

# CREDIT PORTFOLIO PERFORMANCE ANALYSIS

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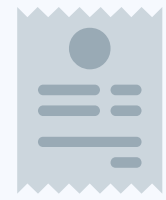
# Project Objective

- Analyze customer behavior and credit portfolio performance using SQL
- Identify active, passive, and high-risk customer segments
- Support data-driven decision-making for effective credit management
- Build analytical SQL models focusing on risk, payment behavior, and customer segmentation

# Data Structure & Table Overview

The dataset used in this project consists of **4 interrelated tables**, designed to store detailed information about **customers**, their **loans**, **payments**, and **risk assessments**.

Each table is connected through primary and foreign key relationships, forming a relational database structure suitable for analytical queries.



# 1. Musteriler (Customers)

Stores personal and contact information of all bank customers.

## Main Fields:

- muster\_i\_id — Primary Key
- ad, soyad — Customer's first and last name
- dogum\_tarixi, cins — Demographic data
- fincode — Unique identifier (national FIN code)
- unvan, elaqe\_nomresi, e\_mail — Address and contact info

MUSTERI_ID	AD,SOYAD	DOGUM_TARIXI	CINS	FINCODE	UNVAN	ELAQE_NOMRESI	E_MAIL
185	Gülmar Abdullayeva	Jun 20, 2086	Qadın	M95R1T7	Bakı	+99455xxxx101	gulnar.abdullayeva@mail.az
190	Günay Əliyeva	Mar 12, 2092	Qadın	2I9R3T6	Gəncə	+99470xxxx202	gunay.eliyeva@yahoo.com
196	Cavid Qəhrəmanov	May 30, 2083	Kişi	T07C5X2	Quba	+99450xxxx303	cavid.qehremanov@gmail.com
198	Sevinc Süleymanova	Aug 12, 2094	Qadın	4J2Q9R8	Xaçmaz	+99477xxxx404	sevinc.suleymanova@web.com
201	Orxan Əliyev	Jul 31, 2095	Kişi	W3U6H1X	Zaqatala	+99470xxxx505	orxan.eliyev@mail.ru

## 2. Kreditler (Loans)

Contains information about all loans issued to customers.

### Main Fields:

- kredit\_id — Primary Key
- musteri\_id — Foreign Key → Musteriler(musteri\_id)
- kredit\_novu, kredit\_meblegi, valyuta — Loan details
- verilme\_tarixi, bitme\_tarixi, muddet\_ay — Loan period
- faiz\_derecesi — Interest rate

KREDIT_ID	MUSTERI_ID	KREDIT_NOVU	KREDIT_MEBLEGI	VALYUTA	VERILME_TARIXI	BITME_TARIXI	FAIZ_DERECESI	MUDDET_AY
397	1440	İstehlak	27029.6	EUR	Jan 8, 2024	Oct 29, 2025	16.48	22
398	1651	Avto	51220.6	USD	Dec 8, 2023	Dec 6, 2029	14.79	48
399	2310	İpoteka	22124.8	EUR	Jan 22, 2025	Mar 19, 2043	7.23	24
400	486	Mikro	183224	AZN	Apr 6, 2025	May 12, 2041	8	18
401	1571	İstehlak	21923.3	EUR	Jan 6, 2023	Jan 1, 2024	18.56	12



## 3. Odenisler (Payments)

Tracks each payment made by customers toward their loans.

### Main Fields:

- odenis\_id — Primary Key
- kredit\_id — Foreign Key → Kreditler(kredit\_id)
- odenis\_tarixi, odenis\_meblegi — Payment date and amount
- odenis\_novu — Payment type ('Əsas borc', 'Faiz', 'Cərimə')
- status — Payment status ('Ödənilib', 'Gecikib', 'Qismən Ödənilib')



ODENIS_ID	KREDIT_ID	ODENIS_TARIXI	ODENIS_MEBLEGI	ODENIS_NOVU	STATUS
466	1607	Jun 4, 2025	230	Faiz	Qismən Ödənilib
467	2240	Feb 11, 2025	1159.33	Əsas	Gecikib
468	192	Jan 8, 2025	1610.62	Cərimə	Ödənilib
469	1625	Aug 20, 2024	122.84	Əsas	Gecikib
470	2023	Jan 31, 2025	598.91	Faiz	Gecikib

