

# E-Ticaret Müşteri Segmentasyonu ve RFM Analizi

Hazırlayan  
Zeliha SEZGİN



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**Veri Ön İşleme  
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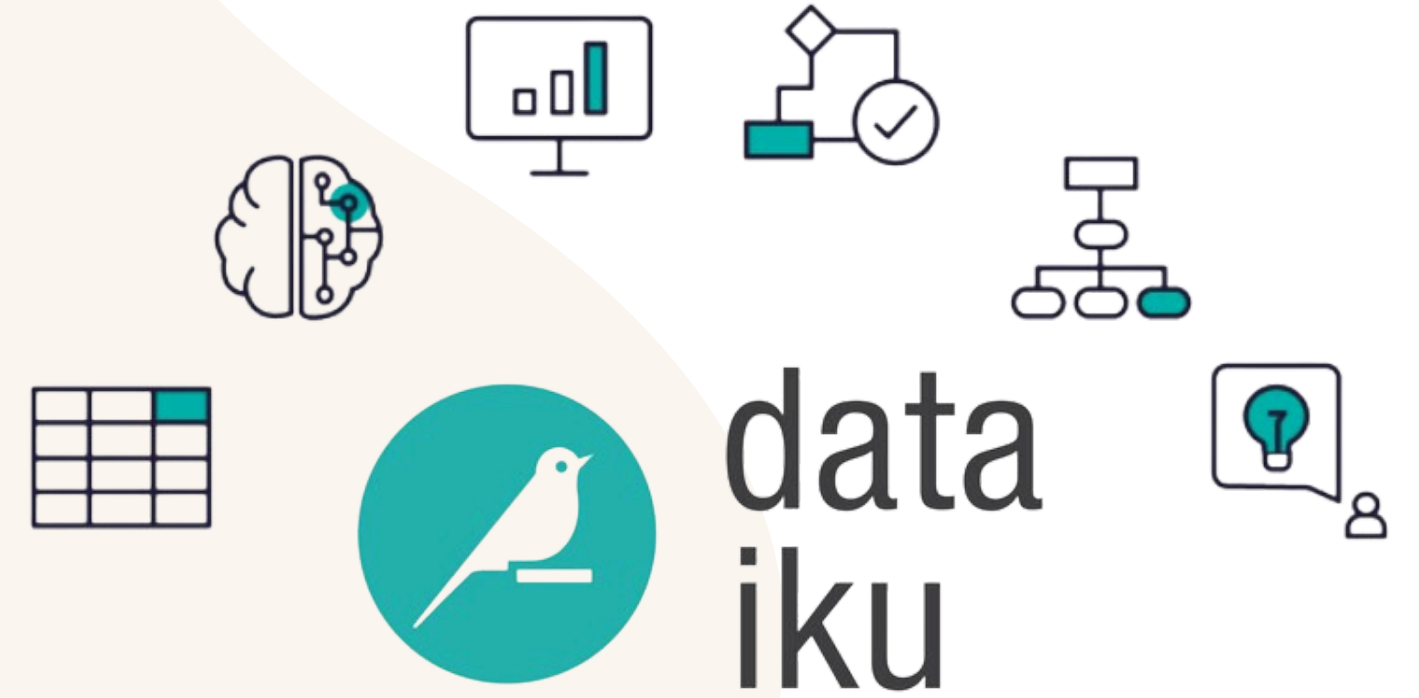
**Dashboard**

**06.**

**Streamlit**

# GİRİŞ

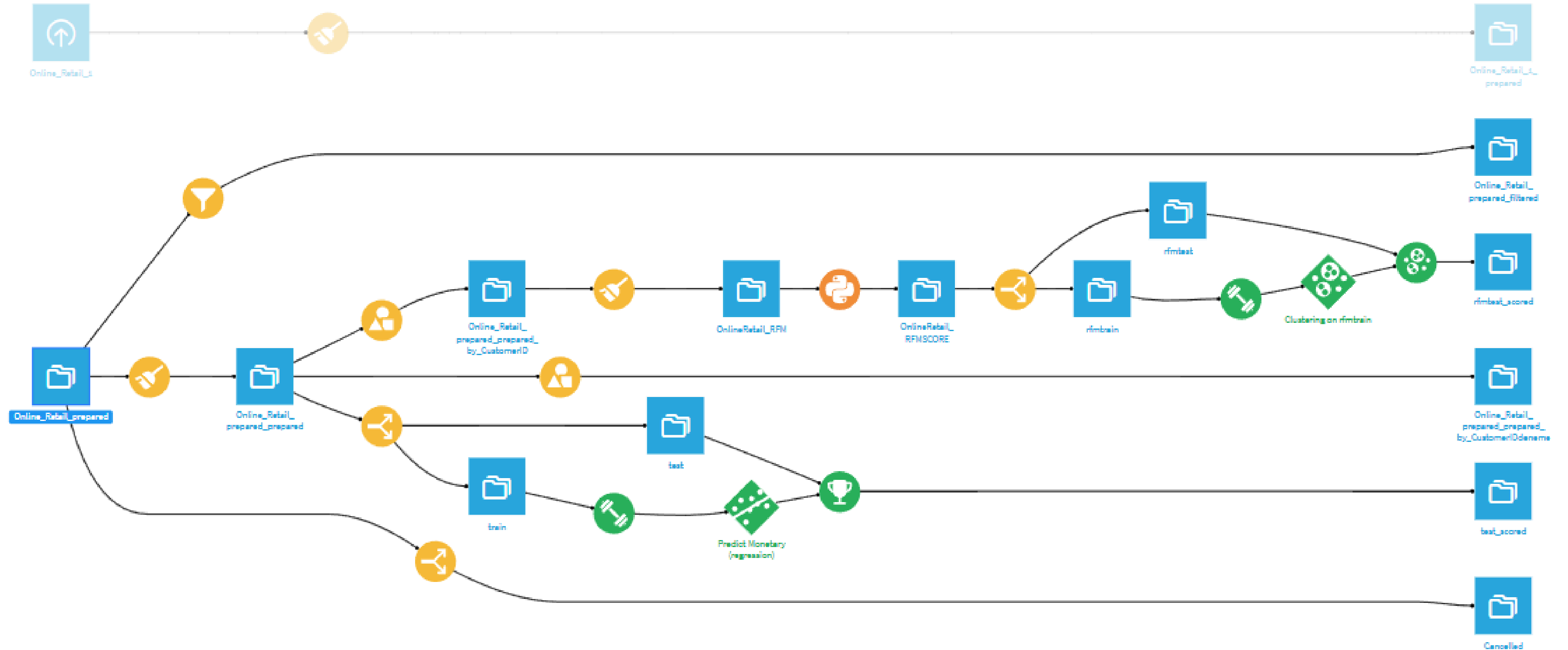
- UCI Machine Learning Repository, Online Retail, 01/12/2010 ile 09/12/2011 tarihleri arasında İngiltere merkezli ve kayıtlı mağazasız bir çevrimiçi perakendeci için gerçekleşen tüm işlemleri içeren 541,909 kayıt bulunduran bir veri setidir ve .csv dosyası şeklindedir.
- Veri Ön İşleme & Temizleme
- Keşifsel Veri Analizi (EDA)
- Veri Görselleştirme
- Makine Öğrenmesi Uygulaması
- Uygulama Arayüzü



# VERİ SETİ DEĞİŞKENLERİ

- **InvoiceNo:** Fatura numarası. Nominal, her işleme benzersiz olarak atanan 6 haneli tam sayı. Bu kod 'c' harfiyle başlıyorsa, iptal olduğunu gösterir.
- **StockCode:** Ürün (kalem) kodu. Nominal, her farklı ürüne benzersiz olarak atanan 5 haneli tam sayı.
- **Description:** Ürün (kalem) adı. Nominal.
- **Quantity:** İşlem başına her ürünün (kalem) miktarı. Sayısal.
- **InvoiceDate:** Fatura tarihi ve saati. Sayısal, her işlemin oluşturulduğu gün ve saat.
- **UnitPrice:** Birim fiyat. Sayısal, Ürün birim fiyatı sterlin cinsinden.
- **CustomerID:** Müşteri numarası. Nominal, her müşteriye benzersiz olarak atanan 5 haneli tam sayı.
- **Country:** Ülke adı. Nominal, her müşterinin ikamet ettiği ülkenin adı.

