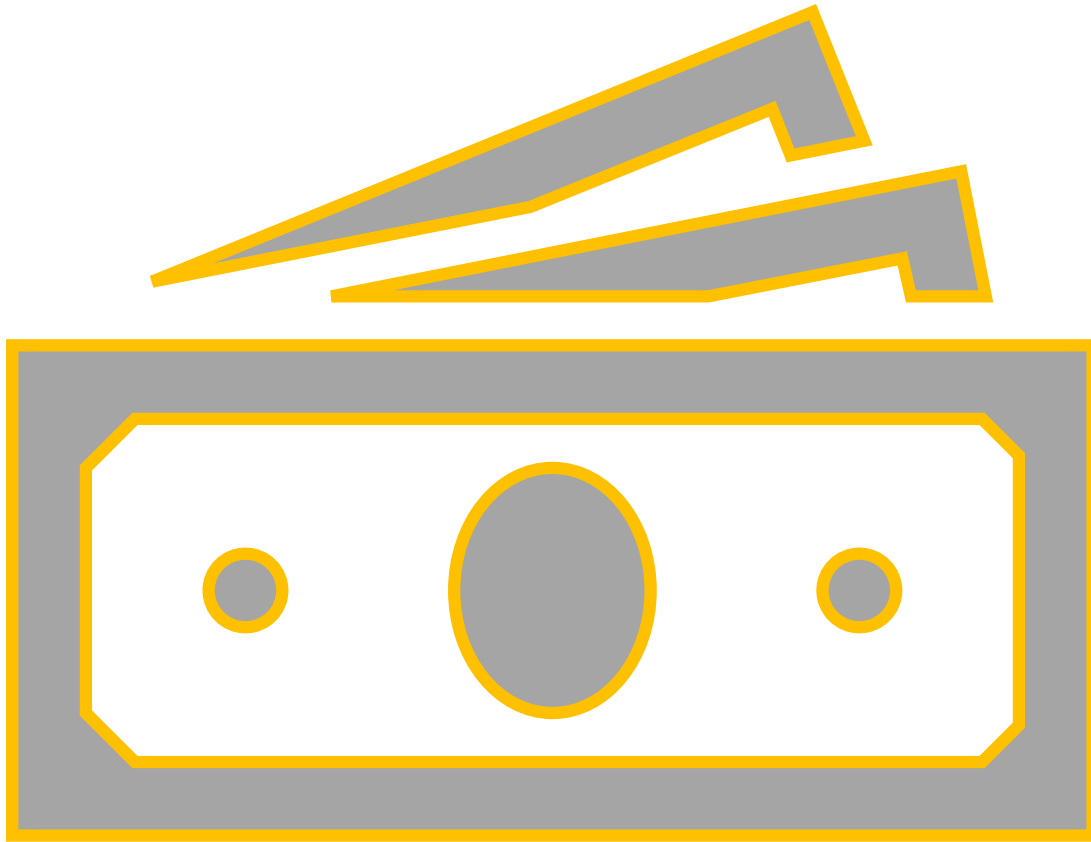


Gunel H. | Coursera Project |

Banking Solutions for Tourists



PEOPLE OFTEN USE FINANCIAL INSTITUTIONS FOR DIFFERENT PURPOSES. BANKS ARE ALSO VERY DEMANDED BY THE TOURISTS.

IN TERMS OF PANDEMIC IN AZERBAIJAN THERE ARE RESTRICTED HOURS ALLOWED FOR CITIZENS BEING OUTSIDE, AND CITIZENS DO NOT HAVE ENOUGH TIME TO CHECK ALL THE BANKS AROUND TO GET THE REQUIRED SERVICES FOR THE OPTIMAL PRICE.

Statement of the problem



THE PROJECT IS AIMED TO CREATE A LIST OF NEAREST TO THE TOURISTS BANKS WITH LARGEST NUMBER OF NEIGHBORHOOD VENUES.



THE KEY FEATURE OF THIS PROJECT IS TO PROVIDE INFORMATION FOR USERS (CITIZENS OR TOURISTS) NOT ONLY ABOUT THE VENUES, BUT ALSO THE DETAILS OF BANKING OPERATIONS OFFERED BY THE NEIGHBORHOOD BANKS.



DUE TO LONG LIST OF SERVICES PROVIDED BY BANKS THIS PARTICULAR PROJECT WILL BE FOCUSED ON COMMISSION OF OPERATIONS OFFERED, IN PARTICULAR LOAN OPERATIONS.

