Digital Banking Growth After COVID

A SQL-Powered Analytical Case Study

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Objective

To analyze how digital banking usage evolved before and after COVID using real-world data and SQL, focusing on transactions, user behavior, and engagement.

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Executive Summary – Data-Driven Answers to 8 Business Questions

Business Question	Key Finding	Business Impact
1. How did user sign-up trends change post-COVID?	71% of users signed up post-COVID	Accelerated digital onboarding
2. Did branch-only users adopt digital banking channels?	100% moved to digital	Full digital transformation of legacy users
3. How did monthly transaction volume shift post-COVID?	Sustained or increased after COVID	High digital activity and usage continuity
4. What is the share of digital vs. physical transactions over time?	Digital share grew from 21% to 45.5%	Significant shift toward mobile/web banking
5. How consistent is user login behavior yearly?	29 logins/user/month consistently	Stable user engagement across years
6. What is the 6-month retention rate after first login month?	100% returned within 6 months	Very strong user retention
7. How did support requests change before vs. after COVID?	Increased requests post-COVID	More user activity & support needs digitally
8. Are users shifting from branch to Chat/App support?	Digital peaked in 2022, branch rebounded in 2024	Re-engagement in physical channels, mixed preference

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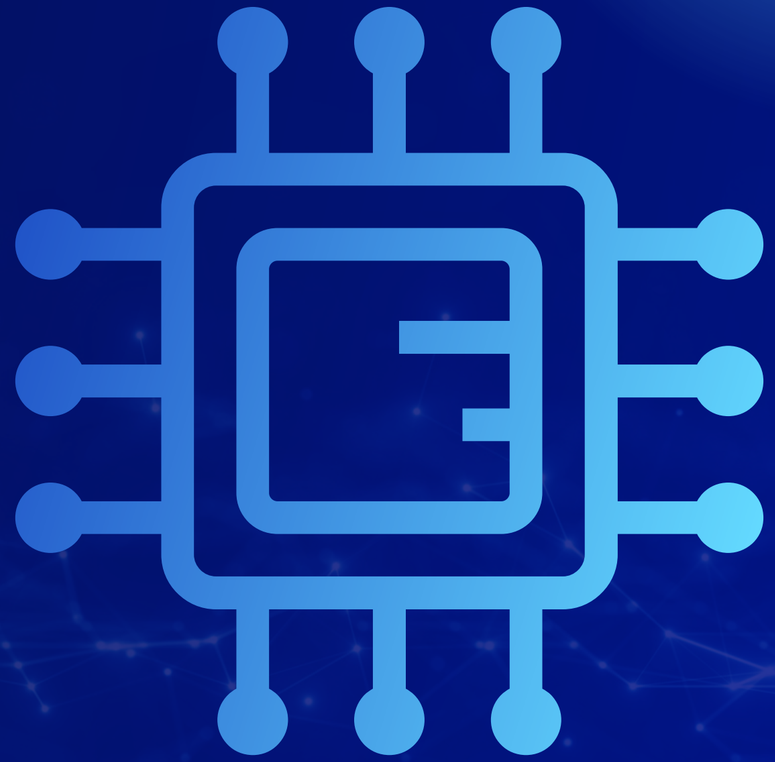
Dataset Summary

- users (500 rows): user_id, signup_date, age, gender, location, channel
- transactions (3000 rows): transaction_id, user_id, transaction_date, amount type channel
- logins (1048575 rows): login_id, user_id, login_date, device_type
- support_requests (1500 rows): request_id, user_id, request_date, request_type, resolved channel