## ⚠ 4. KreditRiskMelumatlari (Credit Risk Information)

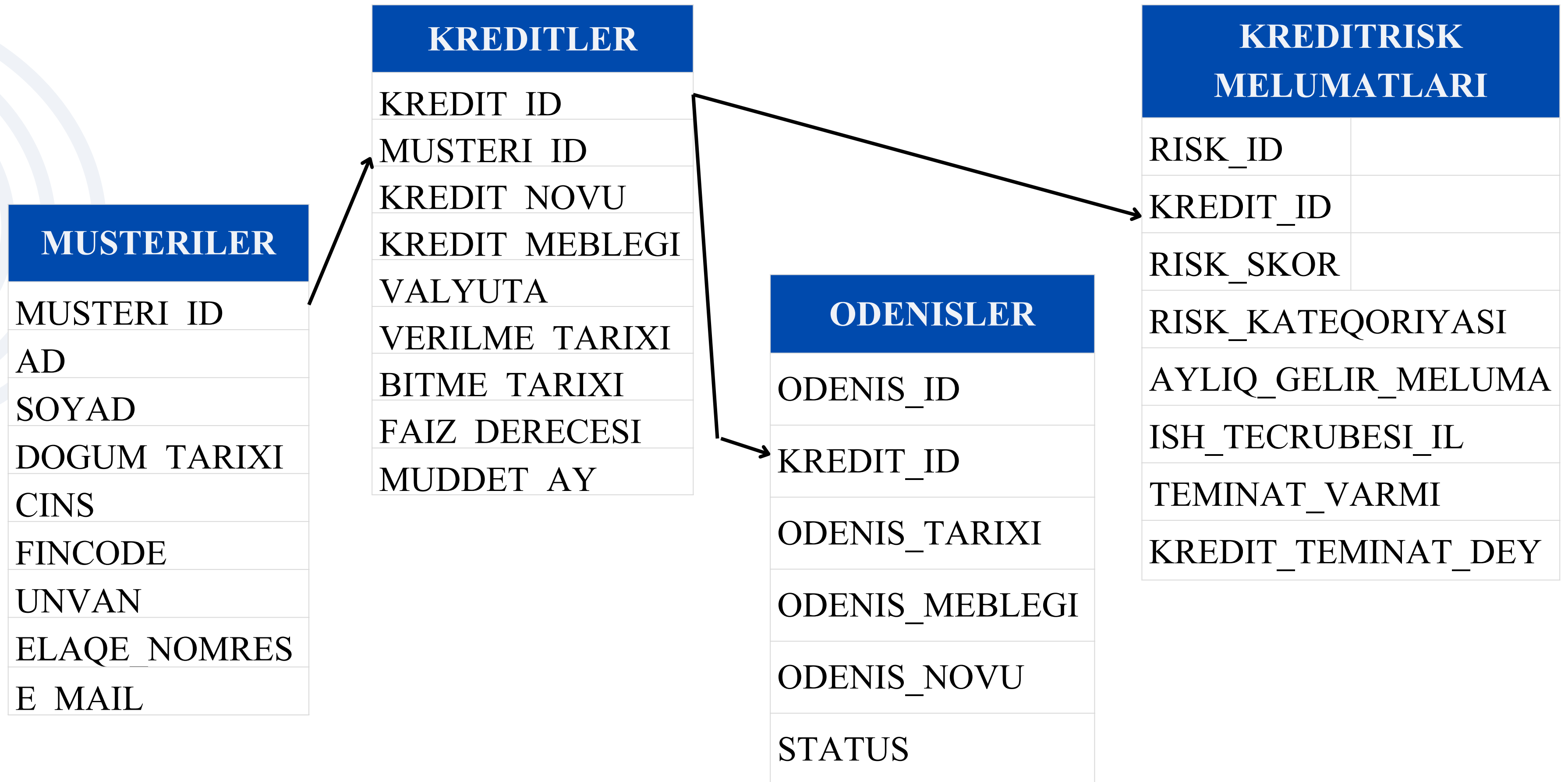
Contains each customer's financial and risk assessment details.

### Main Fields:

- risk\_id — Primary Key
- kredit\_id — Foreign Key → Kreditler(kredit\_id)
- risk\_skoru, risk\_kateqoriyasi — Credit score and risk level
- ayliq\_gelir\_melumati, ish\_tecrubesi\_il — Financial background
- teminat\_varmi — Collateral details

RISK_ID	KREDIT_ID	RISK_SKORU	RISK_KATEQORIYASI	AYLIQ_GELIR_MELUMATI	ISH_TECRUBESI_IL	TEMINAT_VARMI
585	1212	632	Orta	2435.27	26	Xeyr
586	1213	774	Aşağı	734.73	10	Xeyr
587	1214	419	Yüksək	2094.31	16	Xeyr
588	1218	762	Aşağı	4935.6	2	Xeyr
589	1222	793	Aşağı	1047.14	27	Xeyr

# ER Diagram & Table Relationships



# Credit Portfolio Overview



Requirement:

Determine the overall average interest rate across all loan types, calculate the total amount of issued loans, and identify the most common loan type (based on the highest number of issued loans).