Project Overview



Research

According to the **Bank fees behaviour study** conducted by TNS at the request of DirectorateGeneral for Health and Consumers (2012), under the current policy status quo, most EU consumers show neither experience nor strong intentions to switch bank providers. This is mainly a consequence of high levels of customer satisfaction as well as of a lack of knowledge about the competitive benefits of switching providers.

Most consumers have no experience with switching a current account to another bank in the more recent past and have no intention to switch in the near future.

‘Shopping around’ and comparing bank fees is not a common practice for most consumers, even amongst those who switched bank accounts. In addition, there is low awareness of the potential savings to be made by switching

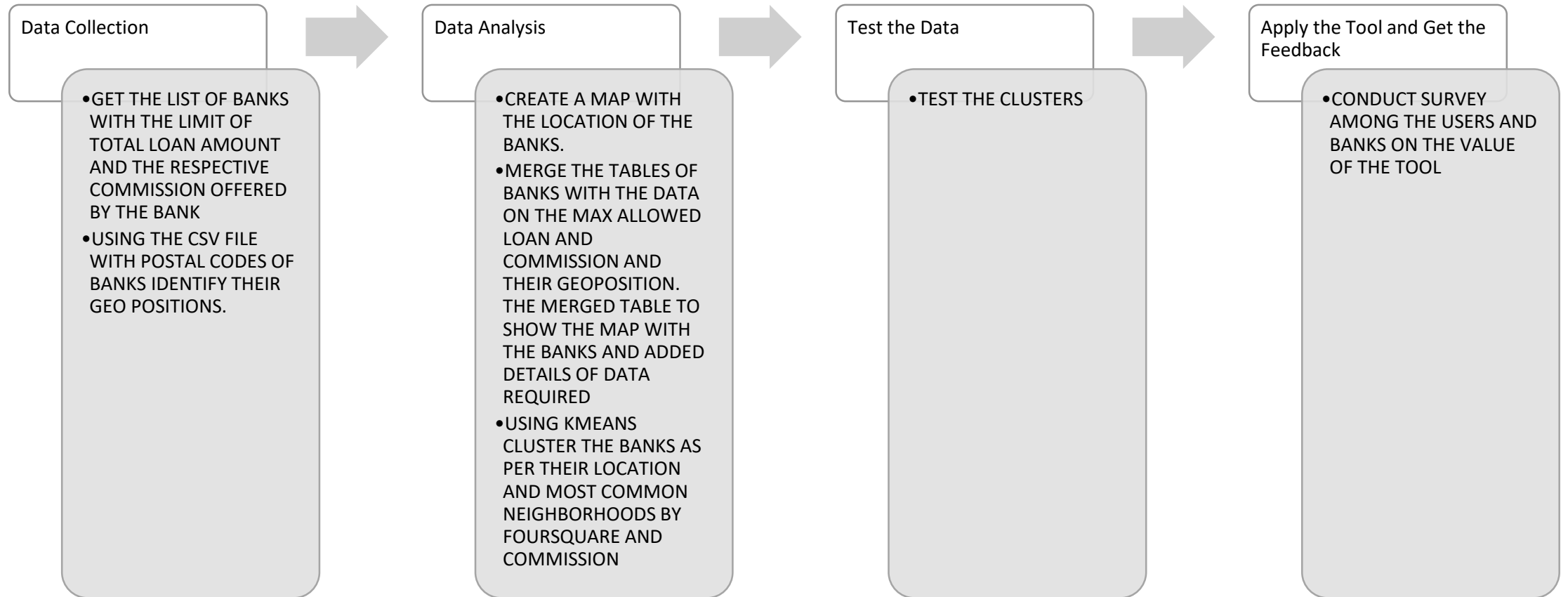


Increased awareness and created tool for users with data on banking services would increase use of banking solutions due to benefits it is creating and reflect in more favorable competitive landscape in banking sector

Hypothesis



Methodology



Data Collection & Normalization

- After collecting the required information on loan limit allowed at each of 21 researched banks and their respective fee rates for these operations, the information was normalized.
- The fields with No Amount Limit and Commission were excluded from the data table.
- In case there were two options for loan provided by banks, the max allowed amount was left in the table, remaining records were dropped
- Respective postal codes for bank branches were used for further mapping and location identification

