost Rate** is calculated using compound interest:

```
=(1 + Monthly Cost Rate)^12 - 1
```

This formula annualizes the monthly cost rate by compounding it over 12 months, revealing the full yearly cost to the borrower.

The **First Payment Date** is identified using the EDATE function:

```
=EDATE(Loan Date, 1)
```

This ensures that the first installment is scheduled exactly one month after the loan is issued.

Similarly, the **Last Payment Date** is calculated by:

```
=EDATE(Loan Date, No. of Payments)
```

This provides the exact date when the final payment will be made, completing the repayment period.

The **Total Interest Paid** over the course of the loan is obtained by summing all "Amount to Interest" values in the repayment table:

```
=SUM(range)
```

Likewise, the **Total of Payments** is the sum of all monthly payment amounts:

```
=SUM(range)
```

These totals help assess the long-term financial burden of the loan.

The monthly payment amount listed in the repayment table is initially equal to the value returned by the PMT function. For each month, the **Amount to Interest** is calculated as:

$$=\text{Loan Amount} * \text{Interest Rate}$$

The **Amount to Principal** is calculated as:

$$=\text{Payment Amount} - \text{Amount to Interest} - \text{KKDF} - \text{BSMV}$$

The KKDF and BSMV taxes themselves are derived as:

$$\text{KKDF} = \text{KKDF Rate} * \text{Amount to Interest}$$

$$\text{BSMV} = \text{BSMV Rate} * \text{Amount to Interest}$$

These values are subtracted from the payment to identify how much of it truly contributes to reducing the loan balance.

Finally, the **Ending Balance** after each payment is calculated by subtracting the Amount to Principal from the Beginning Balance:

$$=\text{Beginning Balance} - \text{Amount to Principal}$$

These detailed formulas allow for a comprehensive breakdown of each installment into interest, taxes, and principal components.

The analysis of “Amount to Interest” and “Amount to Principal” over time provided insights into how the burden of interest decreases while principal payments increase throughout the repayment process.

Additionally, a comparison of total repayment amounts and interest rates from multiple banks helped identify the most cost-effective loan option. Some of these financial techniques and functions were learned through self-education using resources such as YouTube tutorials and Udemy courses. These learning platforms played a crucial role in understanding and applying Excel-based financial modeling in this study.

2.3. Evaluation Criteria

The following criteria were considered when comparing banks:

- Monthly installment amounts
- Total repayment amount
- Interest rates
- Distribution of interest and principal payments over time

Based on these criteria, the study aims to determine the most advantageous loan option.

3. FINDINGS AND COMPARISONS

3.1. Loan Payment Calculators by Bank

Loan Payment Calculator tables were created to be used in separate payment tables for the six different banks examined in the study. These tables serve as a vital tool for analyzing the repayment plans offered by each bank. They provide a clear breakdown of interest rates, total interest paid, and total of payments, allowing for an easy comparison of the loan options. The data in these tables were carefully organized and calculated using Excel's financial functions, ensuring accuracy and consistency in the comparison process.

Loan Payment Calculator			
	Input:		Output:
Loan Amount	₺ 100,000.00	Payment Amount	₺ 8,585.40
No. of Payments	24	First Payment Date	2/1/2023
Interest Rate	5.25%	Last Payment Date	1/1/2025
Loan Date	1/1/2023	Total Interest Paid	₺ 81,576.57
Monthly Cost Rate	6.83%	Total of Payments	₺ 206,049.54
Total Annual Cost Rate	120.8385%		
KKDF and BSMV Rate	15%		

Table 3.1.1 Halkbank Loan Payment Calculator

Loan Payment Calculator			
	Input:		Output:
Loan Amount	₺ 100,000.00	Payment Amount	₺ 7,715.70
No. of Payments	24	First Payment Date	2/1/2023
Interest Rate	4.35%	Last Payment Date	1/1/2025
Loan Date	1/1/2023	Total Interest Paid	₺ 65,520.53
Monthly Cost Rate	5.66%	Total of Payments	₺ 185,176.68
Total Annual Cost Rate	93.4999%		
KKDF and BSMV Rate	15%		

Table 3.1.2 Ziraat Bank Loan Payment Calculator

Loan Payment Calculator			
	Input:		Output:
Loan Amount	₺ 100,000.00	Payment Amount	₺ 7,612.23
No. of Payments	24	First Payment Date	2/1/2023
Interest Rate	4.24%	Last Payment Date	1/1/2025
Loan Date	1/1/2023	Total Interest Paid	₺ 63,610.46
Monthly Cost Rate	5.51%	Total of Payments	₺ 182,693.60
Total Annual Cost Rate	90.3804%		
KKDF and BSMV Rate	15%		

Table 3.1.3 enpara.com Loan Payment Calculator

Loan Payment Calculator			
	Input:		Output:
Loan Amount	₺ 100,000.00	Payment Amount	₺ 7,342.56
No. of Payments	24	First Payment Date	2/1/2023
Interest Rate	3.95%	Last Payment Date	1/1/2025
Loan Date	1/1/2023	Total Interest Paid	₺ 58,631.79
Monthly Cost Rate	5.14%	Total of Payments	₺ 176,221.32
Total Annual Cost Rate	82.3761%		
KKDF and BSMV Rate	15%		

Table 3.1.4 Garanti BBVA Loan Payment Calculator

Loan Payment Calculator			
	Input:		Output:
Loan Amount	₺ 100,000.00	Payment Amount	₺ 7,333.34
No. of Payments	24	First Payment Date	2/1/2023
Interest Rate	3.94%	Last Payment Date	1/1/2025
Loan Date	1/1/2023	Total Interest Paid	₺ 58,461.60
Monthly Cost Rate	5.12%	Total of Payments	₺ 176,000.08
Total Annual Cost Rate	82.1056%		
KKDF and BSMV Rate	15%		

Table 3.1.5 QNB Bank Loan Payment Calculator

Loan Payment Calculator			
	Input:		Output:
Loan Amount	₺ 100,000.00	Payment Amount	₺ 7,250.62
No. of Payments	24	First Payment Date	2/1/2023
Interest Rate	3.85%	Last Payment Date	1/1/2025
Loan Date	1/1/2023	Total Interest Paid	₺ 56,934.44
Monthly Cost Rate	5.01%	Total of Payments	₺ 174,014.77
Total Annual Cost Rate	79.6883%		
KKDF and BSMV Rate	15%		

Table 3.1.6 İşbank Loan Payment Calculator

The values seen in the tables contain the data required for the payment tables we will create.

