

SQL task

1. Aggregated Data

This query generates a comprehensive breakdown of payment activity for each provider. It categorizes performance by country and transaction status, calculating the relative share of each status (Success, Failed, Pending) within the total volume for that specific PSP and region .

- **SQL Query:**

```
-- Task 1
SELECT
    p.name AS psp_name,
    COALESCE(pc.bin_country, 'Unknown') AS country,
    'Payment'::TEXT AS operation_type,
    t.status AS transaction_status,
    COUNT(t.id) AS transaction_count,
    ROUND(AVG(t.amount), 2) AS avg_amount,
    ROUND(
        COUNT(t.id) * 100.0 / NULLIF(SUM(COUNT(t.id)),
OVER (PARTITION BY p.name, pc.bin_country), 0),
        2
    ) AS share_percent

FROM transactions t
JOIN psp p ON t.psp_id = p.id
JOIN payment_credentials pc ON t.payment_credentials_id =
pc.id
GROUP BY
    p.name,
    pc.bin_country,
    t.status
ORDER BY
    p.name,
    pc.bin_country,
    transaction_count DESC;
```

- **Output:**

	psp_name character varying (100) 	country character varying 	operation_type text 	transaction_status character varying (50) 	transaction_count bigint 	avg_amount numeric 	share_percent numeric 
1	PSP A	AUS	Payment	pending	13	255.68	43.33
2	PSP A	AUS	Payment	success	11	247.97	36.67
3	PSP A	AUS	Payment	failed	6	224.07	20.00
4	PSP A	CAN	Payment	pending	9	308.88	52.94
5	PSP A	CAN	Payment	failed	4	331.51	23.53
6	PSP A	CAN	Payment	success	4	71.78	23.53
7	PSP A	FRA	Payment	pending	5	386.07	71.43
8	PSP A	FRA	Payment	success	1	76.11	14.29
9	PSP A	FRA	Payment	failed	1	402.48	14.29
10	PSP A	GBR	Payment	failed	5	336.81	45.45
11	PSP A	GBR	Payment	success	4	347.10	36.36
12	PSP A	GBR	Payment	pending	2	282.59	18.18
13	PSP A	USA	Payment	pending	10	281.49	35.71
14	PSP A	USA	Payment	success	10	234.11	35.71
15	PSP A	USA	Payment	failed	8	255.57	28.57
16	PSP B	AUS	Payment	success	11	258.22	42.31
17	PSP B	AUS	Payment	failed	10	278.39	38.46
18	PSP B	AUS	Payment	pending	5	200.90	19.23
19	PSP B	CAN	Payment	failed	7	240.81	41.18
20	PSP B	CAN	Payment	pending	5	300.66	29.41
21	PSP B	CAN	Payment	success	5	255.15	29.41
22	PSP B	FRA	Payment	success	8	247.41	61.54
23	PSP B	FRA	Payment	failed	3	153.75	23.08
24	PSP B	FRA	Payment	pending	2	166.67	15.38
25	PSP B	GBR	Payment	failed	7	229.27	53.85
26	PSP B	GBR	Payment	success	6	263.18	46.15
27	PSP B	USA	Payment	failed	10	252.68	45.45

2. Top PSPs by Country

This report identifies the top three performing payment providers for each country based on their success rate . By using a dense ranking function, it highlights the partners that provide the highest conversion in each market .

- SQL Query:

```
-- Task 2

WITH psp_stats AS (
  SELECT
    p.name AS psp_name,
    pc.bin_country AS country,

    COUNT(*) FILTER (WHERE t.status = 'success') AS success_count,
    COUNT(*) AS total_count
```

```

        FROM transactions t
        JOIN psp p ON t.psp_id = p.id
        JOIN payment_credentials pc ON
t.payment_credentials_id = pc.id
        GROUP BY p.name, pc.bin_country

        /* Important note: to ensure statistical significance
in production, apply a threshold
           (HAVING COUNT(*) > 10) to avoid skewed rankings
from low-volume providers
        */
    ),

ranked_psps AS (
    SELECT
        psp_name,
        country,
        ROUND(success_count * 100.0 / NULLIF(total_count,
0), 2) AS success_rate,

        DENSE_RANK() OVER (
            PARTITION BY country
            ORDER BY (success_count * 100.0 /
NULLIF(total_count, 0)) DESC
            ) AS rating
    FROM psp_stats
)

SELECT
    psp_name,
    country,
    success_rate,
    rating
FROM ranked_psps
WHERE rating <= 3
ORDER BY country, rating;

```

- **Output:**

	psp_name character varying (100) 	country character varying (50) 	success_rate numeric 	rating bigint 
1	PSP D	AUS	47.37	1
2	PSP G	AUS	44.44	2
3	PSP B	AUS	42.31	3
4	PSP H	CAN	61.54	1
5	PSP E	CAN	37.50	2
6	PSP F	CAN	36.36	3
7	PSP B	FRA	61.54	1
8	PSP J	FRA	50.00	2
9	PSP C	FRA	38.46	3
10	PSP I	GBR	50.00	1
11	PSP B	GBR	46.15	2
12	PSP C	GBR	37.50	3
13	PSP J	USA	43.48	1
14	PSP I	USA	40.91	2
15	PSP B	USA	36.36	3