1	BANK OF BAKU ASC	5000	1%
2	AG BANK	500	0.30%
3	Amrahbank ASC	1000	0.50%
4	Atabank ASC	750	0.40%
5	Azer-Turk Bank ASC	Limit yoxdur	1%
6	BANK BTB ASC	Limit yoxdur	1.50%
7	GUNAY BANK	Limit yoxdur	1%
8	BANK SILK VEY ASC	Limit yoxdur	0.40%
9	Azerb. Beynəlxalq Bank ASC	1000	1.15%
10	Azərbaycan Sənaye Bank ASC	Limit yoxdur	0.50%
11	EKSPRESSBANK ASC	1000	1%
12	KAPITALBANK ASC	1000	1%

	Bank	Amount Limit	Comissio
0	ACCESSBANK QSC	200	1%
1	BANK OF BAKU ASC	5000	1%
2	AG BANK	500	0.30%
3	Amrahbank ASC	1000	0.50%
4	Atabank ASC	750	0.40%
5	Azer-Turk Bank ASC	20000	1%
6	BANK BTB ASC	20000	1.50%
7	GUNAY BANK	20000	1%
8	BANK SILK VEY ASC	20000	0.40%
9	Azerb. Beynəlxalq Bank ASC	1000	1.15%
0	Azərbaycan Sənaye Bank ASC	20000	0.50%
1	EKSPRESSBANK ASC	1000	1%

	Bank	Mebleg_limiti	Kechurme_haqqi
0	Accessbank	5 - 200 AZN	1% - min. 1 AZN
1	AFB Bank	5.000 AZN	1%
2	AGBank	500 AZN	0.3% - min. 0,5 AZN
3	Amrahbank	10 - 1.000 AZN/USD	0,5%, - min. 0,5 AZN 0,5% - min. 0,7 USD
4	Atabank1	750 AZN/USD	0.4% - min. 0,5 AZN
5	Bank Avrasiya	Limit yoxdur	1% - min. 0,40 AZN
6	Bank BTB	Limit yoxdur	1,5% - min. 0,45 AZN
7	Bank Respublika2	Limit yoxdur	1% - min. 0,5 AZN
8	Bank Silk Way	Limit yoxdur	0,4% - min. 1 AZN
9	Beynəlxalq Bank	10-1.000 AZN	1,15%
10	Caspian Development Bank	Limit yoxdur	0,5%

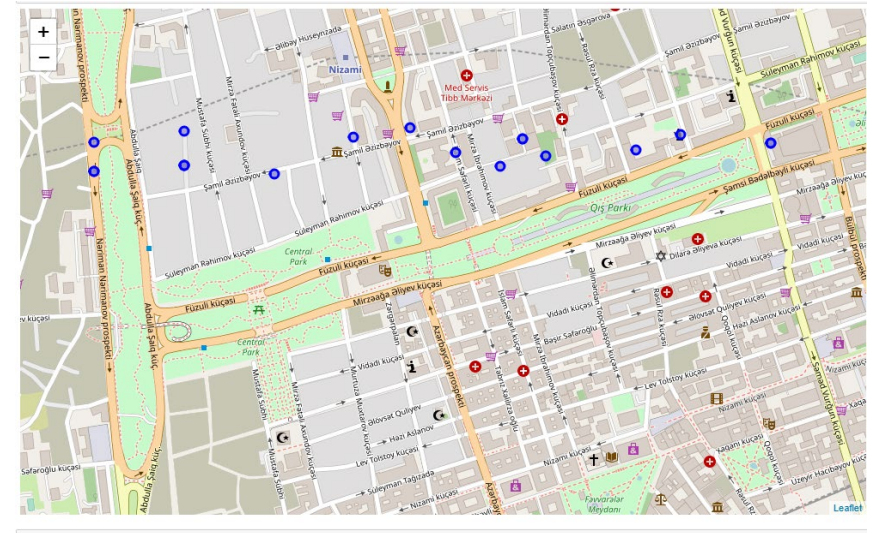
setting venue identification and
classification

Using Foursquare API

	Name	Street Code	Postal Code	Latitude	Longitude
0	Atabank ASC	35036	AZ1010	40.378067	49.819435
1	Atabank ASC	35136	AZ1010	40.378067	49.819435
2	Azarbaycan Sanaye BankASC	35137	AZ1005	40.377636	49.818871
3	RABITABANK ASC	35133	AZ1010	40.378067	49.819435
4	Nikoyl Inv.Kom.Bank ASC	35981	AZ0900	40.377731	49.823948

