Qversity Project 2025

This project contains a local data platform architecture for telecom analytics built with Docker Compose, PostgreSQL, Airflow, dbt, and pgAdmin. The project follows the Bronze → Silver → Gold (Medallion Architecture) modeling approach and addresses multiple business questions based on customer, location, calendar and payment data.

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Business Questions & Answers

1. What is the average revenue per user (ARPU) by plan type?

On average, **Control** plan users generate higher revenue per user, while **Pospago** plan users have the lowest ARPU.

	plan_type text	arpu numeric
1	control	77.96
2	prepago	77.91
3	pospago	76.52

2. What is the revenue distribution by geographic location?

The revenue distribution by city reveals that **Colombian cities dominate the top of the list**, generating the highest total revenue across all geographic locations (image partially shown):

	country text	city text	total_revenue numeric
1	colombia	bogotá	27441.31
2	colombia	medellín	24052.73
3	colombia	cali	23622.53
4	colombia	barranquilla	19930.84
5	peru	lima	10197.81

3. Which customer segments generate the highest revenue?

Customer segments are grouped by **credit segment** and **plan type**. The combination that generates the **highest total revenue of $31.827,47 US dollars:**

	credit_segment text	plan_type text	num_customers bigint	total_revenue numeric	avg_revenue_per_customer numeric
1	low	control	415	31827.47	76.69
2	low	pospago	404	30193.12	74.74
3	low	prepago	371	29290.41	78.95
4	medium	prepago	220	17527.71	79.67
5	medium	pospago	207	17039.41	82.32
6	medium	control	210	16710.52	79.57
7	high	prepago	163	11923.15	73.15
8	high	control	140	11099.47	79.28
9	high	pospago	134	9777.25	72.96

4. What is the distribution of customers by location?

The customer distribution by location reveals that once again, Colombian cities dominate the top of the list, with the highest being **Bogotá with 358 customers** and the lowest being Concepción - Chile with 38 customers (image partially shown).

	country text	city text	count bigint
1	colombia	bogotá	358
2	colombia	medellín	326
3	colombia	cali	311
4	colombia	barranquilla	251
5	peru	lima	127

5. What is the age distribution of customers by plan type?

The age distribution of customers by plan type shows that elderly customers (65+) dominate across all plan types — **Control**, **Pospago**, and **Prepago** , while the other groups (primarily the 18-24 group) show the lowest distribution across all plan types. This could be explained by a few factors (image partially shown):

- Older users may prefer more stable and predictable services, such as **control plans** that prevent overspending.

- The 65+ group may represent **long-standing customers** who have maintained the same number or service for many years.

	plan_type text	age_group text	total bigint
1	control	65+	224
2	prepago	65+	202
3	pospago	65+	196
4	control	35-44	131
5	pospago	35-44	127
6	control	44-54	126
7	prepago	44-54	123
8	prepago	55-64	118
9	pospago	25-34	116

6. What is the age distribution by country and operator?

The 65+ age group has the highest customer counts across all operators and countries (image partially shown):

- WOM and Claro both have 91 customers in this age group.
- Colombia, as we saw in question N°4 dominates in number of customers.
- Movistar and Tigo follow with 77 and 69, respectively.

Younger age groups (18–24 and 25–34) also appear frequently, especially under WOM and Tigo, indicating some adoption by younger demographics and Claro shows a strong distribution across all age groups, suggesting a more balanced customer base.

	operator text	age_group text	country text	total bigint
1	wom	65+	colombia	91
2	claro	65+	colombia	91
3	movistar	65+	colombia	77
4	tigo	65+	colombia	69
5	wom	25-34	colombia	56
6	movistar	35-44	colombia	53
7	tigo	35-44	colombia	53
8	movistar	45-54	colombia	51
9	tigo	25-34	colombia	50
10	claro	18-24	colombia	50
11	wom	55-64	colombia	49
12	tigo	45-54	colombia	48
13	claro	45-54	colombia	48
14	claro	35-44	colombia	46
15	tigo	55-64	colombia	46
16	wom	35-44	colombia	46
17	wom	45-54	colombia	45
18	claro	55-64	colombia	44
19	wom	18-24	colombia	43