3.2. Monthly Repayment Plans by Bank

Separate repayment tables were created for each of the six banks, providing a comprehensive breakdown of their monthly installment amounts, including the distribution of principal and interest payments for each month over the entire loan term. These tables were designed to highlight the variations in repayment structures between the banks, enabling a clearer comparison of their financial offerings.

Amortization Table								
Pmt No.	Pmt Date	Payment Amount	Beginning Balance	Amount to Interest	Amount to Principal	KKDF	BSMV	Ending Balance
1	2/1/2023	₺ 8,585.40	₺100,000.00	₺ 5,250.00	₺ 1,760.40	₺ 787.50	₺ 787.50	₺ 98,239.60
2	3/1/2023	₺ 8,585.40	₺ 98,239.60	₺ 5,157.58	₺ 1,880.54	₺ 773.64	₺ 773.64	₺ 96,359.06
3	4/1/2023	₺ 8,585.40	₺ 96,359.06	₺ 5,058.85	₺ 2,008.89	₺ 758.83	₺ 758.83	₺ 94,350.17
4	5/1/2023	₺ 8,585.40	₺ 94,350.17	₺ 4,953.38	₺ 2,146.00	₺ 743.01	₺ 743.01	₺ 92,204.17
5	6/1/2023	₺ 8,585.40	₺ 92,204.17	₺ 4,840.72	₺ 2,292.46	₺ 726.11	₺ 726.11	₺ 89,911.70
6	7/1/2023	₺ 8,585.40	₺ 89,911.70	₺ 4,720.36	₺ 2,448.92	₺ 708.05	₺ 708.05	₺ 87,462.78
7	8/1/2023	₺ 8,585.40	₺ 87,462.78	₺ 4,591.80	₺ 2,616.06	₺ 688.77	₺ 688.77	₺ 84,846.72
8	9/1/2023	₺ 8,585.40	₺ 84,846.72	₺ 4,454.45	₺ 2,794.61	₺ 668.17	₺ 668.17	₺ 82,052.11
9	10/1/2023	₺ 8,585.40	₺ 82,052.11	₺ 4,307.74	₺ 2,985.34	₺ 646.16	₺ 646.16	₺ 79,066.77
10	11/1/2023	₺ 8,585.40	₺ 79,066.77	₺ 4,151.01	₺ 3,189.09	₺ 622.65	₺ 622.65	₺ 75,877.68
11	12/1/2023	₺ 8,585.40	₺ 75,877.68	₺ 3,983.58	₺ 3,406.75	₺ 597.54	₺ 597.54	₺ 72,470.93
12	1/1/2024	₺ 8,585.40	₺ 72,470.93	₺ 3,804.72	₺ 3,639.26	₺ 570.71	₺ 570.71	₺ 68,831.67
13	2/1/2024	₺ 8,585.40	₺ 68,831.67	₺ 3,613.66	₺ 3,887.64	₺ 542.05	₺ 542.05	₺ 64,944.04
14	3/1/2024	₺ 8,585.40	₺ 64,944.04	₺ 3,409.56	₺ 4,152.97	₺ 511.43	₺ 511.43	₺ 60,791.07
15	4/1/2024	₺ 8,585.40	₺ 60,791.07	₺ 3,191.53	₺ 4,436.41	₺ 478.73	₺ 478.73	₺ 56,354.66
16	5/1/2024	₺ 8,585.40	₺ 56,354.66	₺ 2,958.62	₺ 4,739.19	₺ 443.79	₺ 443.79	₺ 51,615.47
17	6/1/2024	₺ 8,585.40	₺ 51,615.47	₺ 2,709.81	₺ 5,062.64	₺ 406.47	₺ 406.47	₺ 46,552.83
18	7/1/2024	₺ 8,585.40	₺ 46,552.83	₺ 2,444.02	₺ 5,408.17	₺ 366.60	₺ 366.60	₺ 41,144.66
19	8/1/2024	₺ 8,585.40	₺ 41,144.66	₺ 2,160.09	₺ 5,777.27	₺ 324.01	₺ 324.01	₺ 35,367.39
20	9/1/2024	₺ 8,585.40	₺ 35,367.39	₺ 1,856.79	₺ 6,171.57	₺ 278.52	₺ 278.52	₺ 29,195.81
21	10/1/2024	₺ 8,585.40	₺ 29,195.81	₺ 1,532.78	₺ 6,592.78	₺ 229.92	₺ 229.92	₺ 22,603.03
22	11/1/2024	₺ 8,585.40	₺ 22,603.03	₺ 1,186.66	₺ 7,042.74	₺ 178.00	₺ 178.00	₺ 15,560.29
23	12/1/2024	₺ 8,585.40	₺ 15,560.29	₺ 816.92	₺ 7,523.41	₺ 122.54	₺ 122.54	₺ 8,036.88
24	1/1/2025	₺ 8,585.40	₺ 8,036.88	₺ 421.94	₺ 8,036.88	₺ 63.29	₺ 63.29	0