# FLOW CHART



# Veri Ön İşleme & Temizleme

Sample First 10,000 rows out of 541,909

InvoiceNo	StockCode	Description	Quantity	InvoiceDate	UnitPrice	CustomerID	Country
string Integer	string Integer	string Natural lang.	bigint Integer	string Date (unparsed)	double Decimal	bigint Integer	string Country
536365	85123A	WHITE HANGING HEART T-LIGHT HOLDER	6	12/1/10 8:26	2.55	17850	United Kingdom
536365	71053	WHITE METAL LANTERN	6	12/1/10 8:26	3.39	17850	United Kingdom
536365	84406B	CREAM CUPID HEARTS COAT HANGER	8	12/1/10 8:26	2.75	17850	United Kingdom
536365	84029G	KNITTED UNION FLAG HOT WATER BOTTLE	6	12/1/10 8:26	3.39	17850	United Kingdom
536365	84029E	RED WOOLLY HOTTIE WHITE HEART.	6	12/1/10 8:26	3.39	17850	United Kingdom
536365	22752	SET 7 BABUSHKA NESTING BOXES	2	12/1/10 8:26	7.65	17850	United Kingdom
536365	21730	GLASS STAR FROSTED T-LIGHT HOLDER	6	12/1/10 8:26	4.25	17850	United Kingdom
536366	22633	HAND WARMER UNION JACK	6	12/1/10 8:28	1.85	17850	United Kingdom
536366	22632	HAND WARMER RED POLKA DOT	6	12/1/10 8:28	1.85	17850	United Kingdom
536367	84879	ASSORTED COLOUR BIRD ORNAMENT	32	12/1/10 8:34	1.69	13047	United Kingdom
536367	22745	POPPY'S PLAYHOUSE BEDROOM	6	12/1/10 8:34	2.1	13047	United Kingdom
536367	22748	POPPY'S PLAYHOUSE KITCHEN	6	12/1/10 8:34	2.1	13047	United Kingdom
536367	22749	FELTCRAFT PRINCESS CHARLOTTE DOLL	8	12/1/10 8:34	3.75	13047	United Kingdom
536367	22310	IVORY KNITTED MUG COSY	6	12/1/10 8:34	1.65	13047	United Kingdom
536367	84969	BOX OF 6 ASSORTED COLOUR TEASPOONS	6	12/1/10 8:34	4.25	13047	United Kingdom
536367	22623	BOX OF VINTAGE JIGSAW BLOCKS	3	12/1/10 8:34	4.95	13047	United Kingdom
536367	22622	BOX OF VINTAGE ALPHABET BLOCKS	2	12/1/10 8:34	9.95	13047	United Kingdom
536367	21754	HOME BUILDING BLOCK WORD	3	12/1/10 8:34	5.95	13047	United Kingdom
536367	21755	LOVE BUILDING BLOCK WORD	3	12/1/10 8:34	5.95	13047	United Kingdom
536367	21777	RECIPE BOX WITH METAL HEART	4	12/1/10 8:34	7.95	13047	United Kingdom
536367	48187	DOORMAT NEW ENGLAND	4	12/1/10 8:34	7.95	13047	United Kingdom
536368	22960	JAM MAKING SET WITH JARS	6	12/1/10 8:34	4.25	13047	United Kingdom
536368	22913	RED COAT RACK PARIS FASHION	3	12/1/10 8:34	4.95	13047	United Kingdom
536368	22912	YELLOW COAT RACK PARIS FASHION	3	12/1/10 8:34	4.95	13047	United Kingdom
536368	22914	BLUE COAT RACK PARIS FASHION	3	12/1/10 8:34	4.95	13047	United Kingdom
536369	21756	BATH BUILDING BLOCK WORD	3	12/1/10 8:35	5.95	13047	United Kingdom

Sample First 10,000 rows out of 541,909

CustomerID	Invoice_No_C1	Invoice_No1	InvoiceDate	StockCode1	Stock_Code_Variant1	Description	Quantity	UnitPrice	Country_
bigint Integer	string Text	bigint Integer	string Date (unparsed)	bigint Integer	string Text	string Natural lang.	bigint Integer	double Decimal	string Country
17850		536365	12/1/10 8:26	85123	A	WHITE HANGING HEART T-LIGHT HOLDER	6	2.55	United Kingdom
17850		536365	12/1/10 8:26	71053		WHITE METAL LANTERN	6	3.39	United Kingdom
17850		536365	12/1/10 8:26	84406	B	CREAM CUPID HEARTS COAT HANGER	8	2.75	United Kingdom
17850		536365	12/1/10 8:26	84029	G	KNITTED UNION FLAG HOT WATER BOTTLE	6	3.39	United Kingdom
17850		536365	12/1/10 8:26	84029	E	RED WOOLLY HOTTIE WHITE HEART.	6	3.39	United Kingdom
17850		536365	12/1/10 8:26	22752		SET 7 BABUSHKA NESTING BOXES	2	7.65	United Kingdom
17850		536365	12/1/10 8:26	21730		GLASS STAR FROSTED T-LIGHT HOLDER	6	4.25	United Kingdom
17850		536366	12/1/10 8:28	22633		HAND WARMER UNION JACK	6	1.85	United Kingdom
17850		536366	12/1/10 8:28	22632		HAND WARMER RED POLKA DOT	6	1.85	United Kingdom
13047		536367	12/1/10 8:34	84879		ASSORTED COLOUR BIRD ORNAMENT	32	1.69	United Kingdom
13047		536367	12/1/10 8:34	22745		POPPY'S PLAYHOUSE BEDROOM	6	2.1	United Kingdom
13047		536367	12/1/10 8:34	22748		POPPY'S PLAYHOUSE KITCHEN	6	2.1	United Kingdom
13047		536367	12/1/10 8:34	22749		FELTCRAFT PRINCESS CHARLOTTE DOLL	8	3.75	United Kingdom
13047		536367	12/1/10 8:34	22310		IVORY KNITTED MUG COSY	6	1.65	United Kingdom
13047		536367	12/1/10 8:34	84969		BOX OF 6 ASSORTED COLOUR TEASPOONS	6	4.25	United Kingdom
13047		536367	12/1/10 8:34	22623		BOX OF VINTAGE JIGSAW BLOCKS	3	4.95	United Kingdom
13047		536367	12/1/10 8:34	22622		BOX OF VINTAGE ALPHABET BLOCKS	2	9.95	United Kingdom
13047		536367	12/1/10 8:34	21754		HOME BUILDING BLOCK WORD	3	5.95	United Kingdom
13047		536367	12/1/10 8:34	21755		LOVE BUILDING BLOCK WORD	3	5.95	United Kingdom
13047		536367	12/1/10 8:34	21777		RECIPE BOX WITH METAL HEART	4	7.95	United Kingdom
13047		536367	12/1/10 8:34	48187		DOORMAT NEW ENGLAND	4	7.95	United Kingdom
13047		536368	12/1/10 8:34	22960		JAM MAKING SET WITH JARS	6	4.25	United Kingdom
13047		536368	12/1/10 8:34	22913		RED COAT RACK PARIS FASHION	3	4.95	United Kingdom
13047		536368	12/1/10 8:34	22912		YELLOW COAT RACK PARIS FASHION	3	4.95	United Kingdom
13047		536368	12/1/10 8:34	22914		BLUE COAT RACK PARIS FASHION	3	4.95	United Kingdom
13047		536369	12/1/10 8:35	21756		BATH BUILDING BLOCK WORD	3	5.95	United Kingdom