7. How are customers distributed across different operators?

The customer distribution by operator shows a fairly balanced market, with WOM leading slightly in total customer count with 614 customers, Claro with 598, Tigo with 560 and Movistar with 535:

	operator text	customer_count bigint
1	wom	614
2	claro	598
3	tigo	560
4	movistar	535

8. What is customer segmentation by credit score ranges?

Customer segmentation by credit score ranges shows that the majority of customers fall into the high segment (≥550), with 1,294 users, followed by the medium segment (275–549) with 999 users, and only 14 customers in the low segment (1–274). This classification suggests that most of the customer base has good to excellent credit standing, which could indicate better financial stability

	credit_segment text	customer_count bigint
1	high	1294
2	low	14
3	medium	999

9. What are the most popular device brands?

The most popular brand is Samsung with 583 of the customers, followed by Apple and Huawei, both with 580 and Xiaomi with 564.

	device_brand text	total bigint
1	samsung	583
2	apple	580
3	huawei	580
4	xiaomi	564

10. What is device brand preference by country/operator?

Well, when analyzing device brand preference by country and operator, several patterns emerge. In Colombia, Samsung is the most popular brand overall, especially among WOM users, while Claro customers are split between Huawei and Samsung. Tigo users also show a strong preference for Huawei and Apple, whereas Movistar users favor Apple devices.

In Peru, preferences are more balanced: WOM users tend to prefer Huawei, while Tigo and Claro users lean toward Apple. Movistar users in Peru show a moderate preference for Xiaomi and Samsung.

In Argentina, Xiaomi stands out as the leading brand among WOM and Tigo customers, while Claro users prefer Apple, and Movistar users are split between Apple and Huawei.

In Mexico, Apple and Huawei are the most common choices depending on the operator, with Claro and Movistar users showing a slightly higher inclination toward Huawei.

And Finally, in Chile, device usage is more distributed, but Samsung and Xiaomi appear consistently across all operators, with Claro and Tigo users also leaning toward Apple.

	country text	operator text	device_brand text	customer_count bigint
1	colombia	wom	samsung	95
2	colombia	wom	xiaomi	87
3	colombia	claro	huawei	84
4	colombia	claro	samsung	84
5	colombia	tigo	huawei	83
6	colombia	claro	apple	81
7	colombia	movistar	apple	80
8	colombia	tigo	xiaomi	79
9	colombia	wom	apple	78
10	colombia	tigo	samsung	75
11	colombia	movistar	huawei	75
12	colombia	movistar	samsung	73
13	colombia	claro	xiaomi	71
14	colombia	wom	huawei	70
15	colombia	movistar	xiaomi	68
16	colombia	tigo	apple	63
17	peru	wom	huawei	33
18	argentina	wom	xiaomi	26
19	peru	tigo	apple	26
20	argentina	claro	apple	26
21	peru	claro	xiaomi	24

11. What is device brand preference by plan type?

Device brand preference between customers varies slightly depending on the **plan type**.

- For control plans, Samsung is the most preferred brand (218), followed closely by Huawei (195), Xiaomi (186), and Apple (184).
- In postpaid (pospago) plans, Apple leads (207), followed by Huawei (191), Xiaomi (182), and Samsung (178).
- In prepaid (prepago) plans, Xiaomi ranks first (196), with Huawei (194), Apple (189), and Samsung (187) closely behind.

	plan_type text	device_brand text	customer_count bigint
1	control	samsung	218
2	pospago	apple	207
3	prepago	xiaomi	196
4	control	huawei	195
5	prepago	huawei	194
6	pospago	huawei	191
7	prepago	apple	189
8	prepago	samsung	187
9	control	xiaomi	186
10	control	apple	184
11	pospago	xiaomi	182
12	pospago	samsung	178