Visualising Banks on the Map and analysing the nearby venues

Maps



```
venues = results['response']['groups'][0]['items']
nearby_venues = json_normalize(venues)
filtered_columns = ['venue.name', 'venue.categories', 'venue.location.lat', 'venue.location.lng']
nearby_venues = nearby_venues.loc[:, filtered_columns]

nearby_venues['venue.categories'] = nearby_venues.apply(get_category_type, axis=1)

nearby_venues.columns = [col.split(".")[1] for col in nearby_venues.columns]

nearby_venues.head()
```

	name	categories	lat	lng
0	Hüseyin Cavid parkı	Park	40.373441	49.816918
1	Qafqaz Point Hotel	Hotel	40.378340	49.819689
2	Büyük Fırat	Turkish Restaurant	40.375510	49.813814
3	Megacity	Gym / Fitness Center	40.377238	49.812210
4	Entree	Bakery	40.382629	49.823836

For each bank nearby venues were detected

	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Neighborhood						
ACCESSBANK QSC	19	19	19	19	19	19
AG BANK	11	11	11	11	11	11
AGBANK ASC	11	11	11	11	11	11
ASC XALQ BANK	6	6	6	6	6	6
ATABANK ASC	11	11	11	11	11	11
Amrahbank ASC	6	6	6	6	6	6
Atabank ASC	22	22	22	22	22	22
Azarbaycan Sanaye BankASC	17	17	17	17	17	17
Azer-Turk Bank ASC	11	11	11	11	11	11
Azerb. Beynelxalq Bank ASC	30	30	30	30	30	30
BANK BTB ASC	33	33	33	33	33	33
BANK DANGASI	23	23	23	23	23	23
BANK OF BAKU ASC	54	54	54	54	54	54
BANK SILK VEY ASC	6	6	6	6	6	6
BANK TECHNIQUE ASC	31	31	31	31	31	31
Bank VTB ASC	31	31	31	31	31	31
EKSPRESSBANK ASC	100	100	100	100	100	100
GUNAY BANK	50	50	50	50	50	50
KAPITALBANK ASC	26	26	26	26	26	26
MUGANBANK	27	27	27	27	27	27
NBCBank ASC	32	32	32	32	32	32
Nikoyl Inv.Kom.Bank ASC	8	8	8	8	8	8
PARABANK SKB	100	100	100	100	100	100
RABITABANK ASC	11	11	11	11	11	11
Turanbank ASC	11	11	11	11	11	11
Unibank KB ASC	100	100	100	100	100	100

Baku_banks.head()

(787, 7)

	Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Atabank ASC	40.378067	49.819435	Qafqaz Point Hotel	40.378340	49.819689	Hotel
1	Atabank ASC	40.378067	49.819435	Qoç et (elmlər)	40.375716	49.815773	BBQ Joint
2	Atabank ASC	40.378067	49.819435	Iveria	40.381165	49.821456	Dumpling Restaurant
3	Atabank ASC	40.378067	49.819435	Çinicı	40.378160	49.815406	Clothing Store
4	Atabank ASC	40.378067	49.819435	Əfsanə	40.379831	49.823092	Restaurant

- In total, a table with 787 records was returned setting the radius to 1000 km, which means that approximately 15-20 venues were identified as near-by for each of the banks researched

Matrix

- The next step was a data matrix to identify the type of venues located nearby each Bank – this feature was made particularly for tourists to enable easier search and navigation in the respective district where their preferred bank is located
- Top nearby venues for each of the researched bank have been listed by their frequency
- Finalized in producing the data table for 20 most common venues for each object

9 Paper / Office Supplies Store 0.05

----AG BANK----

	venue	freq
0	Restaurant	0.18
1	Hotel	0.18
2	Turkish Restaurant	0.09
3	Gym Pool	0.09
4	Dumpling Restaurant	0.09
5	Multiplex	0.09
6	Café	0.09
7	State / Provincial Park	0.09
8	Tea Room	0.09
9	Kids Store	0.00