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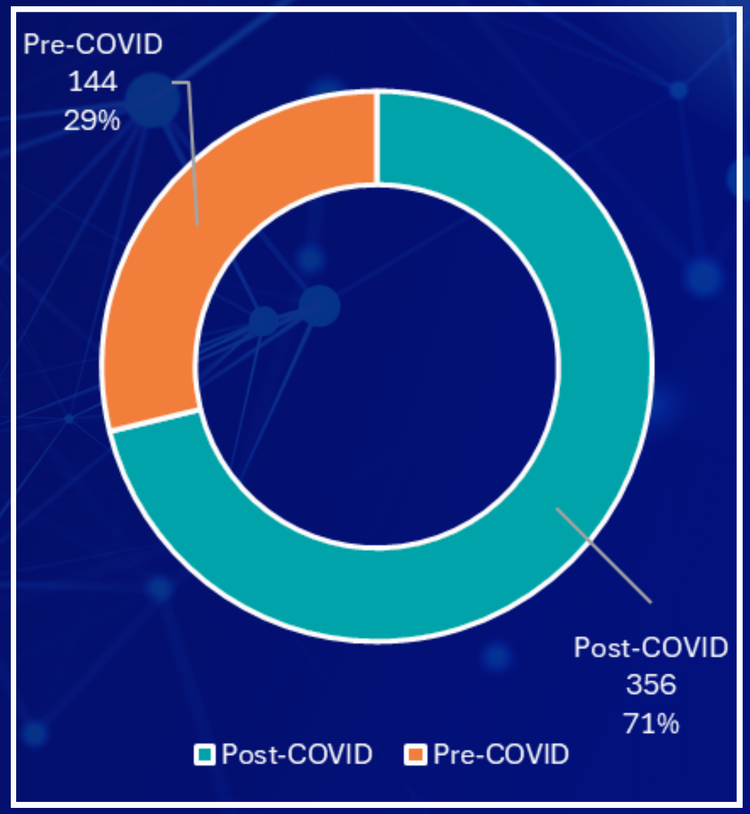
User Signups Before vs. After COVID

🧾SQL Query :

```
select
    covid_period,
    count(distinct user_id) as total_users
 from(
    select *,
        case
            when signup_date<'2020-03-01' then 'Pre_Covid'
            else 'Post_Covid'
        end as covid_period
    from users
)as filtered_users
group by covid_period
order by total_users desc;
```



💡 Insight:

- Over 70% of users signed up after the onset of COVID-19, reflecting a major shift toward digital onboarding and increased demand for online banking services.

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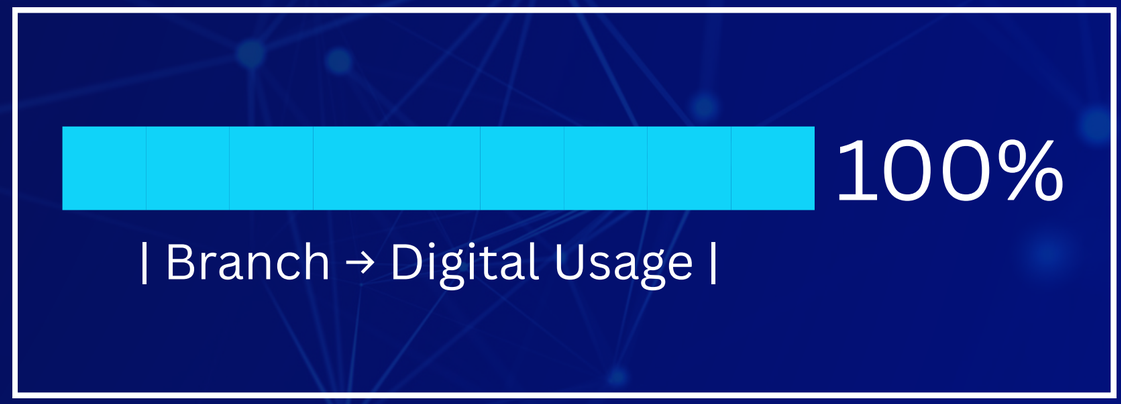
100% of Branch Users Adopted Digital Channels

🧾SQL Query :

```
with branch_users as (
    select distinct user_id
    from users
    where channel = 'branch'),

moved_to_digital as (
    select distinct b.user_id as id
    from branch_users as b
    left join transactions as t
        on b.user_id = t.user_id
        and t.channel in ('web', 'mobile')
    left join logins as l
        on b.user_id = l.user_id
        and l.device_type in ('web', 'mobile')
    where l.login_id is not null or t.transaction_id is not null)

select
    cast(count(id) * 100.0 /
        (select count(user_id) from branch_users)
    as decimal(13,2)) as branch_to_digital
from moved_to_digital;
```



💡 Insight:

- All branch-origin users in the dataset eventually used digital platforms — indicating a complete transition over time.