Table 3.2.1 Halkbank Amortization Table

Amortization Table								
Pmt No.	Pmt Date	Payment Amount	Beginning Balance	Amount to Interest	Amount to Principal	KKDF	BSMV	Ending Balance
1	2/1/2023	₺ 7,715.70	₺100,000.00	₺ 4,350.00	₺ 2,060.70	₺ 652.50	₺ 652.50	₺ 97,939.30
2	3/1/2023	₺ 7,715.70	₺ 97,939.30	₺ 4,260.36	₺ 2,177.23	₺ 639.05	₺ 639.05	₺ 95,762.08
3	4/1/2023	₺ 7,715.70	₺ 95,762.08	₺ 4,165.65	₺ 2,300.35	₺ 624.85	₺ 624.85	₺ 93,461.73
4	5/1/2023	₺ 7,715.70	₺ 93,461.73	₺ 4,065.59	₺ 2,430.43	₺ 609.84	₺ 609.84	₺ 91,031.29
5	6/1/2023	₺ 7,715.70	₺ 91,031.29	₺ 3,959.86	₺ 2,567.88	₺ 593.98	₺ 593.98	₺ 88,463.42
6	7/1/2023	₺ 7,715.70	₺ 88,463.42	₺ 3,848.16	₺ 2,713.09	₺ 577.22	₺ 577.22	₺ 85,750.33
7	8/1/2023	₺ 7,715.70	₺ 85,750.33	₺ 3,730.14	₺ 2,866.51	₺ 559.52	₺ 559.52	₺ 82,883.81
8	9/1/2023	₺ 7,715.70	₺ 82,883.81	₺ 3,605.45	₺ 3,028.62	₺ 540.82	₺ 540.82	₺ 79,855.20
9	10/1/2023	₺ 7,715.70	₺ 79,855.20	₺ 3,473.70	₺ 3,199.88	₺ 521.06	₺ 521.06	₺ 76,655.32
10	11/1/2023	₺ 7,715.70	₺ 76,655.32	₺ 3,334.51	₺ 3,380.84	₺ 500.18	₺ 500.18	₺ 73,274.48
11	12/1/2023	₺ 7,715.70	₺ 73,274.48	₺ 3,187.44	₺ 3,572.02	₺ 478.12	₺ 478.12	₺ 69,702.45
12	1/1/2024	₺ 7,715.70	₺ 69,702.45	₺ 3,032.06	₺ 3,774.02	₺ 454.81	₺ 454.81	₺ 65,928.43
13	2/1/2024	₺ 7,715.70	₺ 65,928.43	₺ 2,867.89	₺ 3,987.44	₺ 430.18	₺ 430.18	₺ 61,940.99
14	3/1/2024	₺ 7,715.70	₺ 61,940.99	₺ 2,694.43	₺ 4,212.93	₺ 404.16	₺ 404.16	₺ 57,728.06
15	4/1/2024	₺ 7,715.70	₺ 57,728.06	₺ 2,511.17	₺ 4,451.17	₺ 376.68	₺ 376.68	₺ 53,276.89
16	5/1/2024	₺ 7,715.70	₺ 53,276.89	₺ 2,317.54	₺ 4,702.89	₺ 347.63	₺ 347.63	₺ 48,574.00
17	6/1/2024	₺ 7,715.70	₺ 48,574.00	₺ 2,112.97	₺ 4,968.84	₺ 316.95	₺ 316.95	₺ 43,605.16
18	7/1/2024	₺ 7,715.70	₺ 43,605.16	₺ 1,896.82	₺ 5,249.82	₺ 284.52	₺ 284.52	₺ 38,355.34
19	8/1/2024	₺ 7,715.70	₺ 38,355.34	₺ 1,668.46	₺ 5,546.70	₺ 250.27	₺ 250.27	₺ 32,808.64
20	9/1/2024	₺ 7,715.70	₺ 32,808.64	₺ 1,427.18	₺ 5,860.37	₺ 214.08	₺ 214.08	₺ 26,948.27
21	10/1/2024	₺ 7,715.70	₺ 26,948.27	₺ 1,172.25	₺ 6,191.77	₺ 175.84	₺ 175.84	₺ 20,756.50
22	11/1/2024	₺ 7,715.70	₺ 20,756.50	₺ 902.91	₺ 6,541.92	₺ 135.44	₺ 135.44	₺ 14,214.59
23	12/1/2024	₺ 7,715.70	₺ 14,214.59	₺ 618.33	₺ 6,911.86	₺ 92.75	₺ 92.75	₺ 7,302.73
24	1/1/2025	₺ 7,715.70	₺ 7,302.73	₺ 317.67	₺ 7,302.73	₺ 47.65	₺ 47.65	0

Table 3.2.2 Ziraat Bank Amortization Table

Amortization Table								
Pmt No.	Pmt Date	Payment Amount	Beginning Balance	Amount to Interest	Amount to Principal	KKDF	BSMV	Ending Balance
1	2/1/2023	₺ 7,612.23	₺ 100,000.00	₺ 4,240.00	₺ 2,100.23	₺ 636.00	₺ 636.00	₺ 97,899.77
2	3/1/2023	₺ 7,612.23	₺ 97,899.77	₺ 4,150.95	₺ 2,216.00	₺ 622.64	₺ 622.64	₺ 95,683.77
3	4/1/2023	₺ 7,612.23	₺ 95,683.77	₺ 4,056.99	₺ 2,338.14	₺ 608.55	₺ 608.55	₺ 93,345.62
4	5/1/2023	₺ 7,612.23	₺ 93,345.62	₺ 3,957.85	₺ 2,467.02	₺ 593.68	₺ 593.68	₺ 90,878.60
5	6/1/2023	₺ 7,612.23	₺ 90,878.60	₺ 3,853.25	₺ 2,603.00	₺ 577.99	₺ 577.99	₺ 88,275.60
6	7/1/2023	₺ 7,612.23	₺ 88,275.60	₺ 3,742.89	₺ 2,746.48	₺ 561.43	₺ 561.43	₺ 85,529.11
7	8/1/2023	₺ 7,612.23	₺ 85,529.11	₺ 3,626.43	₺ 2,897.87	₺ 543.97	₺ 543.97	₺ 82,631.25
8	9/1/2023	₺ 7,612.23	₺ 82,631.25	₺ 3,503.56	₺ 3,057.60	₺ 525.53	₺ 525.53	₺ 79,573.65
9	10/1/2023	₺ 7,612.23	₺ 79,573.65	₺ 3,373.92	₺ 3,226.13	₺ 506.09	₺ 506.09	₺ 76,347.51
10	11/1/2023	₺ 7,612.23	₺ 76,347.51	₺ 3,237.13	₺ 3,403.96	₺ 485.57	₺ 485.57	₺ 72,943.55
11	12/1/2023	₺ 7,612.23	₺ 72,943.55	₺ 3,092.81	₺ 3,591.58	₺ 463.92	₺ 463.92	₺ 69,351.97
12	1/1/2024	₺ 7,612.23	₺ 69,351.97	₺ 2,940.52	₺ 3,789.55	₺ 441.08	₺ 441.08	₺ 65,562.42
13	2/1/2024	₺ 7,612.23	₺ 65,562.42	₺ 2,779.85	₺ 3,998.43	₺ 416.98	₺ 416.98	₺ 61,563.98
14	3/1/2024	₺ 7,612.23	₺ 61,563.98	₺ 2,610.31	₺ 4,218.83	₺ 391.55	₺ 391.55	₺ 57,345.16
15	4/1/2024	₺ 7,612.23	₺ 57,345.16	₺ 2,431.43	₺ 4,451.37	₺ 364.72	₺ 364.72	₺ 52,893.79
16	5/1/2024	₺ 7,612.23	₺ 52,893.79	₺ 2,242.70	₺ 4,696.73	₺ 336.40	₺ 336.40	₺ 48,197.06
17	6/1/2024	₺ 7,612.23	₺ 48,197.06	₺ 2,043.56	₺ 4,955.61	₺ 306.53	₺ 306.53	₺ 43,241.45
18	7/1/2024	₺ 7,612.23	₺ 43,241.45	₺ 1,833.44	₺ 5,228.76	₺ 275.02	₺ 275.02	₺ 38,012.68
19	8/1/2024	₺ 7,612.23	₺ 38,012.68	₺ 1,611.74	₺ 5,516.97	₺ 241.76	₺ 241.76	₺ 32,495.71
20	9/1/2024	₺ 7,612.23	₺ 32,495.71	₺ 1,377.82	₺ 5,821.07	₺ 206.67	₺ 206.67	₺ 26,674.64
21	10/1/2024	₺ 7,612.23	₺ 26,674.64	₺ 1,131.00	₺ 6,141.93	₺ 169.65	₺ 169.65	₺ 20,532.71
22	11/1/2024	₺ 7,612.23	₺ 20,532.71	₺ 870.59	₺ 6,480.47	₺ 130.59	₺ 130.59	₺ 14,052.24
23	12/1/2024	₺ 7,612.23	₺ 14,052.24	₺ 595.81	₺ 6,837.67	₺ 89.37	₺ 89.37	₺ 7,214.57
24	1/1/2025	₺ 7,612.23	₺ 7,214.57	₺ 305.90	₺ 7,214.57	₺ 45.88	₺ 45.88	0