	UMUMI_ORTA_FAIZ	UMUMI_KREDIT_MEBLEGI	EN_POPULYAR_KREDIT_NOVU
1	14.22	182194308.5	Mikro Biznes

# Insight & Business Commentary

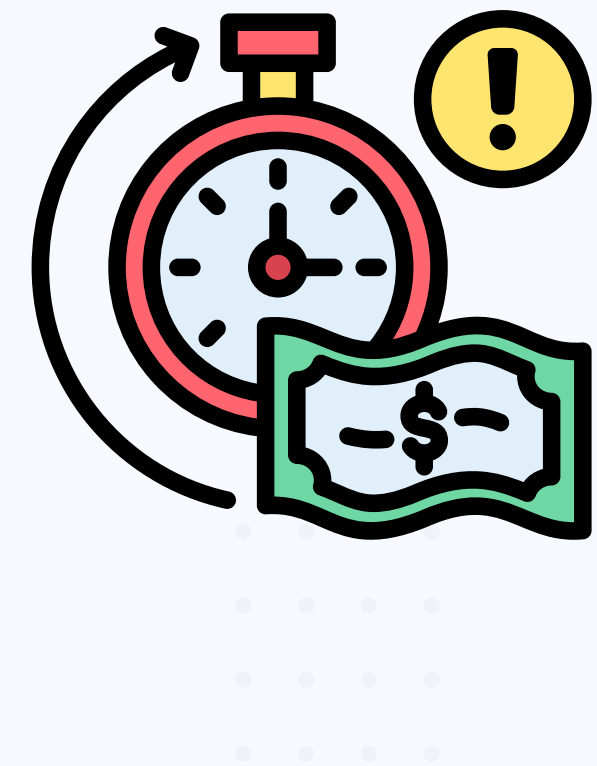
Crucially, "Mikro Biznes" loans dominate the portfolio. To capitalize on this, the bank should:

**Reinforce "Mikro Biznes":** Continue targeted marketing and optimize product offerings for Micro Business clients to sustain growth and market share.

**Monitor Segment Risk:** Closely track the risk profile of this largest segment, as its performance significantly impacts the overall portfolio health.

**Explore Diversification:** While strong in one area, consider strategies to develop and promote other loan types to reduce concentration risk and ensure long-term portfolio resilience.

# Delinquent Payments & High-Risk Client Segmentation



Requirement:

Identify customers (Name, Surname, FIN code) with delinquent payments, show their total overdue loan amounts, and highlight those categorized as 'High' risk.

	AD	SOYAD	FINCODE	UMUMI_MEBLEG	RISK_KATEQORIYASI
1	Günay	Ağayev	M3P0QLL	1217257.97	Yüksək
2	Samir	Həsənov	UAIF1LU	996702.52	Yüksək
3	Aytən	Ağayev	6MJC0T9	866735.82	Yüksək
4	Vüqar	Əhmədov	BS86ZGE	826651.41	Yüksək
5	Orxan	Quliyev	66JE3A9	589525.26	Yüksək



# Insight & Business Commentary

## Key Insights:

**Significant Delinquency:** Top delinquent clients have substantial overdue amounts (e.g., Günay Ağayev: 121,257.97).

**High-Risk Overlap:** Crucially, many leading delinquent accounts, including those with the highest overdue sums, are categorized as "Yüksək" (High) risk.

This data reveals critical credit loss exposure from delinquent, high-risk clients. The bank must:

**Prioritize Collections:** Immediately intensify collection efforts on these high-balance, high-risk accounts.

**Strengthen Risk Protocols:** Re-evaluate and tighten lending/monitoring policies, especially for "High" risk applicants, to prevent future delinquencies in this vulnerable segment. This proactive approach is vital for portfolio stability.

# Regional Credit Portfolio Performance



Requirement:

Analyze the Average Loan Amount, Average Interest Rate, and High-Risk Client Ratio by region.

	REGION_SIAHISI	ORTA_KREDIT_MEBLEGI	ORTA_FAIZ_DERECESI	YR_MUSTERI_FAIZI
1	Şamaxı ş.	60787.75	14.03	54.12
2	Şəki ş.	57488.94	14.17	51.85
3	Mingəçevir ş.	74169.47	13.9	51.28
4	Tovuz ş.	56707.96	14.59	50.68
5	İmişli ş.	66842.36	14.01	48.19
6	Qusar ş.	56407.89	14.33	47.06
7	Lənkəran ş.	56856.63	14.36	46.05
8	Gəncə ş.	58219.66	14.17	41.46
9	Quba ş.	57389.1	14.62	40.32
10	Ağcabədi ş.	57049.93	14.11	40
11	Sumqayıt ş.	70944.86	13.75	38.46
12	Bərdə ş.	64312.73	14.01	38.27
13	Xaçmaz ş.	59610.99	14.25	36.14
14	Bakı ş.	52924.66	14.91	35.8

# Insight & Business Commentary

## Key Insights

**Inverse Risk Pricing:** A critical pricing anomaly exists. Baku, the safest region (35.8% risk), is charged the highest interest rate (14.91%), while high-risk regions pay less.