# Veri Ön işleme & Temizleme

Whole data 2,997 rows

CustomerID	Invoice_No1_count	Invoice_No1_distinct	InvoiceDate_max	LastPurchaseDate_max	Monetary_sum	count
bigint Integer	bigint Integer	bigint Integer	date only Date only	bigint Integer	double Decimal	bigint Integer
12347	106	5	2011-09-06	5427	2540.29000000000013	106
12348	5	1	2011-05-04	5131	367.0	5
12350	17	1	2011-02-02	5222	334.400000000000003	17
12352	23	3	2011-03-11	5252	1296.380000000000006	23
12355	13	1	2011-09-05	5007	459.4	13
12356	21	1	2011-08-04	5039	481.46	21
12357	131	1	2011-06-11	5093	6207.6699999999996	131
12358	19	2	2011-12-07	5031	1168.06	19
12359	143	3	2011-12-01	5190	3495.730000000000014	143
12362	110	5	2011-11-10	5154	2135.78999999999995	110
12363	16	1	2011-11-04	4947	299.1	16
12364	27	1	2011-02-12	5212	310.319999999999994	27
12367	11	1	2011-05-12	5123	168.9	11
12370	48	1	2011-10-03	4979	938.390000000000002	48
12371	62	1	2011-11-10	4941	1527.960000000000003	62
12372	19	1	2011-11-05	4946	515.7	19
12373	14	1	2011-01-02	5253	364.6	14
12375	11	1	2011-02-09	5215	230.300000000000004	11
12378	219	1	2011-02-08	5216	4008.620000000000013	219
12380	36	1	2011-07-06	5068	607.550000000000001	36
12381	87	5	2011-12-10	5123	1845.310000000000006	87
12383	36	2	2011-12-01	5037	750.609999999999999	36
12384	27	2	2011-11-11	4974	585.270000000000001	27
12386	10	2	2011-06-01	5396	401.900000000000003	10
12388	16	2	2011-09-03	5072	334.95	16
12393	36	2	2011-11-01	5039	884.1	36

Whole data 2,997 rows

CustomerID	InvoiceDate_max	AnalyzeDate	Recency	Frequency	Monetary
bigint Integer	date only Date only	date only Date only	bigint Integer	bigint Integer	double Decimal
12347	2011-09-06	2025-05-21	5006	106	2540.29000000000013
12348	2011-05-04	2025-05-21	5131	5	367.0
12350	2011-02-02	2025-05-21	5222	17	334.400000000000003
12352	2011-03-11	2025-05-21	5185	23	1296.380000000000006
12355	2011-09-05	2025-05-21	5007	13	459.4
12356	2011-08-04	2025-05-21	5039	21	481.46
12357	2011-06-11	2025-05-21	5093	131	6207.6699999999996
12358	2011-12-07	2025-05-21	4914	19	1168.06
12359	2011-12-01	2025-05-21	4920	143	3495.730000000000014
12362	2011-11-10	2025-05-21	4941	110	2135.78999999999995
12363	2011-11-04	2025-05-21	4947	16	299.1
12364	2011-02-12	2025-05-21	5212	27	310.319999999999994
12367	2011-05-12	2025-05-21	5123	11	168.9
12370	2011-10-03	2025-05-21	4979	48	938.390000000000002
12371	2011-11-10	2025-05-21	4941	62	1527.960000000000003
12372	2011-11-05	2025-05-21	4946	19	515.7
12373	2011-01-02	2025-05-21	5253	14	364.6
12375	2011-02-09	2025-05-21	5215	11	230.300000000000004
12378	2011-02-08	2025-05-21	5216	219	4008.620000000000013
12380	2011-07-06	2025-05-21	5068	36	607.550000000000001
12381	2011-12-10	2025-05-21	4911	87	1845.310000000000006
12383	2011-12-01	2025-05-21	4920	36	750.609999999999999
12384	2011-11-11	2025-05-21	4940	27	585.270000000000001
12386	2011-06-01	2025-05-21	5103	10	401.900000000000003
12388	2011-09-03	2025-05-21	5009	16	334.95
12393	2011-11-01	2025-05-21	4950	36	884.1

# PYTHON RECIPE

The screenshot displays a Jupyter Notebook titled "compute\_OnlineRetail\_RFMScore". The interface includes a left sidebar with "Inputs" and "Outputs" sections. The "Inputs" section shows "OnlineRetail\_RFM" and the "Outputs" section shows "OnlineRetail\_RFMScore". The main area contains a Python script with the following code:

```
1 # -*- coding: utf-8 -*-
2 import dataiku
3 import pandas as pd, numpy as np
4 from dataiku import pandasutils as pdu
5
6 # Read recipe inputs
7 OnlineRetail_RFM = dataiku.Dataset("OnlineRetail_RFM")
8 OnlineRetail_RFM_df = OnlineRetail_RFM.get_dataframe()
9
10
11 # Compute recipe outputs from inputs
12 # TODO: Replace this part by your actual code that computes the output, as a Pandas dataframe
13 # NB: DSS also supports other kinds of APIs for reading and writing data. Please see doc.
14
15 OnlineRetail_RFMScore_df = OnlineRetail_RFM_df # For this sample code, simply copy input to output
16
17 OnlineRetail_RFMScore_df['RecencyScore'] = pd.qcut(OnlineRetail_RFM_df['Recency'], q=4, labels=range(4, 0, -1))
18
19 OnlineRetail_RFMScore_df['FrequencyScore'] = pd.qcut(OnlineRetail_RFM_df['Frequency'], q=4, labels=range(4, 0, -1))
20
21 # Monetary için: Yüksek TotalAmount_sum değerleri daha iyi
22 OnlineRetail_RFMScore_df['MonetaryScore'] = pd.qcut(OnlineRetail_RFM_df['Monetary'], q=4, labels=range(4, 0, -1))
23
24 # RFM skorunu birleştir
25 OnlineRetail_RFMScore_df['RFMScore'] = OnlineRetail_RFM_df['RecencyScore'].astype(str) + OnlineRetail_RFMScore_df['FrequencyScore'].astype(str) + OnlineRetail_RFMScore_df['MonetaryScore'].astype(str)
26
27 # RFM skorunu sayısal değere çevir
28 OnlineRetail_RFMScore_df['RFMValue'] = OnlineRetail_RFM_df['RecencyScore'].astype(int) + OnlineRetail_RFMScore_df['FrequencyScore'].astype(int) + OnlineRetail_RFMScore_df['MonetaryScore'].astype(int)
29
30 #####
31 # Müşteri seviyesini belirleyen fonksiyon
32 def get_customer_level(rfm_score):
33     if rfm_score >= 9:
34         return 'Top'
35     elif rfm_score >= 6:
36         return 'Middle'
37     else:
38         return 'Low'
39
40 # Müşteri seviyesi kolonunu oluştur
41 OnlineRetail_RFMScore_df['CustomerLevel'] = OnlineRetail_RFMScore_df['RFMValue'].apply(get_customer_level)
42
43
44 # Write recipe outputs
45 OnlineRetail_RFMScore = dataiku.Dataset("OnlineRetail_RFMScore")
46 OnlineRetail_RFMScore.write_with_schema(OnlineRetail_RFMScore_df)
```