Table 3.2.3 enpara.com Amortization Table

Amortization Table								
Pmt No.	Pmt Date	Payment Amount	Beginning Balance	Amount to Interest	Amount to Principal	KKDF	BSMV	Ending Balance
1	2/1/2023	₺ 7,342.56	₺ 100,000.00	₺ 3,950.00	₺ 2,207.56	₺ 592.50	₺ 592.50	₺ 97,792.44
2	3/1/2023	₺ 7,342.56	₺ 97,792.44	₺ 3,862.80	₺ 2,320.91	₺ 579.42	₺ 579.42	₺ 95,471.53
3	4/1/2023	₺ 7,342.56	₺ 95,471.53	₺ 3,771.13	₺ 2,440.09	₺ 565.67	₺ 565.67	₺ 93,031.44
4	5/1/2023	₺ 7,342.56	₺ 93,031.44	₺ 3,674.74	₺ 2,565.39	₺ 551.21	₺ 551.21	₺ 90,466.05
5	6/1/2023	₺ 7,342.56	₺ 90,466.05	₺ 3,573.41	₺ 2,697.12	₺ 536.01	₺ 536.01	₺ 87,768.93
6	7/1/2023	₺ 7,342.56	₺ 87,768.93	₺ 3,466.87	₺ 2,835.62	₺ 520.03	₺ 520.03	₺ 84,933.30
7	8/1/2023	₺ 7,342.56	₺ 84,933.30	₺ 3,354.87	₺ 2,981.23	₺ 503.23	₺ 503.23	₺ 81,952.07
8	9/1/2023	₺ 7,342.56	₺ 81,952.07	₺ 3,237.11	₺ 3,134.32	₺ 485.57	₺ 485.57	₺ 78,817.76
9	10/1/2023	₺ 7,342.56	₺ 78,817.76	₺ 3,113.30	₺ 3,295.26	₺ 467.00	₺ 467.00	₺ 75,522.50
10	11/1/2023	₺ 7,342.56	₺ 75,522.50	₺ 2,983.14	₺ 3,464.47	₺ 447.47	₺ 447.47	₺ 72,058.02
11	12/1/2023	₺ 7,342.56	₺ 72,058.02	₺ 2,846.29	₺ 3,642.38	₺ 426.94	₺ 426.94	₺ 68,415.64
12	1/1/2024	₺ 7,342.56	₺ 68,415.64	₺ 2,702.42	₺ 3,829.41	₺ 405.36	₺ 405.36	₺ 64,586.23
13	2/1/2024	₺ 7,342.56	₺ 64,586.23	₺ 2,551.16	₺ 4,026.05	₺ 382.67	₺ 382.67	₺ 60,560.18
14	3/1/2024	₺ 7,342.56	₺ 60,560.18	₺ 2,392.13	₺ 4,232.79	₺ 358.82	₺ 358.82	₺ 56,327.39
15	4/1/2024	₺ 7,342.56	₺ 56,327.39	₺ 2,224.93	₺ 4,450.14	₺ 333.74	₺ 333.74	₺ 51,877.25
16	5/1/2024	₺ 7,342.56	₺ 51,877.25	₺ 2,049.15	₺ 4,678.66	₺ 307.37	₺ 307.37	₺ 47,198.59
17	6/1/2024	₺ 7,342.56	₺ 47,198.59	₺ 1,864.34	₺ 4,918.91	₺ 279.65	₺ 279.65	₺ 42,279.68
18	7/1/2024	₺ 7,342.56	₺ 42,279.68	₺ 1,670.05	₺ 5,171.49	₺ 250.51	₺ 250.51	₺ 37,108.19
19	8/1/2024	₺ 7,342.56	₺ 37,108.19	₺ 1,465.77	₺ 5,437.05	₺ 219.87	₺ 219.87	₺ 31,671.14
20	9/1/2024	₺ 7,342.56	₺ 31,671.14	₺ 1,251.01	₺ 5,716.24	₺ 187.65	₺ 187.65	₺ 25,954.90
21	10/1/2024	₺ 7,342.56	₺ 25,954.90	₺ 1,025.22	₺ 6,009.77	₺ 153.78	₺ 153.78	₺ 19,945.12
22	11/1/2024	₺ 7,342.56	₺ 19,945.12	₺ 787.83	₺ 6,318.37	₺ 118.17	₺ 118.17	₺ 13,626.75
23	12/1/2024	₺ 7,342.56	₺ 13,626.75	₺ 538.26	₺ 6,642.82	₺ 80.74	₺ 80.74	₺ 6,983.93
24	1/1/2025	₺ 7,342.56	₺ 6,983.93	₺ 275.87	₺ 6,983.93	₺ 41.38	₺ 41.38	0