12. Which services are most commonly contracted?

The most commonly contracted services among customers is the international service with 2041 times, followed by voice and roaming with 2023 and 2021 respectively, data and sms are the lowest with 2019 and 1999 respectively.

	service text	times_contracted bigint
1	international	2041
2	voice	2023
3	roaming	2021
4	data	2019
5	sms	1999

13. What service combinations are most popular?

While roaming and international are the single most used services among customers, the most popular combinations are related with data, voice, roaming and international services with a few having also the sms service (this could be explained by the use of messaging apps that only require wifi connection), mostly like an all in one bundle pack of services.

	service_combination text	customer_count bigint
1	roaming	223
2	international	210
3	data + roaming + sms + voice	210
4	data + international + sms + voice	208
5	data + international + roaming + voice	205

14. What percentage of customers have payment issues?

According to the data, **75.42%** of customers have payment issues.

percentage_with_payment_issues double precision
75.42262678803641

15. Which customers have pending payments?

Nearly 2114 customers have pending or failed payments of which can be identified by either customer, email or record_uui

	customer_id bigint	email text	operator text	plan_type text	payment_date date	payment_status text
1	1451	an.fernn@hotmail.com	tigo	control	2024-07-02	pending
2	1482	carmen.lopez@yahoo.com	wom	pospago	2024-08-12	pending
3	1890	ana.lpez@email.com	tigo	control	2024-07-31	pending
4	3608	lui.martinez@correo.com	wom	pospago	2024-09-22	pending
5	4260	mara.garci@correo.com	tigo	pospago	2024-07-14	failed
6	5676	mari.garcia@email.com	movistar	pospago	2024-06-12	pending
7	5683	miguel.garc@hotmail.com	wom	pospago	2024-08-09	pending
8	5953	miguel.lope@hotmail.com	wom	control	2024-07-23	pending
9	6026	maria.martnez@gmail.com	tigo	prepago	2024-11-27	pending
10	6587	juan.gonzalez@outlook.com	tigo	prepago	2025-04-09	failed
11	7255	carlos.fernn@gmail.com	wom	prepago	2024-11-15	pending
12	7799	mari.martin@outlook.com	tigo	prepago	2024-08-14	failed
13	8172	laura.gonzalez@yahoo.com	tigo	pospago	2024-10-05	pending
14	8399	carmen.rodriguez@hotmail.c...	claro	control	2024-06-17	failed
15	8492	pedro.rodrgue@outlook.com	wom	prepago	2024-07-29	failed
16	9236	laur.lope@gmail.com	wom	pospago	2024-12-13	failed

Total rows: 2114 Query complete 00:00:00.128

16. How does credit score correlate with payment behavior?

Looking at the data, customers with **higher credit scores** don't always have the best payment behavior. In fact, those with **pending payments** have the **highest average credit score**, while those who have **actually paid** have the **lowest**.

	payment_status text	avg_credit_score numeric	num_customers bigint
1	paid	573.67	1781
2	failed	576.68	1740
3	late	577.50	1806
4	pending	580.07	1774

17. How does the distribution of new customers change over time?

Over time, the distribution of new customers shows a clear upward trend. In the months of 2022, the number of new customers each month was relatively low, around 20. This figure increased in 2023, with most months averaging about 50 new customers. The growth continued into 2024, where the monthly count reached approximately 80. During the first half of 2025, this level of 80 new customers per month has remained consistent, indicating a period of sustained growth and customer acquisition

	year numeric	month numeric	new_customers bigint
1	2022	6	26
2	2022	7	81
3	2022	8	50
4	2022	9	57
5	2022	10	55
6	2022	11	41
7	2022	12	75
8	2023	1	64
9	2023	2	35
10	2023	3	48
11	2023	4	58
12	2023	5	96
13	2023	6	66
14	2023	7	71
15	2023	8	70
16	2023	9	64
17	2023	10	81
18	2023	11	26
19	2023	12	63
20	2024	1	30
21	2024	2	53
22	2024	3	42
23	2024	4	56
24	2024	5	44
25	2024	6	75
26	2024	7	48
27	2024	8	59
28	2024	9	55

18. What are customer acquisition trends by operator?

Tigo Trend: Consistently strong.