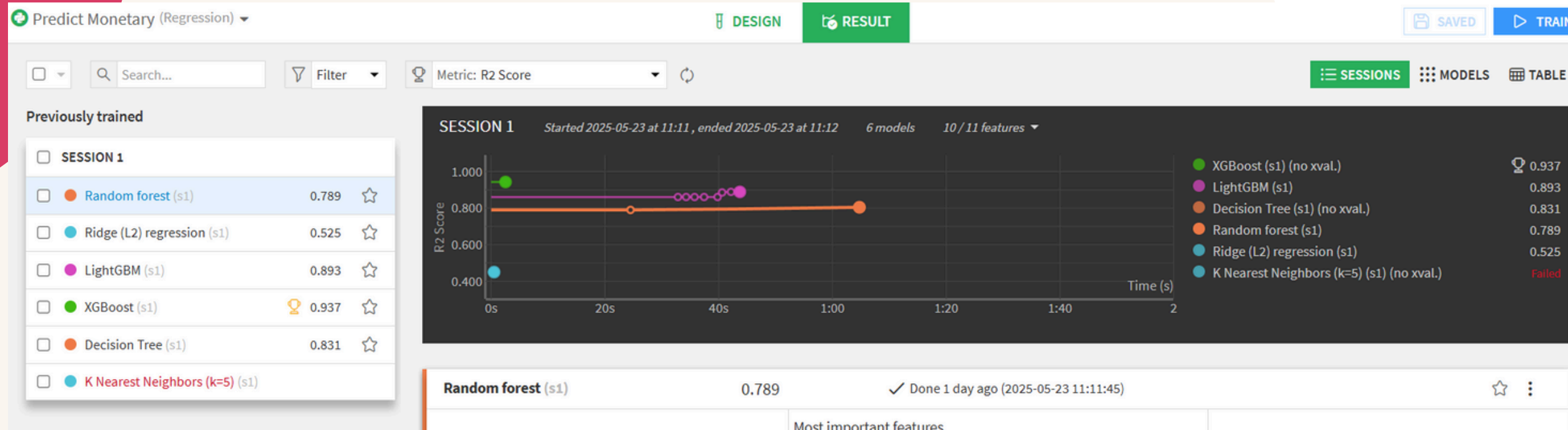


# RFM ANALIZI

Istanbul Data Science Academy

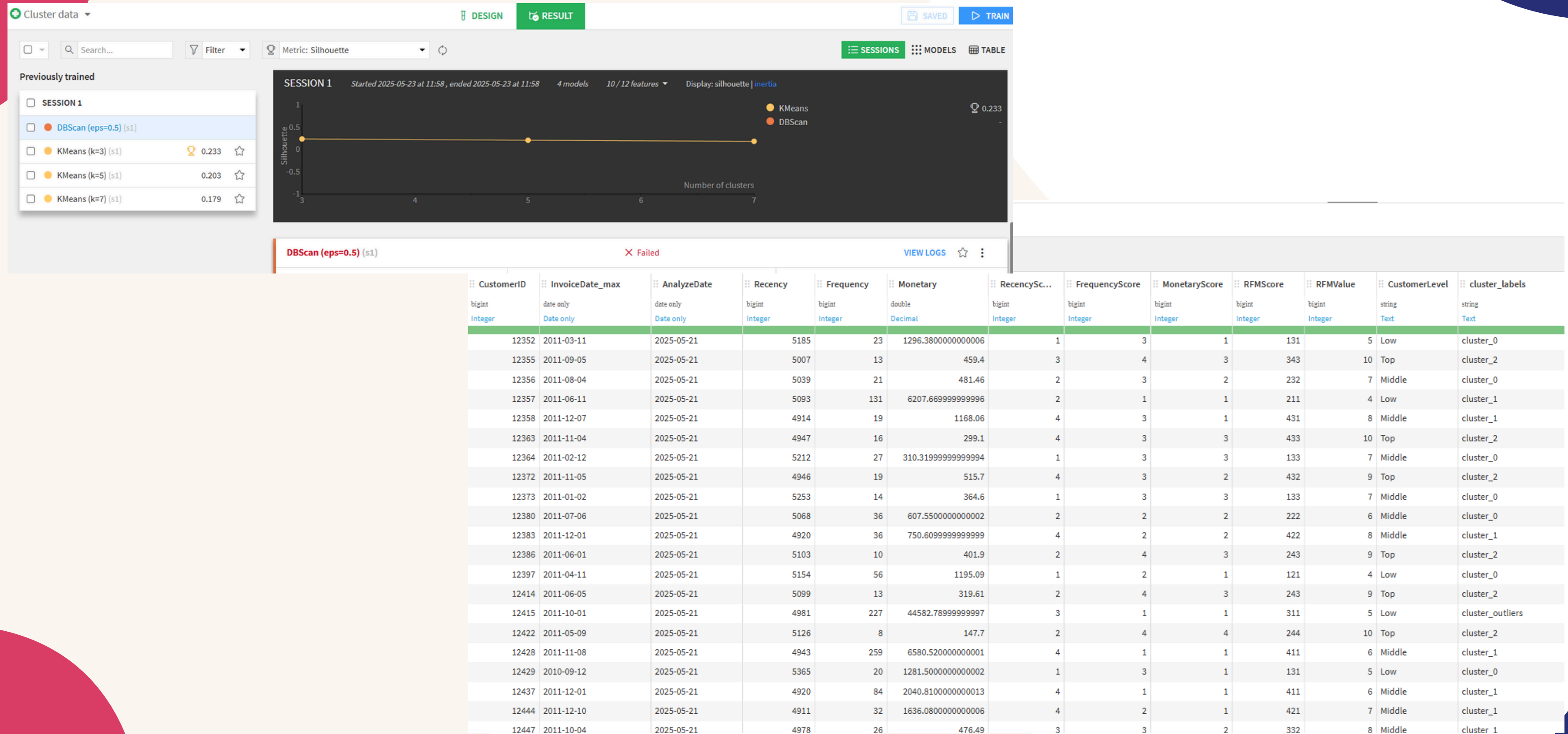
OnlineRetail_RFMScore												Explore	Charts	Stat
Whole data 2,997 rows														
CustomerID	InvoiceDate_max	AnalyzeDate	Recency	Frequency	Monetary	RecencySc...	MonetaryScore	RFMScore	FrequencyScore	RFMValue	CustomerLevel			
bigint Integer	date only Date only	date only Date only	bigint Integer	bigint Integer	double Decimal	string Integer	string Integer	string Integer	string Integer	int Integer	string Text			
12347	2011-09-06	2025-05-21	5006	106	2540.2900000000001	3	1	311	1	5	Low			
12348	2011-05-04	2025-05-21	5131	5	367.0	1	3	143	4	8	Middle			
12350	2011-02-02	2025-05-21	5222	17	334.40000000000001	1	3	133	3	7	Middle			
12352	2011-03-11	2025-05-21	5185	23	1296.38000000000006	1	1	131	3	5	Low			
12355	2011-09-05	2025-05-21	5007	13	459.4	3	3	343	4	10	Top			
12356	2011-08-04	2025-05-21	5039	21	481.46	2	2	232	3	7	Middle			
12357	2011-06-11	2025-05-21	5093	131	6207.6699999999996	2	1	211	1	4	Low			
12358	2011-12-07	2025-05-21	4914	19	1168.06	4	1	431	3	8	Middle			
12359	2011-12-01	2025-05-21	4920	143	3495.73000000000014	4	1	411	1	6	Middle			
12362	2011-11-10	2025-05-21	4941	110	2135.78999999999995	4	1	411	1	6	Middle			
12363	2011-11-04	2025-05-21	4947	16	299.1	4	3	433	3	10	Top			
12364	2011-02-12	2025-05-21	5212	27	310.319999999999994	1	3	133	3	7	Middle			
12367	2011-05-12	2025-05-21	5123	11	168.9	2	4	244	4	10	Top			
12370	2011-10-03	2025-05-21	4979	48	938.390000000000003	3	2	322	2	7	Middle			
12371	2011-11-10	2025-05-21	4941	62	1527.960000000000007	4	1	421	2	7	Middle			
12372	2011-11-05	2025-05-21	4946	19	515.7	4	2	432	3	9	Top			
12373	2011-01-02	2025-05-21	5253	14	364.6	1	3	133	3	7	Middle			
12375	2011-02-09	2025-05-21	5215	11	230.3000000000000004	1	4	144	4	9	Top			
12378	2011-02-08	2025-05-21	5216	219	4008.62000000000013	1	1	111	1	3	Low			
12380	2011-07-06	2025-05-21	5068	36	607.550000000000002	2	2	222	2	6	Middle			
12381	2011-12-10	2025-05-21	4911	87	1845.310000000000006	4	1	411	1	6	Middle			
12383	2011-12-01	2025-05-21	4920	36	750.609999999999999	4	2	422	2	8	Middle			
12384	2011-11-11	2025-05-21	4940	27	585.270000000000002	4	2	432	3	9	Top			
12386	2011-06-01	2025-05-21	5103	10	401.9	2	3	243	4	9	Top			
12388	2011-09-03	2025-05-21	5009	16	334.95	3	3	333	3	9	Top			
12393	2011-11-01	2025-05-21	4950	36	884.1	4	2	422	2	8	Middle			