Table 3.2.4 Garanti BBVA Amortization Table

Amortization Table								
Pmt No.	Pmt Date	Payment Amount	Beginning Balance	Amount to Interest	Amount to Principal	KKDF	BSMV	Ending Balance
1	2/1/2023	₺ 7,333.34	₺ 100,000.00	₺ 3,940.00	₺ 2,211.34	₺ 591.00	₺ 591.00	₺ 97,788.66
2	3/1/2023	₺ 7,333.34	₺ 97,788.66	₺ 3,852.87	₺ 2,324.60	₺ 577.93	₺ 577.93	₺ 95,464.06
3	4/1/2023	₺ 7,333.34	₺ 95,464.06	₺ 3,761.28	₺ 2,443.67	₺ 564.19	₺ 564.19	₺ 93,020.39
4	5/1/2023	₺ 7,333.34	₺ 93,020.39	₺ 3,665.00	₺ 2,568.83	₺ 549.75	₺ 549.75	₺ 90,451.56
5	6/1/2023	₺ 7,333.34	₺ 90,451.56	₺ 3,563.79	₺ 2,700.41	₺ 534.57	₺ 534.57	₺ 87,751.16
6	7/1/2023	₺ 7,333.34	₺ 87,751.16	₺ 3,457.40	₺ 2,838.72	₺ 518.61	₺ 518.61	₺ 84,912.43
7	8/1/2023	₺ 7,333.34	₺ 84,912.43	₺ 3,345.55	₺ 2,984.12	₺ 501.83	₺ 501.83	₺ 81,928.31
8	9/1/2023	₺ 7,333.34	₺ 81,928.31	₺ 3,227.98	₺ 3,136.97	₺ 484.20	₺ 484.20	₺ 78,791.34
9	10/1/2023	₺ 7,333.34	₺ 78,791.34	₺ 3,104.38	₺ 3,297.64	₺ 465.66	₺ 465.66	₺ 75,493.70
10	11/1/2023	₺ 7,333.34	₺ 75,493.70	₺ 2,974.45	₺ 3,466.55	₺ 446.17	₺ 446.17	₺ 72,027.15
11	12/1/2023	₺ 7,333.34	₺ 72,027.15	₺ 2,837.87	₺ 3,644.11	₺ 425.68	₺ 425.68	₺ 68,383.04
12	1/1/2024	₺ 7,333.34	₺ 68,383.04	₺ 2,694.29	₺ 3,830.76	₺ 404.14	₺ 404.14	₺ 64,552.29
13	2/1/2024	₺ 7,333.34	₺ 64,552.29	₺ 2,543.36	₺ 4,026.97	₺ 381.50	₺ 381.50	₺ 60,525.32
14	3/1/2024	₺ 7,333.34	₺ 60,525.32	₺ 2,384.70	₺ 4,233.23	₺ 357.70	₺ 357.70	₺ 56,292.09
15	4/1/2024	₺ 7,333.34	₺ 56,292.09	₺ 2,217.91	₺ 4,450.06	₺ 332.69	₺ 332.69	₺ 51,842.03
16	5/1/2024	₺ 7,333.34	₺ 51,842.03	₺ 2,042.58	₺ 4,677.99	₺ 306.39	₺ 306.39	₺ 47,164.04
17	6/1/2024	₺ 7,333.34	₺ 47,164.04	₺ 1,858.26	₺ 4,917.59	₺ 278.74	₺ 278.74	₺ 42,246.45
18	7/1/2024	₺ 7,333.34	₺ 42,246.45	₺ 1,664.51	₺ 5,169.47	₺ 249.68	₺ 249.68	₺ 37,076.98
19	8/1/2024	₺ 7,333.34	₺ 37,076.98	₺ 1,460.83	₺ 5,434.25	₺ 219.12	₺ 219.12	₺ 31,642.72
20	9/1/2024	₺ 7,333.34	₺ 31,642.72	₺ 1,246.72	₺ 5,712.60	₺ 187.01	₺ 187.01	₺ 25,930.12
21	10/1/2024	₺ 7,333.34	₺ 25,930.12	₺ 1,021.65	₺ 6,005.20	₺ 153.25	₺ 153.25	₺ 19,924.93
22	11/1/2024	₺ 7,333.34	₺ 19,924.93	₺ 785.04	₺ 6,312.78	₺ 117.76	₺ 117.76	₺ 13,612.15
23	12/1/2024	₺ 7,333.34	₺ 13,612.15	₺ 536.32	₺ 6,636.12	₺ 80.45	₺ 80.45	₺ 6,976.02
24	1/1/2025	₺ 7,333.34	₺ 6,976.02	₺ 274.86	₺ 6,976.02	₺ 41.23	₺ 41.23	0