- Highlights: Frequently among the top in monthly new customer counts, especially notable spikes in:
- March 2024: 26 new customers.
- February 2024: 20 new customers.
- September 2024: 21 new customers.
- Stability: Maintains high acquisition almost every month — never a clear decline trend.
- Verdict: Tigo is the most consistent performer and often the monthly leader.

Wom Trend: Gradual growth followed by steady high performance.

- Highlights: Strong showings in 2023 and 2024, with frequent 20+ months (for example July 2024: 22, May 2024: 24). Maintained competitive acquisition in 2025, with solid values like 18 in May 2025.
- Verdict: Highly competitive, especially in the last two years. Wom is closing in on Tigo.

Claro Trend: Fluctuates month to month, with bursts of strong performance.

- Highlights: Peaks like October 2024 with 29 customers – highest in the dataset. Strong recoveries after dips (for example from 8 in Sept 2024 to 29 in Oct 2024).
- Verdict: High potential but inconsistent. Performs very well in some months but dips in others.

Movistar Trend: Weakest of the four.

- Highlights: Occasionally crosses 15–17 customers, but more often stays below 14. Example lows: November 2023 (7), April 2023 (6), February 2025 (5).
- Verdict: Consistently lower acquisition numbers suggest weaker marketing or customer appeal.

19. What percentage of customers are active/suspended/inactive?

The majority of customers have an active cellphone plan (800), representing 34.78% of the total. Meanwhile, 758 customers (32.96%) are inactive, and 742 customers (32.26%) have their plans suspended.

	status text	customer_count bigint	percentage numeric
1	active	800	34.78
2	inactive	758	32.96
3	suspended	742	32.26

20. Which service combinations drive highest revenue?

The top five service combinations generating the highest revenue include International service as a standalone offering, which leads with $9,159. The remaining top combinations are bundled service packages, each contributing over $8,000 in revenue.

	service_combination text	num_customers bigint	total_revenue numeric
1	international	116	9159.14
2	international + roaming + sms + voice	114	8975.81
3	data + international + sms + voice	114	8945.46
4	data + international + roaming + voice	106	8720.41
5	data + roaming + sms + voice	114	8477.73

21. How do the mean and median monthly revenues per user compare across different plan types and operators?

Tigo stands out as the most consistent operator in terms of revenue performance. It leads in both mean and median revenue for control plans and shows strong figures in prepaid, with the highest median ($80.82) and a solid mean ($78.42). This suggests that Tigo's customers not only pay more on average but also do so consistently.

Claro also performs well in control and prepaid plans, with mean revenues close to Tigo's, though it never takes the top spot.

Wom, while slightly behind in control plans, shows impressive strength in postpaid, achieving the highest median revenue overall ($84.04), indicating steady spending across its postpaid customer base.

Movistar, on the other hand, tends to underperform in comparison. It consistently shows the lowest median revenues across all plan types, especially in postpaid ($72.98) and prepaid ($75), suggesting less consistent or lower-spending users. While its mean values are not dramatically lower, the gap between mean and median implies possible disparities in user spending.

	plan_type text	operator text	mean_revenue numeric	median_revenue double precision	user_count bigint
1	control	claro	79.09	78.03	190
2	control	movistar	76.79	76.68	185
3	control	tigo	79.83	80.5	201
4	control	wom	75.97	73.21	189
5	pospago	claro	76.30	76.16	205
6	pospago	movistar	77.94	72.98	163
7	pospago	tigo	75.11	74	169
8	pospago	wom	76.79	84.035	208
9	prepago	claro	78.01	82	191
10	prepago	movistar	76.05	75	177
11	prepago	tigo	78.42	80.815	178
12	prepago	wom	78.95	77.92	208