# RFM PREDICTION



Most important features											
CustomerID	Invoice_No1	InvoiceDate	LastPurchaseDate	StockCode1	Stock_Code_Variant1	Description	Quantity	UnitPrice	Monetary	Country_	prediction
bigint Integer	bigint Integer	date only Date only	bigint Integer	bigint Integer	string Text	string Natural lang.	bigint Integer	double Decimal	double Decimal	string Country	float Decimal
17850	536365	2010-01-12	5608	85123	A	WHITE HANGING HEART T-LIGHT HOLDER	6	2.55	15.299999999999999	United Kingdom	17.405086517333984
17850	536365	2010-01-12	5608	71053		WHITE METAL LANTERN	6	3.39	20.34	United Kingdom	18.30586814880371
17850	536365	2010-01-12	5608	84406	B	CREAM CUPID HEARTS COAT HANGER	8	2.75	22.0	United Kingdom	27.010921478271484
17850	536366	2010-01-12	5608	22632		HAND WARMER RED POLKA DOT	6	1.85	11.100000000000001	United Kingdom	15.016292572021484
13047	536367	2010-01-12	5608	84879		ASSORTED COLOUR BIRD ORNAMENT	32	1.69	54.08	United Kingdom	55.126529693603516
13047	536367	2010-01-12	5608	22749		FELTCRAFT PRINCESS CHARLOTTE DOLL	8	3.75	30.0	United Kingdom	27.624713897705078
13047	536367	2010-01-12	5608	22310		IVORY KNITTED MUG COSY	6	1.65	9.899999999999999	United Kingdom	13.808269500732422
13047	536367	2010-01-12	5608	84969		BOX OF 6 ASSORTED COLOUR TEASPOONS	6	4.25	25.5	United Kingdom	20.662227630615234
13047	536367	2010-01-12	5608	21754		HOME BUILDING BLOCK WORD	3	5.95	17.85	United Kingdom	16.221052169799805
13047	536367	2010-01-12	5608	21755		LOVE BUILDING BLOCK WORD	3	5.95	17.85	United Kingdom	16.221052169799805
13047	536367	2010-01-12	5608	48187		DOORMAT NEW ENGLAND	4	7.95	31.8	United Kingdom	33.304443359375
13047	536368	2010-01-12	5608	22913		RED COAT RACK PARIS FASHION	3	4.95	14.850000000000001	United Kingdom	15.095705032348633
13047	536368	2010-01-12	5608	22914		BLUE COAT RACK PARIS FASHION	3	4.95	14.850000000000001	United Kingdom	15.095705032348633
13047	536369	2010-01-12	5608	21756		BATH BUILDING BLOCK WORD	3	5.95	17.85	United Kingdom	16.221052169799805
12583	536370	2010-01-12	5608	22728		ALARM CLOCK BAKELIKE PINK	24	3.75	90.0	France	94.07137298583984
12583	536370	2010-01-12	5608	22727		ALARM CLOCK BAKELIKE RED	24	3.75	90.0	France	94.07137298583984
12583	536370	2010-01-12	5608	21724		PANDA AND BUNNIES STICKER SHEET	12	0.85	10.2	France	11.234996795654297
12583	536370	2010-01-12	5608	21883		STARS GIFT TAPE	24	0.65	15.600000000000001	France	13.597484588623047
12583	536370	2010-01-12	5608	10002		INFLATABLE POLITICAL GLOBE	48	0.85	40.8	France	33.81608963012695