Table 3.2.5 QNB Bank Amortization Table

Amortization Table								
Pmt No.	Pmt Date	Payment Amount	Beginning Balance	Amount to Interest	Amount to Principal	KKDF	BSMV	Ending Balance
1	2/1/2023	₺ 7,250.62	₺ 100,000.00	₺ 3,850.00	₺ 2,245.62	₺ 577.50	₺ 577.50	₺ 97,754.38
2	3/1/2023	₺ 7,250.62	₺ 97,754.38	₺ 3,763.54	₺ 2,358.01	₺ 564.53	₺ 564.53	₺ 95,396.38
3	4/1/2023	₺ 7,250.62	₺ 95,396.38	₺ 3,672.76	₺ 2,476.03	₺ 550.91	₺ 550.91	₺ 92,920.35
4	5/1/2023	₺ 7,250.62	₺ 92,920.35	₺ 3,577.43	₺ 2,599.95	₺ 536.62	₺ 536.62	₺ 90,320.40
5	6/1/2023	₺ 7,250.62	₺ 90,320.40	₺ 3,477.34	₺ 2,730.08	₺ 521.60	₺ 521.60	₺ 87,590.32
6	7/1/2023	₺ 7,250.62	₺ 87,590.32	₺ 3,372.23	₺ 2,866.72	₺ 505.83	₺ 505.83	₺ 84,723.60
7	8/1/2023	₺ 7,250.62	₺ 84,723.60	₺ 3,261.86	₺ 3,010.20	₺ 489.28	₺ 489.28	₺ 81,713.40
8	9/1/2023	₺ 7,250.62	₺ 81,713.40	₺ 3,145.97	₺ 3,160.86	₺ 471.89	₺ 471.89	₺ 78,552.54
9	10/1/2023	₺ 7,250.62	₺ 78,552.54	₺ 3,024.27	₺ 3,319.06	₺ 453.64	₺ 453.64	₺ 75,233.48
10	11/1/2023	₺ 7,250.62	₺ 75,233.48	₺ 2,896.49	₺ 3,485.18	₺ 434.47	₺ 434.47	₺ 71,748.30
11	12/1/2023	₺ 7,250.62	₺ 71,748.30	₺ 2,762.31	₺ 3,659.61	₺ 414.35	₺ 414.35	₺ 68,088.69
12	1/1/2024	₺ 7,250.62	₺ 68,088.69	₺ 2,621.41	₺ 3,842.78	₺ 393.21	₺ 393.21	₺ 64,245.91
13	2/1/2024	₺ 7,250.62	₺ 64,245.91	₺ 2,473.47	₺ 4,035.11	₺ 371.02	₺ 371.02	₺ 60,210.80
14	3/1/2024	₺ 7,250.62	₺ 60,210.80	₺ 2,318.12	₺ 4,237.06	₺ 347.72	₺ 347.72	₺ 55,973.74
15	4/1/2024	₺ 7,250.62	₺ 55,973.74	₺ 2,154.99	₺ 4,449.13	₺ 323.25	₺ 323.25	₺ 51,524.61
16	5/1/2024	₺ 7,250.62	₺ 51,524.61	₺ 1,983.70	₺ 4,671.81	₺ 297.55	₺ 297.55	₺ 46,852.80
17	6/1/2024	₺ 7,250.62	₺ 46,852.80	₺ 1,803.83	₺ 4,905.63	₺ 270.57	₺ 270.57	₺ 41,947.17
18	7/1/2024	₺ 7,250.62	₺ 41,947.17	₺ 1,614.97	₺ 5,151.16	₺ 242.24	₺ 242.24	₺ 36,796.01
19	8/1/2024	₺ 7,250.62	₺ 36,796.01	₺ 1,416.65	₺ 5,408.98	₺ 212.50	₺ 212.50	₺ 31,387.03
20	9/1/2024	₺ 7,250.62	₺ 31,387.03	₺ 1,208.40	₺ 5,679.69	₺ 181.26	₺ 181.26	₺ 25,707.34
21	10/1/2024	₺ 7,250.62	₺ 25,707.34	₺ 989.73	₺ 5,963.96	₺ 148.46	₺ 148.46	₺ 19,743.37
22	11/1/2024	₺ 7,250.62	₺ 19,743.37	₺ 760.12	₺ 6,262.46	₺ 114.02	₺ 114.02	₺ 13,480.91
23	12/1/2024	₺ 7,250.62	₺ 13,480.91	₺ 519.02	₺ 6,575.90	₺ 77.85	₺ 77.85	₺ 6,905.02
24	1/1/2025	₺ 7,250.62	₺ 6,905.02	₺ 265.84	₺ 6,905.02	₺ 39.88	₺ 39.88	0

Table 3.2.6 İşbank Amortization Table

As seen in the tables, interest rates vary between banks. Some banks offer lower interest rates, reducing the total repayment amount, while others have higher rates, increasing the overall cost of the loan.

3.3. Comparison of Amount to Interest and Amount to Principal

To better understand how loan installments are divided between interest and principal payments, graphs comparing "Amount to Interest" and "Amount to Principal" were created.