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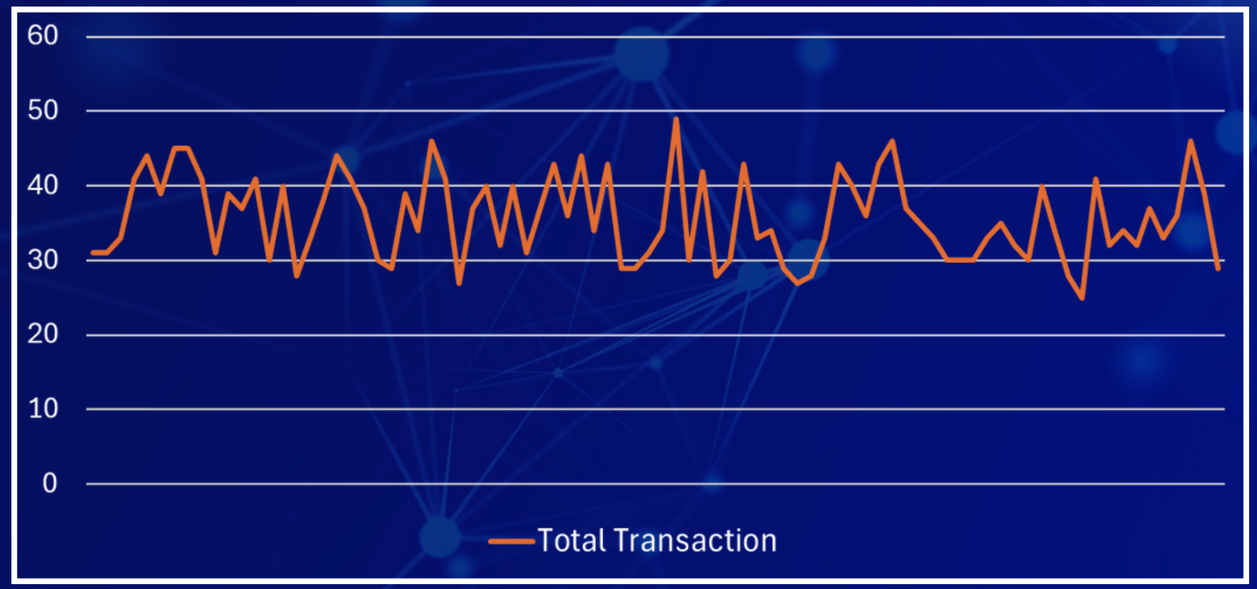
Monthly Transaction Volume – Pre vs. Post COVID

🧾SQL Query :

```
select
  format(transaction_date, 'yyyy-MM') AS Month_Year,
  case
    when transaction_date < '2020-03-01' THEN 'Pre_Covid'
    else 'Post_Covid'
  end as covid_period,
  count(transaction_id) as Total_Transaction
from transactions
group by
  format(transaction_date, 'yyyy-MM'),
  case
    when transaction_date < '2020-03-01' THEN 'Pre_Covid'
    else 'Post_Covid'
  end
order by  Month_Year, covid_period asc ;
```



💡 Insight:

- While transaction volumes were steady before COVID, they remained stable and slightly increased afterward — indicating digital adoption sustained transactional activity through the pandemic period and beyond.