# RFM CLUSTERING



# DASHBOARD

2025-05-21

Maximum of AnalyzeDate

2997

Count of records

5065.39

Average of Recency

56.273

Average of Frequency

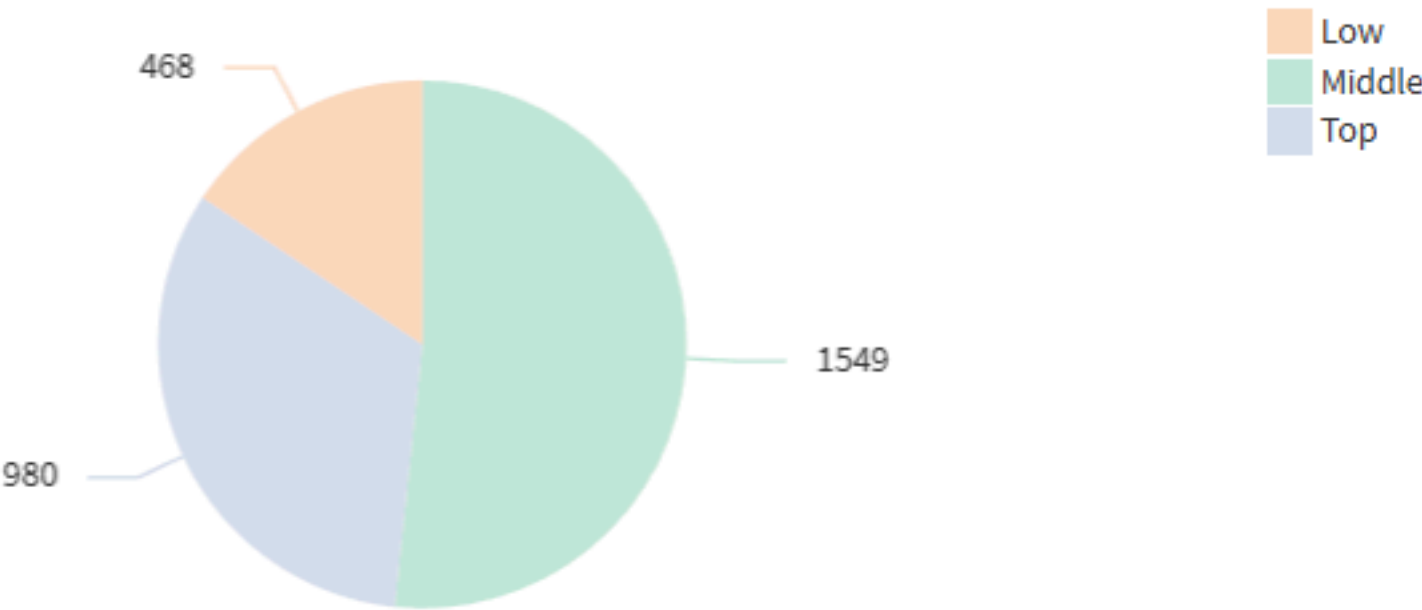
1293.12

Average of Monetary

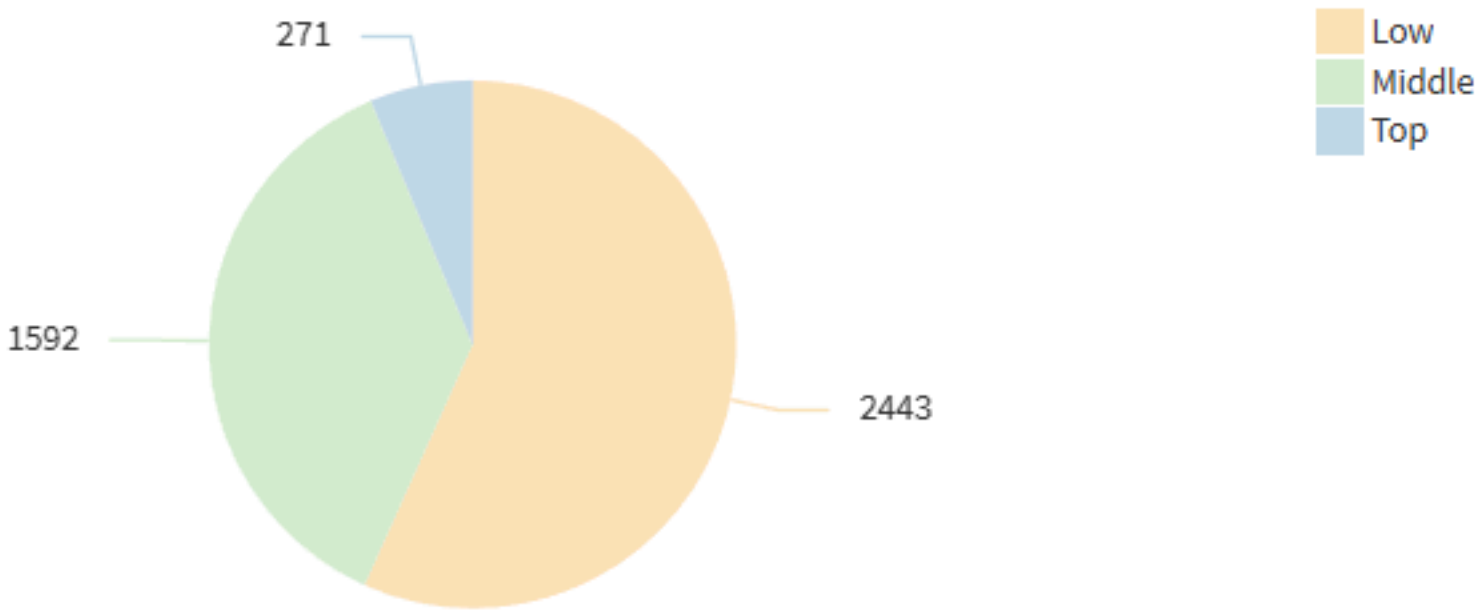
7.5205

Average of RFMValue

Count by CustomerLevel on OnlineRetail\_RFMScore