**High-Risk Exposure:** Mingachevir represents a major vulnerability, combining high risk (51.2%) with the largest average loan exposure (~74k AZN) and a low interest rate (13.9%).

**Regional Disparity:** The top 4 regions (e.g., Shamakhi, Sheki) have >50% high-risk clients, indicating a need for urgent portfolio restructuring in these zones.

## Business Actions

**Correct Pricing Strategy:** Immediately implement Risk-Based Pricing. Lower rates in Baku to capture market share and increase rates in high-risk regions (Shamakhi, Mingachevir) to cover potential losses.

**Limit Exposure:** Cap maximum loan amounts in regions with >45% high-risk density (Top 7 regions) to mitigate credit loss.

# Loan Repayment Behavior & Potential Default

Requirement:

For each loan, calculate the total amount paid, the outstanding balance, and the count of late payments (specifically where status = 'Gecikib'). Based on these metrics, compute the Potential Default Risk, defined as the ratio of late payments to the total number of payment transactions. Retrieve the top 5 loans with the highest risk scores.

	⌘ KREDIT_ID	⌘ KREDIT_MEBLEGI	⌘ UMUMI_ODENILMIS_MEBLEG	⌘ QALIQ_MEBLEG	⌘ GECIKMIS_ODENIS_SAYI	⌘ UMUMI_ODENIS_SAYI	⌘ POTENSIAL_DEFOLT_RISK
1	2079	18233.69	1802.88	16430.81	4	4	100
2	2228	29598.05	1068	28530.05	2	2	100
3	378	3894.55	1019.41	2875.14	2	2	100
4	363	78595.41	220.31	78375.1	1	1	100
5	1162	21776.54	225.99	21550.55	1	1	100

# Insight & Business Commentary

**100% Delinquency Rate:** The top 5 high-risk loans have missed every scheduled payment since origination, indicating persistent non-payment behavior.

**High Capital Exposure:** Principal reduction is negligible. Loan ID 363 retains a balance exceeding 78k, with less than 0.3% of the principal repaid.

**Early-Stage Default:** Limited payment activity (1–4 transactions) suggests immediate post-disbursement default, highlighting potential weaknesses in credit underwriting.

# Risk Analysis by Income Segments

Requirement:

Segment monthly income into defined brackets (0–500, 501–1000, 1001–2000, 2000+ AZN). For each income group, calculate the average risk score and count the number of loans classified as 'High' risk.

	AYLIQ_GELIRLER	ORTALAMA_SKOR	YUKSEK_RQ_SAYI
1	2000+	573.71	355
2	1000–2000	567.89	120
3	500–1000	568.82	67
4	0–500	548.96	11



# Insight & Business Commentary

**High-Income Risk Paradox:** Contrary to expectations, the highest income segment (2000+ AZN) accounts for the majority (~64%) of all high-risk loans (355 cases).

This indicates that higher income does not guarantee better repayment behavior.

**Score Stagnation:** Average risk scores are surprisingly consistent across all groups (ranging tightly between 548–573). This suggests that income level is not a strong predictor of creditworthiness in this portfolio.

**Strategic Implication:** The bank should shift focus from gross income to Debt-to-Income (DTI) ratios, as high earners appear to be over-leveraged.



# Strategic Customer Segmentation

Requirement:

Classify customers into two segments based on their credit lifecycle: 1. **Active Credit Customers** - borrowers with at least one active loan and payment activity within the last 6 months

2. **Potential Repeat Customers** - borrowers who have fully settled their loans with no history of delayed payments.

For each segment, calculate the total customer count and average age.

	SEQMENT	MUSTERI_SAYI	ORTA_YAS
1	Aktiv Kredit Müşterileri	1029	38
2	Potensial Tekrar Müşteriler	2	27

# Insight & Business Commentary

**Retention Crisis:** Only 0.2% of customers qualify as "Ideal Repeat" (2 vs 1029), signaling a portfolio-wide struggle with delinquency and debt cycles.

**Demographic Insight:** High-quality borrowers are significantly younger (Avg Age: 27) than the active base (38), indicating better financial discipline among the youth segment.

**Strategy:** Pivot retention efforts toward the under-30 demographic, as the older core segment demonstrates higher default risk.

# THANK You!



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