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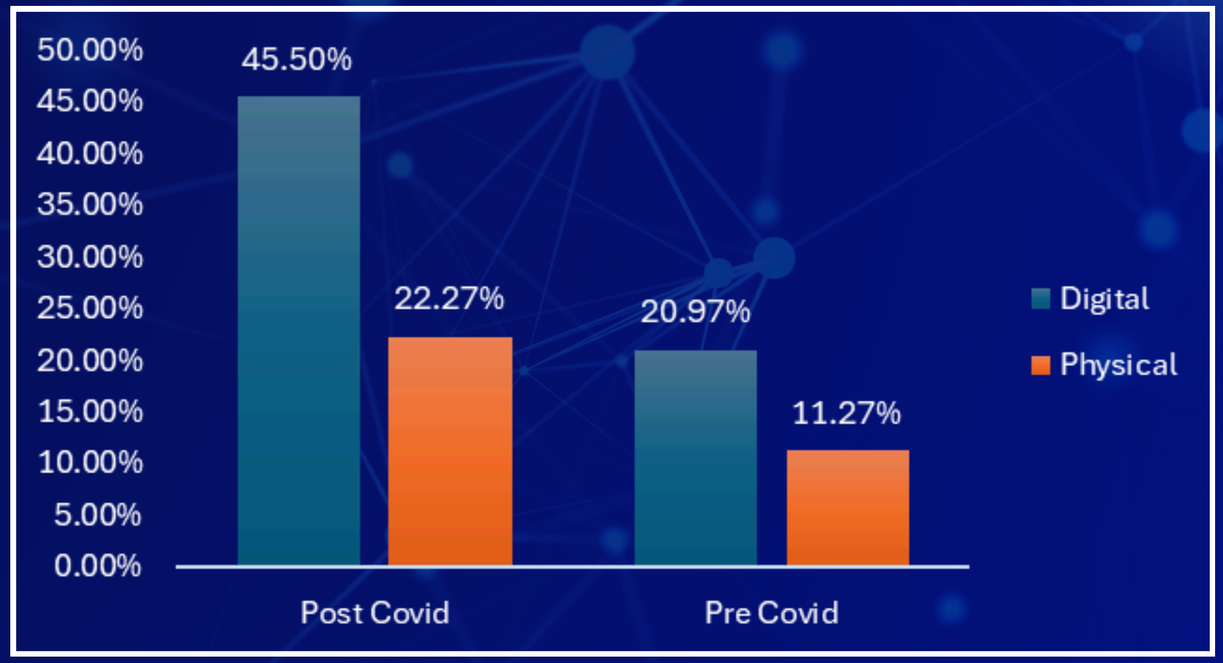
Share of Digital vs. Physical Transactions (Pre vs Post-COVID)

🗒️SQL Query :

```
sselect
 covid_period,
 channel_group,
count(transaction_id) as total_transaction,
cast(count(transaction_id) * 100.0 /
      (select count(transaction_id) from transactions)
 as decimal(13,2)) as percentage
from (
   select
     transaction_id,
     case
       when transaction_date < '2020-03-01' then 'pre_covid'
       else 'post_covid'
     end as covid_period,
     case
       when channel in ('mobile','web') then 'digital'
       else 'physical'
     end as channel_group
   from transactions
) as t
group by covid_period, channel_group
order by total_transaction desc;
```



💡 Insight:

- Digital transactions surged from 21% to 45.5% post-COVID — more than doubling in share, indicating a significant shift toward online banking.

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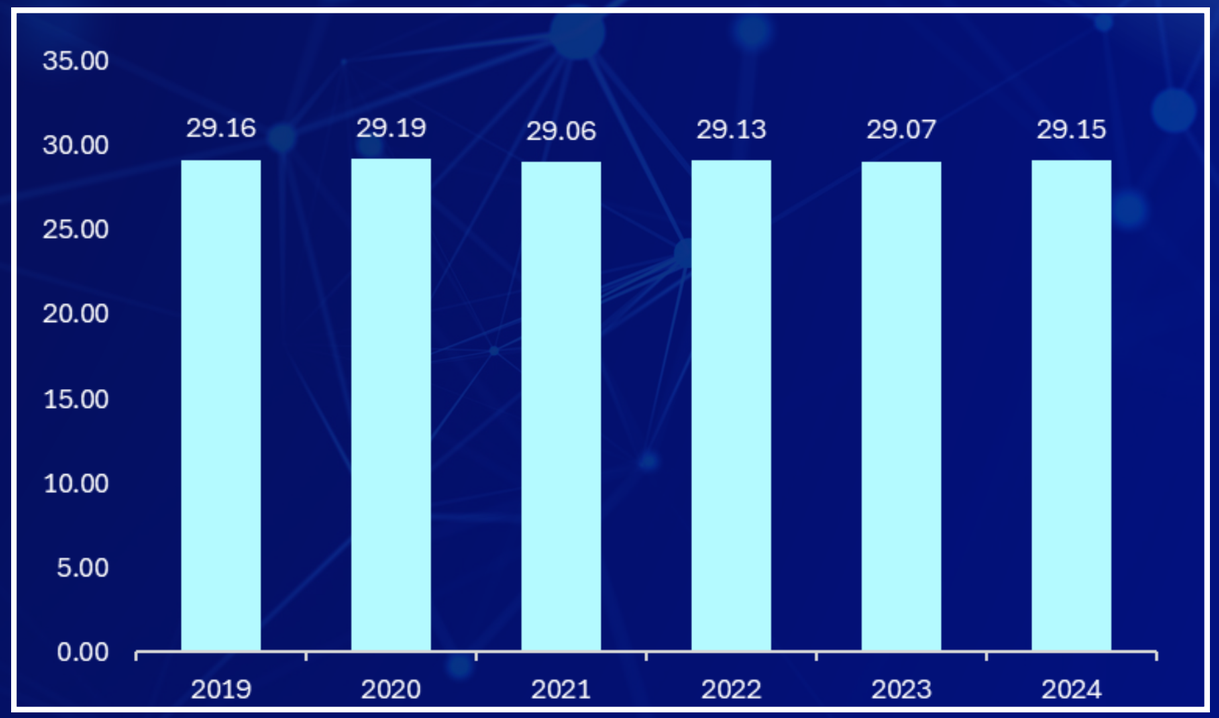
Avg. Logins per User per Month (Yearly Trend)