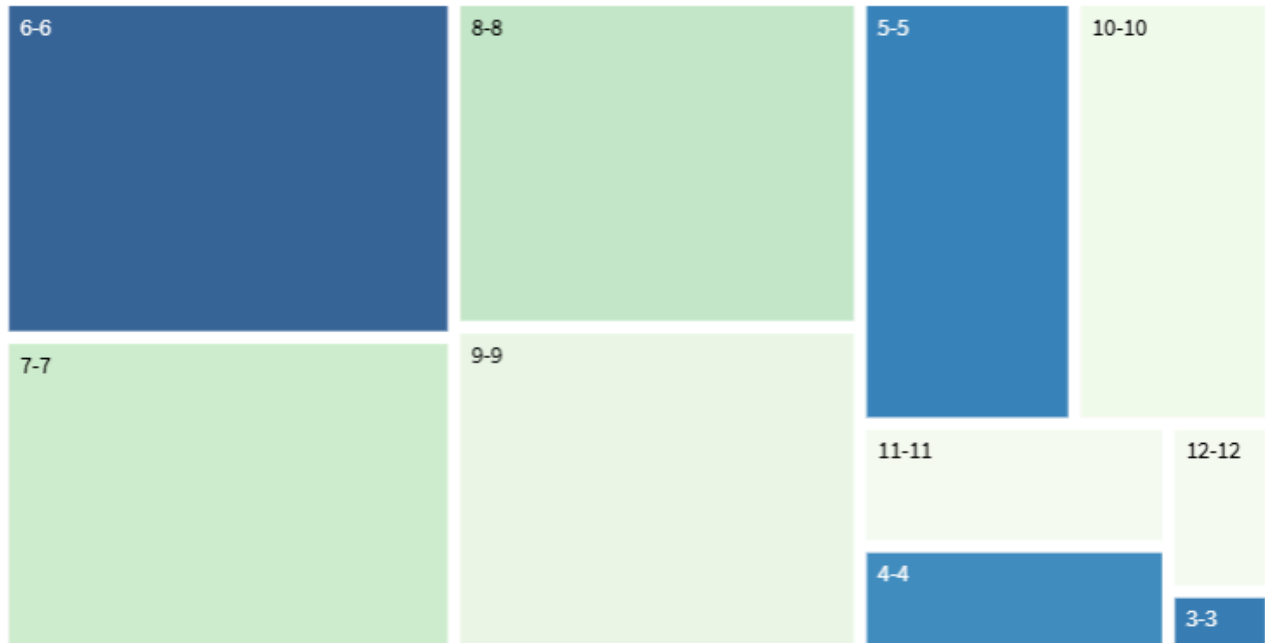


Avg of Monetary by CustomerLevel on OnlineRetail\_RFMScore

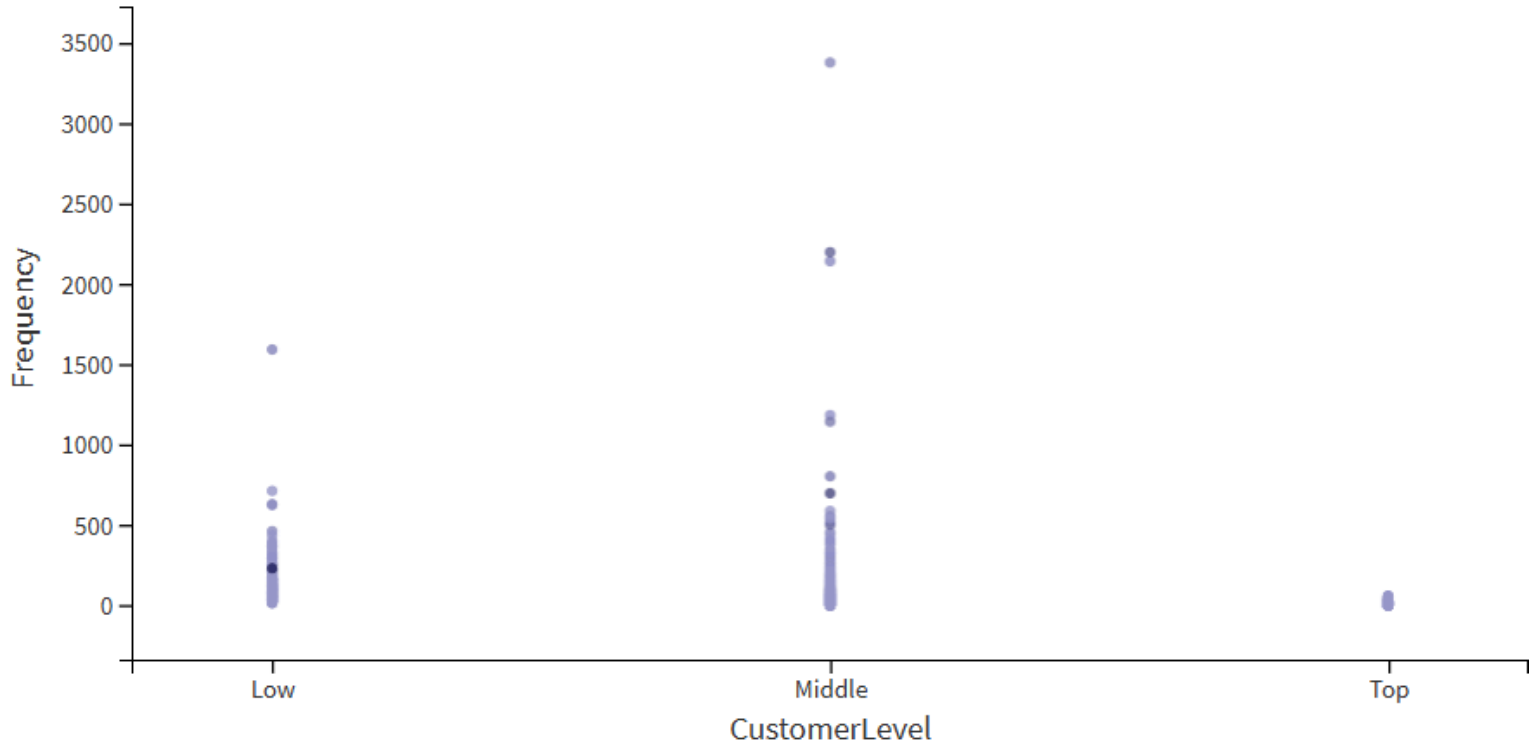


# DASHBOARD

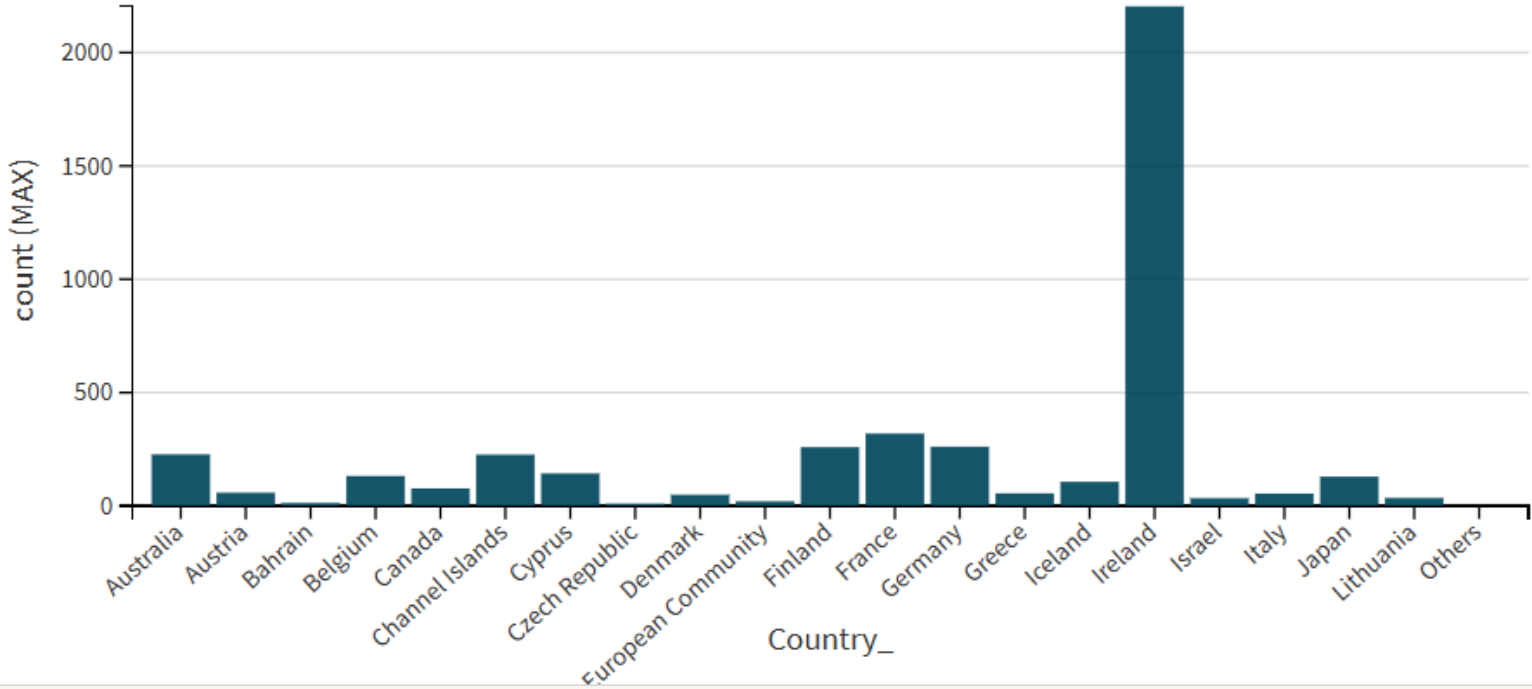
Count by RFMValue on OnlineRetail\_RFMScore



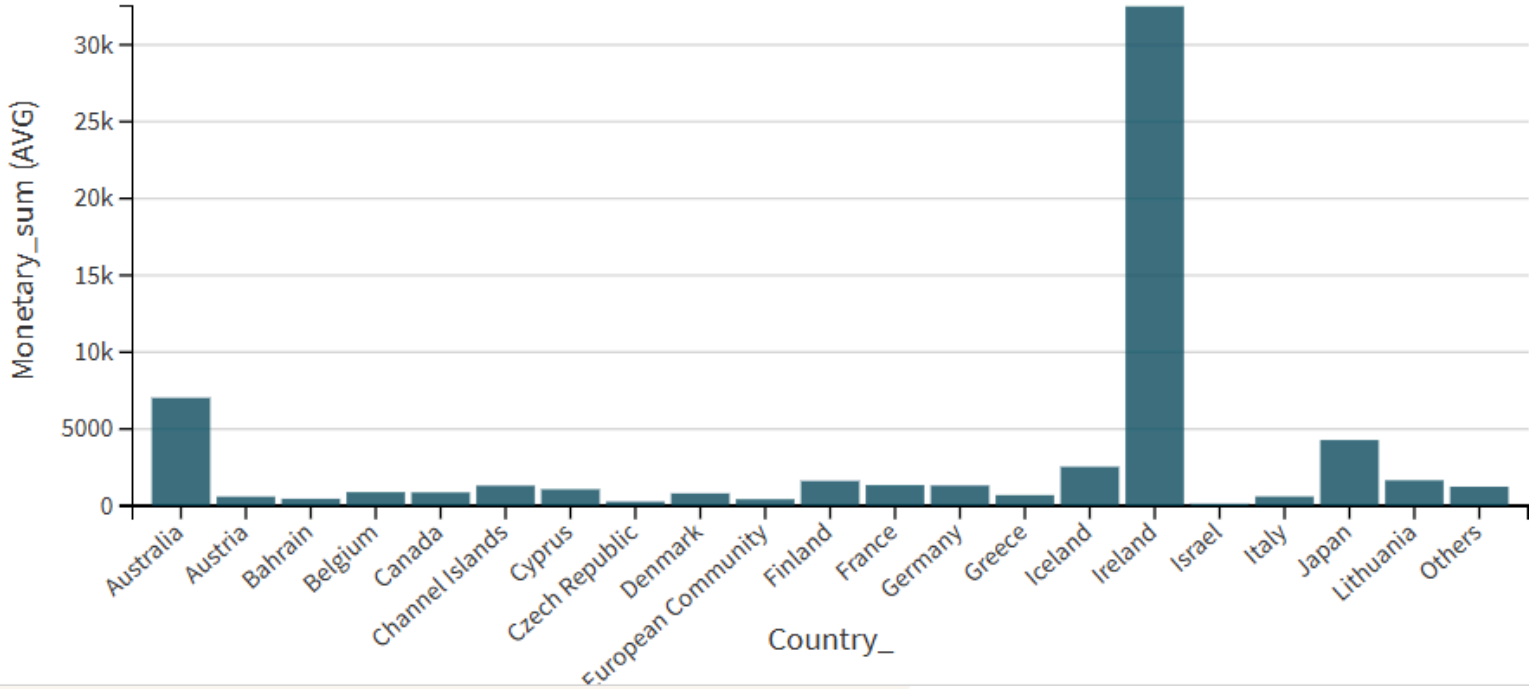
CustomerLevel vs Frequency on OnlineRetail\_RFMScore