----AGBANK ASC----

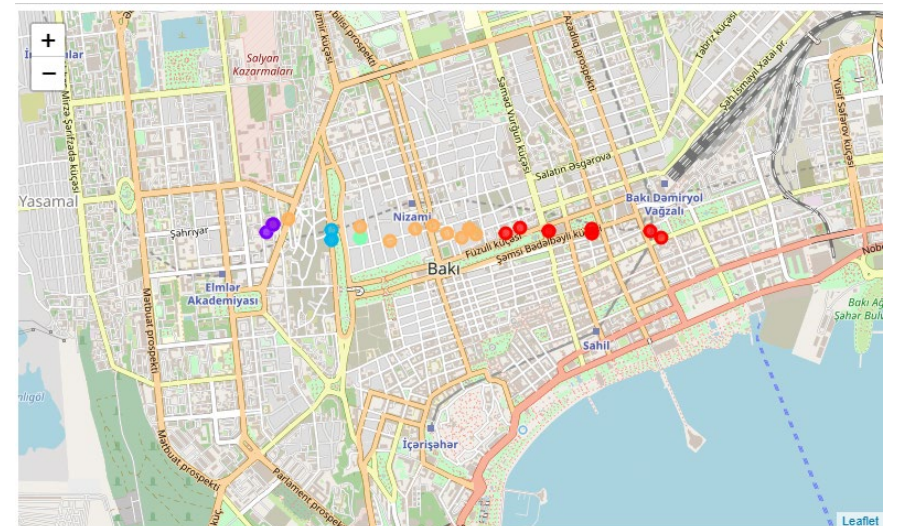
Bar	Bistro	Bookstore	Bridal Shop	Burger Joint
0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0

lost non venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue	6th Most Common Venue	7th Most Common Venue	8th Most Common Venue	9th Most Common Venue
rant	Turkish Restaurant	Theater	Kebab Restaurant	Fast Food Restaurant	Paper / Office Supplies Store	Park	Dessert Shop	Pizza Place
rant	Hotel	Turkish Restaurant	Dumpling Restaurant	Multiplex	Café	Gym Pool	State / Provincial Park	Tea Room
rant	Hotel	Turkish Restaurant	Dumpling Restaurant	Multiplex	Café	Gym Pool	State / Provincial Park	Tea Room
ool	State / Provincial Park	Park	Restaurant	Eastern European Restaurant	Hotel	Flower Shop	Fish & Chips Shop	Fast Food Restaurant
	Café	Grocery Store	Kids Store	Eastern European Restaurant	Dumpling Restaurant	Clothing Store	Restaurant	Turkish Restaurant

K Clustering

- Kmeans was used as a clustering method for clustering the banks
- Number of clusters was set to 5
- The primary purpose of this step – to be able to find the optimal solutions based on the primary location preferences of the users

Cluster_Label	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue
4	ACCESSBANK QSC	Restaurant	Turkish Restaurant	Theater
2	AG BANK	Restaurant	Hotel	Turkish Restaurant
2	AGBANK ASC	Restaurant	Hotel	Turkish Restaurant
3	ASC XALQ BANK	Gym Pool	State / Provincial Park	Park
1	ATABANK ASC	Hotel	Café	Grocery Store



	Street Code	Amount Limit	Comission	Cluster Labeling	Cluster Label	Clusters Label	Cluster_Label	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue
0	35036	750.0	0.40%	1	1	1	1	Hotel	Café	Grocery Store	Kids Store
1	35136	750.0	0.40%	1	1	1	1	Hotel	Café	Grocery Store	Kids Store
2	35137	20000.0	0.50%	1	1	1	1	Turkish Restaurant	Café	Hotel	BBQ Joint

Finally...

...within each cluster for each bank we returned a list of most common venues available, as well as information on loan opportunities and commission

Conclusion

- The primary benefit of this project is that bank customers can see the details of operations and offerings of nearby banks
- This type of tools become more useful during rising economic vulnerabilities in terms of growing demand on digital solutions in this field, as observed in Azerbaijan in 2015 with [azn.today](#) database for currency rate comparisons at banks
- In terms of current pandemic the value of digital solutions further grow and people in Azerbaijan having lockdown and limited hours outside with a special permissions are looking for researching opportunities of services and goods using digital tools
- Independent survey carried among 8 local citizens proved they find this solution useful and are likely to continue using it.

Limitations

- Key limitations associated with the project are related to limited data on banking products and services at sites
- Another limitation of the current project was inability to spend more time with testing the benefits of the current tool on banks performance and banking competitive landscape

Works Cited

- BANK FEES BEHAVIOUR STUDY, 2012, Conducted by TNS at the request of Directorate-General for Health and Consumers
- Richard Barrington | MoneyRates.com | The Latest MoneyRates.com Update on Bank Fees, 2020: electronic source: <https://www.moneyrates.com/research-center/bank-fees/>
- The Bank Merger Wave, Gary Dymski – 1999