🧾SQL Query :

```
select
    year(login_date) as login_year,
    cast(count(login_id) * 1.0 / count(distinct user_id)
    / count(distinct month(login_date))
    as decimal(13,2)) as avg_logins_per_user_per_active_month
from logins
group by year(login_date)
order by login_year;
```



💡 Insight:

- User login behavior remained highly consistent — around 29 logins per user per month across all years.

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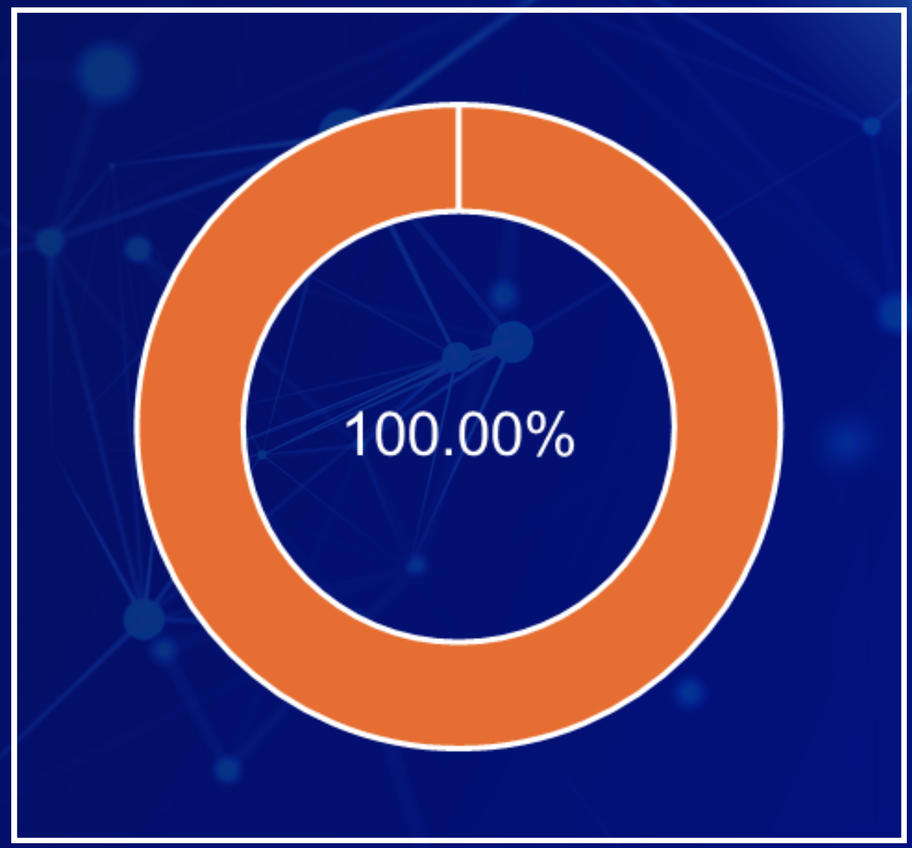
100% Users Returned Within 6 Months After 1st Month

🧾SQL Query :

```
with filter_login as (
    select *,
           dense_rank() over (
               partition by user_id
               order by year(login_date), month(login_date)
           ) as rank
    from logins
),
returned_user as (
    select
        user_id,
        min(case when rank = 1 then login_date end) as first_month_login,
        min(case when rank > 1 then login_date end) as second_month_login
    from filter_login
    group by user_id
)
select
    cast(count(distinct user_id) * 100.0 /
         (select count(distinct user_id) from logins)
         as decimal(13,2)) as retention_percentage_6_months
from returned_user
where second_month_login is not null
  and datediff(month, first_month_login, second_month_login) <= 6;
```



💡 Insight:

- All users logged in again within 6 months after their first login month. This indicates exceptional early user engagement and a highly effective digital onboarding process.