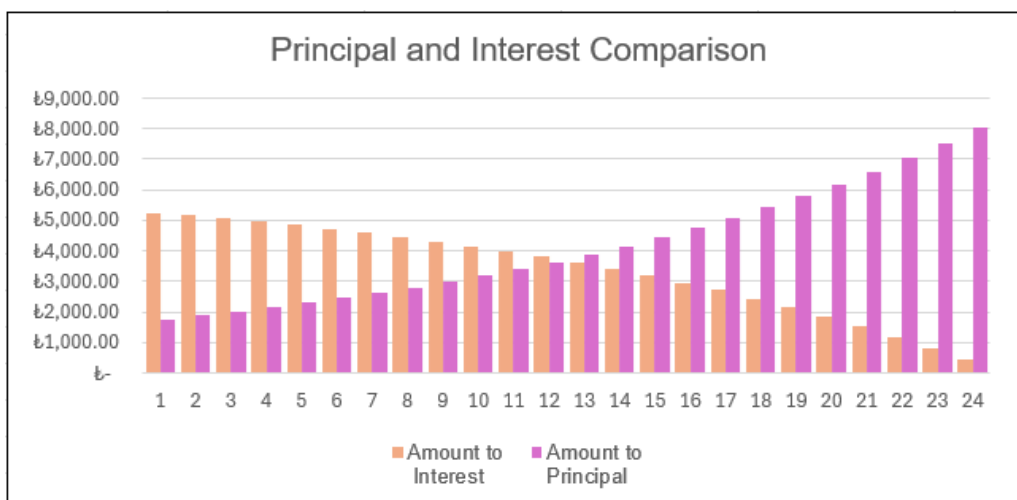


Chart 3.3.1 Principal and Interest Comparison Chart of Halkbank

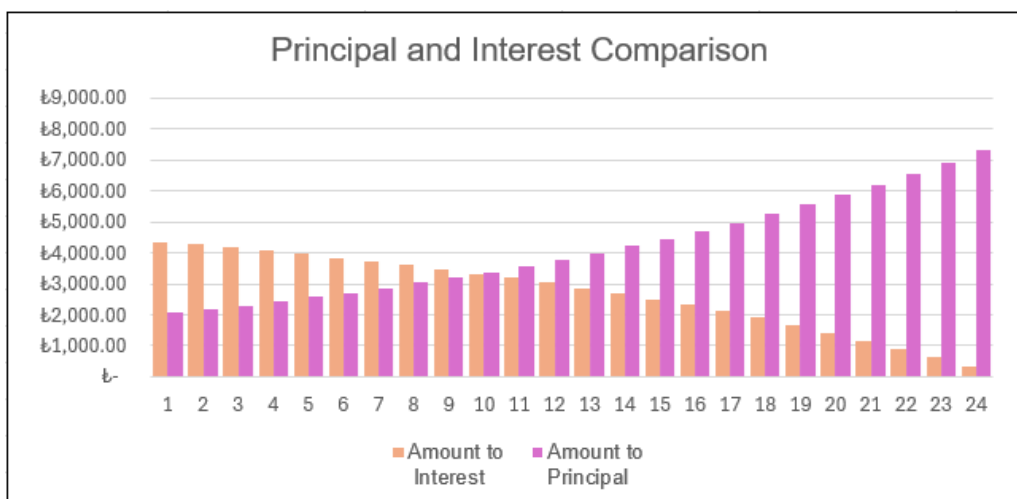


Chart 3.3.2 Principal and Interest Comparison Chart of Ziraat Bank

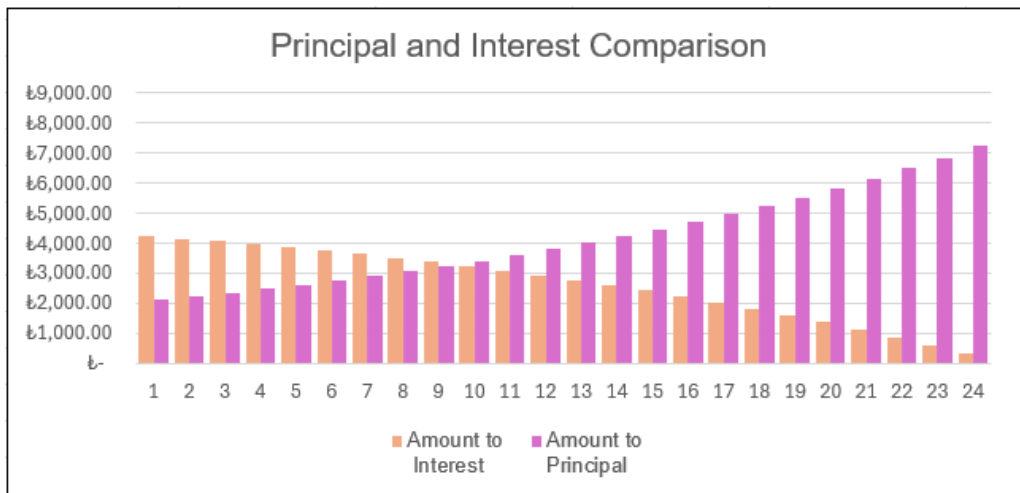


Chart 3.3.3 Principal and Interest Comparison Chart of enpara.com

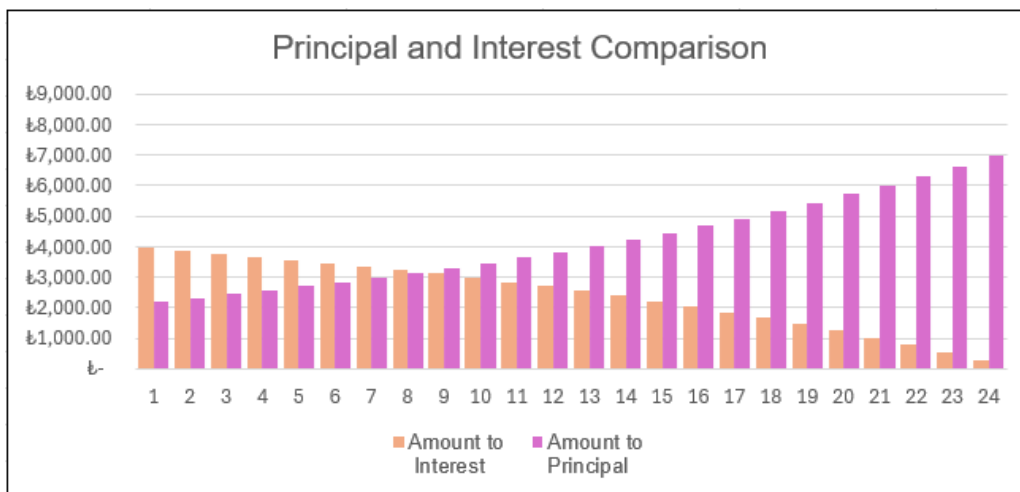


Chart 3.3.4 Principal and Interest Comparison Chart of Garanti BBVA

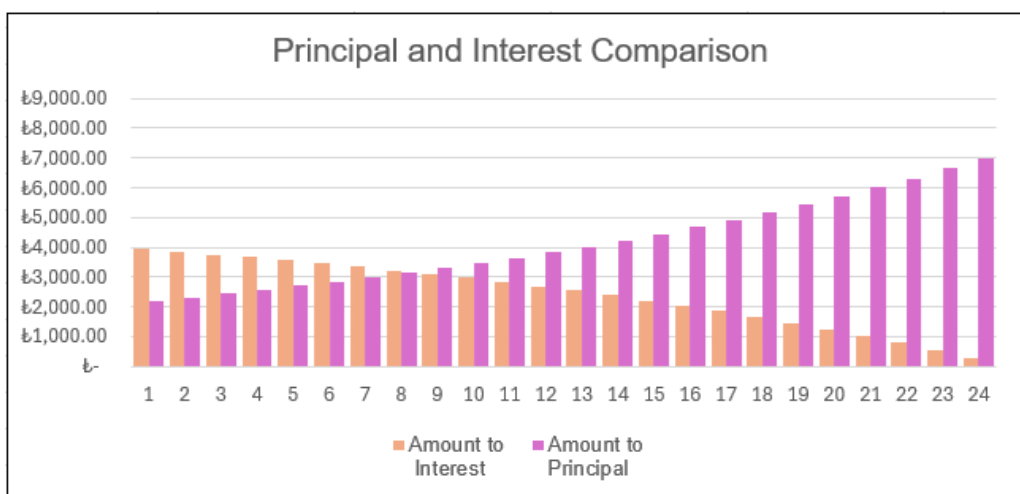


Chart 3.3.5 Principal and Interest Comparison Chart of QNB Bank

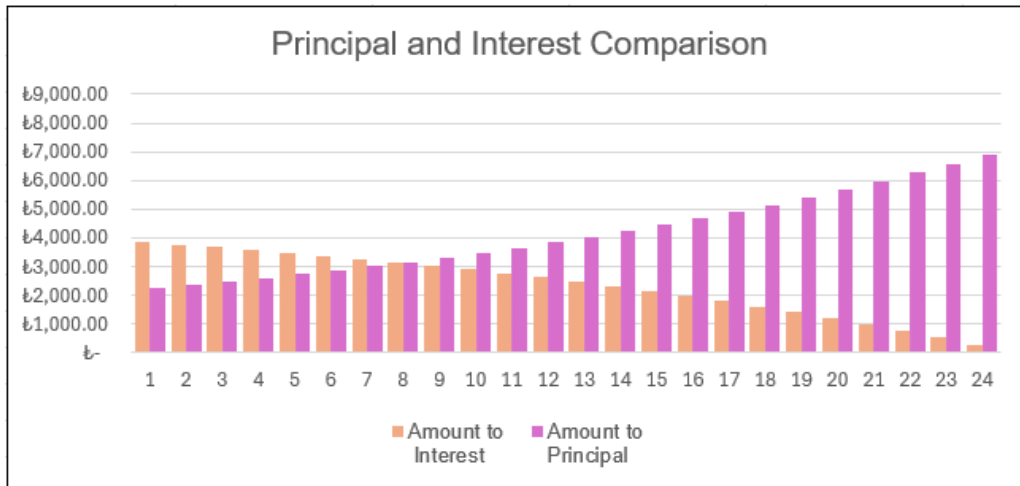


Chart 3.3.6 Principal and Interest Comparison Chart of İşbank

From these charts, it can be observed that some banks charge higher interest payments at the beginning of the loan, while others distribute interest and principal payments more evenly. Notably, İşbank offers a more balanced distribution of interest and principal over time, making it a more advantageous option.

3.4. Comparison of Total Payment and Interest Rates

Finally, a comparison table of total repayment amounts and annual interest rates was prepared.

	Total of Payments	Interest Rate
Halkbank	₺ 206,049.54	5.25%
Ziraat Bank	₺ 185,176.68	4.35%
enpara.com	₺ 182,693.60	4.24%
Garanti BBVA	₺ 176,221.32	3.95%
QNB Bank	₺ 176,000.08	3.94%
Türkiye İş Bank	₺ 174,014.77	3.85%

Table 3.4.1 Comparison Table of Total Payment and Annual Interest Rates

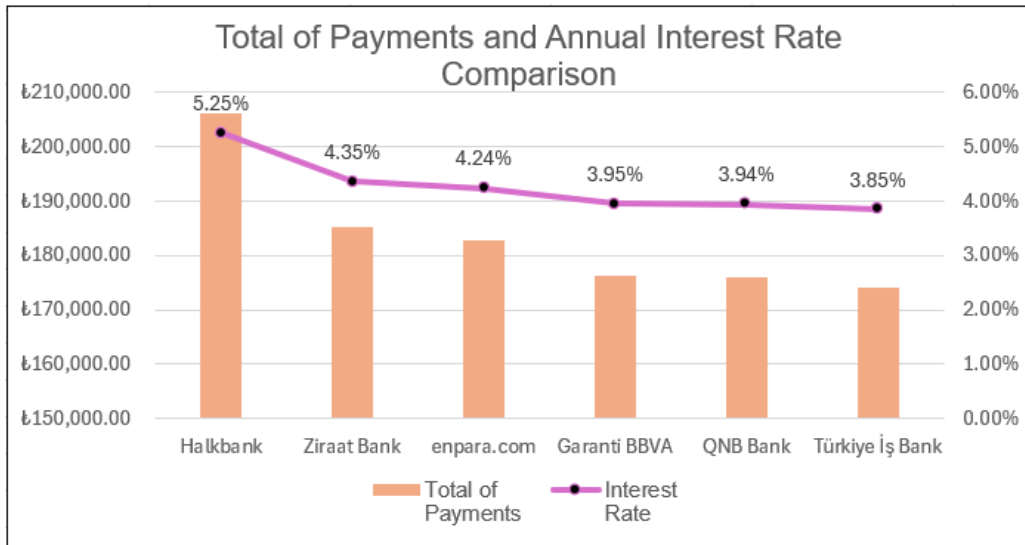


Chart 3.4.1 Comparison Chart of Total Payment and Annual Interest Rates

The findings indicate that İşbank offers the lowest total repayment amount and the most favorable interest rate, making it the most cost-effective option among the analyzed banks.

4. CONCLUSION AND RECOMMENDATIONS

4.1. Selection of the Most Suitable Bank