Max of count by Country\_ on Online\_Retail\_prepared\_prepared\_by\_CustomerIDdeneme



Avg of Monetary\_sum by Country\_ on Online\_Retail\_prepared\_prepared\_by\_CustomerIDdeneme

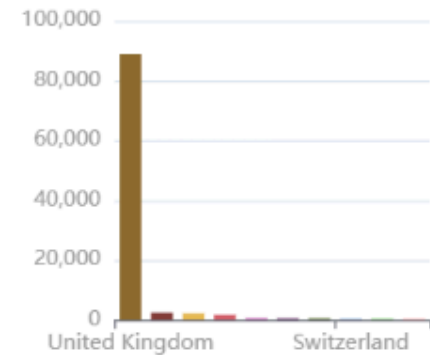




# İSTATİSTİKLER

## ▼ Country\_

### ▼ Histogram



### ▼ Summary stats

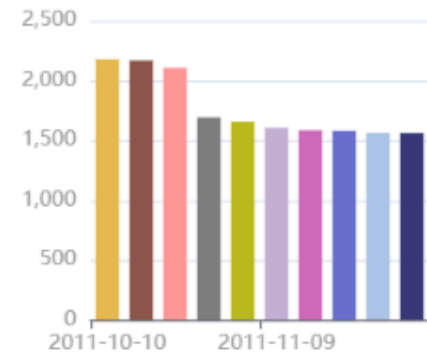
N values	100000
N distinct	33
Mode	United Kingdom
N empty	0

### ▼ Frequency table

United Kingdom	89%	88928
Germany	2%	2383
France	2%	2121
Ireland	2%	1637
Spain	1%	590
Portugal	1%	501
Belgium	0%	498
Switzerland	0%	484
Netherlands	0%	464
Australia	0%	312
Others	2%	2082
<b>N distinct</b>		<b>33</b>

## ▼ InvoiceDate

### ▼ Histogram



### ▼ Summary stats

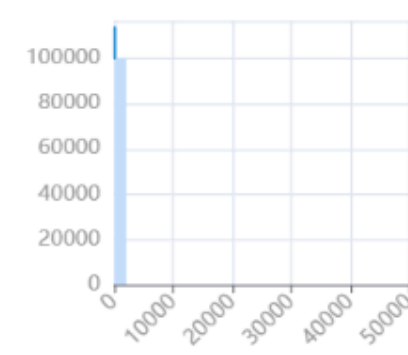
N values	100000
N distinct	108
Mode	2011-10-10
N empty	0

### ▼ Frequency table

2011-10-10	2%	2179
2010-05-12	2%	2169
2011-06-10	2%	2107
2011-05-10	2%	1693
2011-04-10	2%	1658
2011-11-09	2%	1606
2010-02-12	2%	1584
2010-06-12	2%	1579
2010-01-12	2%	1565
2011-07-10	2%	1563
Others	82%	82297
<b>N distinct</b>		<b>108</b>

## ▼ Monetary

### ▼ Histogram



### ▼ Summary stats

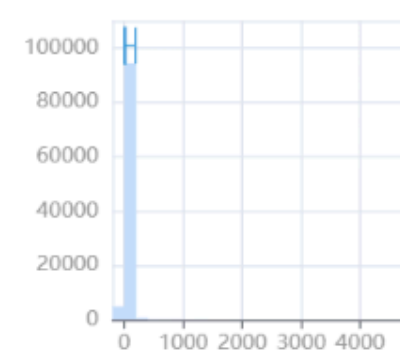
N values	100000
N distinct	1700
N finite	100000
Mean	22.606685
Median	12.48
Std Dev	146.50501861
Min	0
Max	38970

### ▼ Quantile table

%	Value
1%	0.5698
5%	1.25
25%	4.95
50%	12.48
75%	19.8
95%	68
99%	204

## ▼ prediction

### ▼ Histogram



### ▼ Summary stats

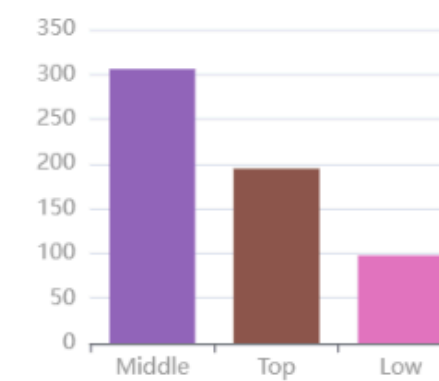
N values	100000
N distinct	1044
N finite	100000
Mean	21.907096686
Median	13.572885513
Std Dev	64.258831109
Min	-5.671530724
Max	3411.5563965

### ▼ Quantile table

%	Value
1%	-0.87139535
5%	0.3042529225
25%	5.8818674088
50%	13.572885513
75%	18.470157623
95%	68.910850525
99%	186.79562195

## ▼ CustomerLevel

### ▼ Histogram



### ▼ Summary stats

N values	599
N distinct	3
Mode	Middle
N empty	0

### ▼ Frequency table

Middle	51%	306
Top	33%	195
Low	16%	98
<b>N distinct</b>		<b>3</b>

## ▼ cluster\_labels

### ▼ Histogram



### ▼ Summary stats

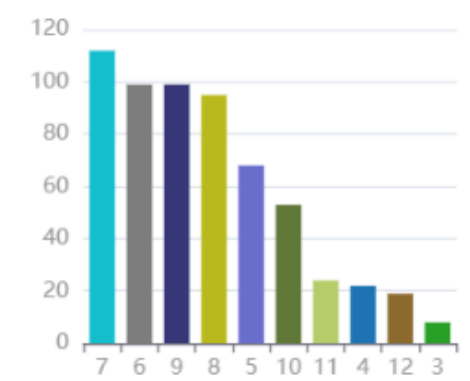
N values	599
N distinct	4
Mode	cluster_0
N empty	0

### ▼ Frequency table

cluster_0	37%	223
cluster_1	36%	216
cluster_2	26%	154
cluster_outliers	1%	6
<b>N distinct</b>		<b>4</b>

## ▼ RFMValue

### ▼ Histogram



### ▼ Summary stats

N values	599
N distinct	10
Mode	7
N empty	0

### ▼ Frequency table

7	19%	112
6	17%	99
9	17%	99
8	16%	95
5	11%	68
10	9%	53
11	4%	24
4	4%	22
12	3%	19
3	1%	8
<b>N distinct</b>		<b>10</b>

# STREAMLIT



<https://rfm-data.streamlit.app/>

# TEŞEKKÜRLER!