Based on the study's findings, İşbank was determined to be the most advantageous option for a 100,000 TL loan. This bank offers both a lower total repayment amount and a more balanced interest and principal distribution compared to other banks.

4.2. Limitations of the Study

This study has the following limitations:

- Since interest rates may change over time, updated calculations should be conducted periodically to maintain the study's relevance.
- The study focuses only on a 100,000 TL loan with a fixed term. Similar analyses can be conducted for different loan amounts and terms.

4.3. Future Work

Future research can explore the following topics:

- Conducting similar analyses for different loan amounts and repayment periods.
- Comparing loan restructuring options to identify the best long-term financing solutions for borrowers.

This study aims to help individuals make more informed decisions when selecting a loan.

References

- Microsoft. (n.d.). *PMT function*. Microsoft Support. Retrieved March 5, 2025, from <https://support.microsoft.com/en-us/office/pmt-function-0214da64-9a63-4996-bc20-214433fa6441>
- Halkbank. (2025). *İhtiyaç Kredisi Hesaplama Aracı*. Retrieved March 5, 2025, from <https://www.halkbank.com.tr>
- Ziraat Bankası. (2025). *Bireysel Kredi Hesaplama*. Retrieved March 5, 2025, from <https://www.ziraatbank.com.tr>
- enpara.com. (2025). *Kredi Hesaplama Aracı*. Retrieved March 5, 2025, from <https://www.enpara.com>
- Garanti BBVA. (2025). *Kredi Hesaplama*. Retrieved March 5, 2025, from <https://www.garantibbva.com.tr>
- QNB Finansbank. (2025). *İhtiyaç Kredisi Hesaplama*. Retrieved March 5, 2025, from <https://www.qnbfinansbank.com>
- Türkiye İş Bankası. (2025). *Kredi Hesaplama Aracı*. Retrieved March 5, 2025, from <https://www.isbank.com.tr>