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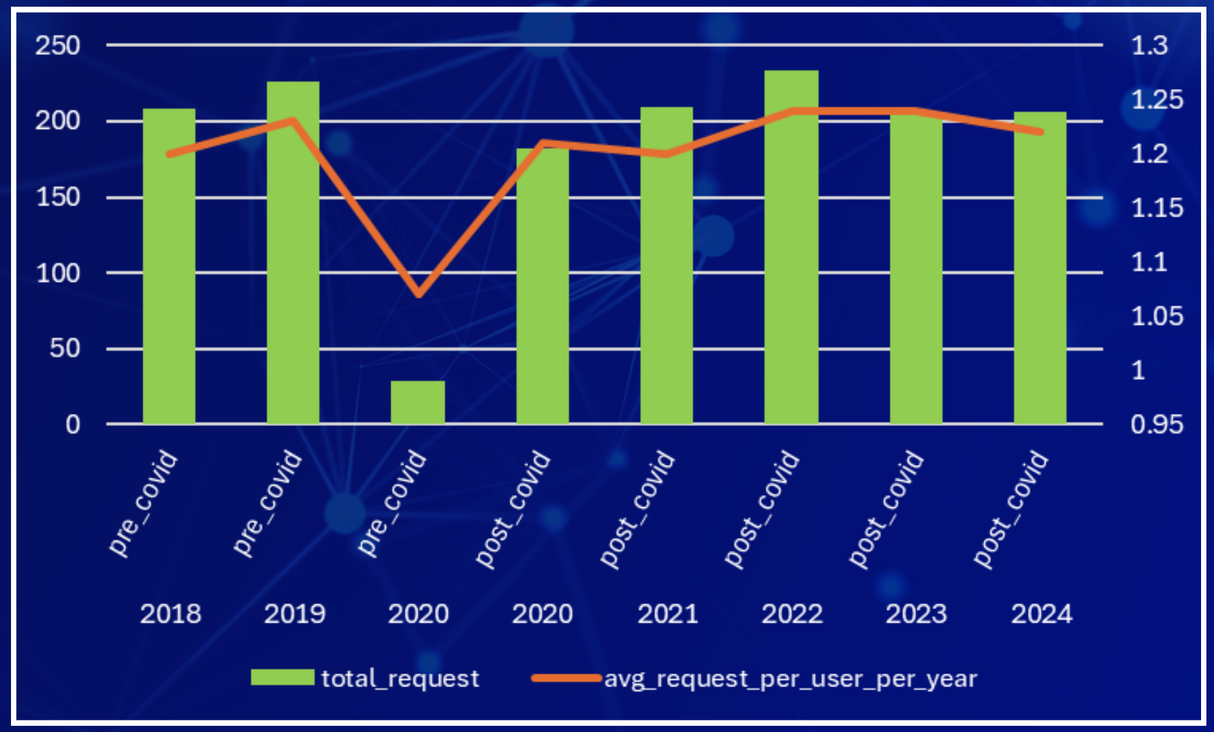
Support Requests: Pre vs Post-COVID Trends

📄SQL Query :

```
select
    year,
    covid_period,
    count(request_id) as total_request,
    cast(count(request_id) * 1.0 / count(distinct user_id) as decimal(13,2))
        as avg_request_per_user_per_year
from (
    select *,
           year(request_date) as year,
           (case
               when request_date < '2020-03-01' then 'pre_covid'
               else 'post_covid'
           end) as covid_period
    from support_requests
) as filtered
group by year, covid_period
order by year asc;
```



💡Insight:

- Support requests saw a sharp increase post-COVID, with both total requests and average requests per user rising noticeably — possibly due to increased digital banking adoption and related queries.

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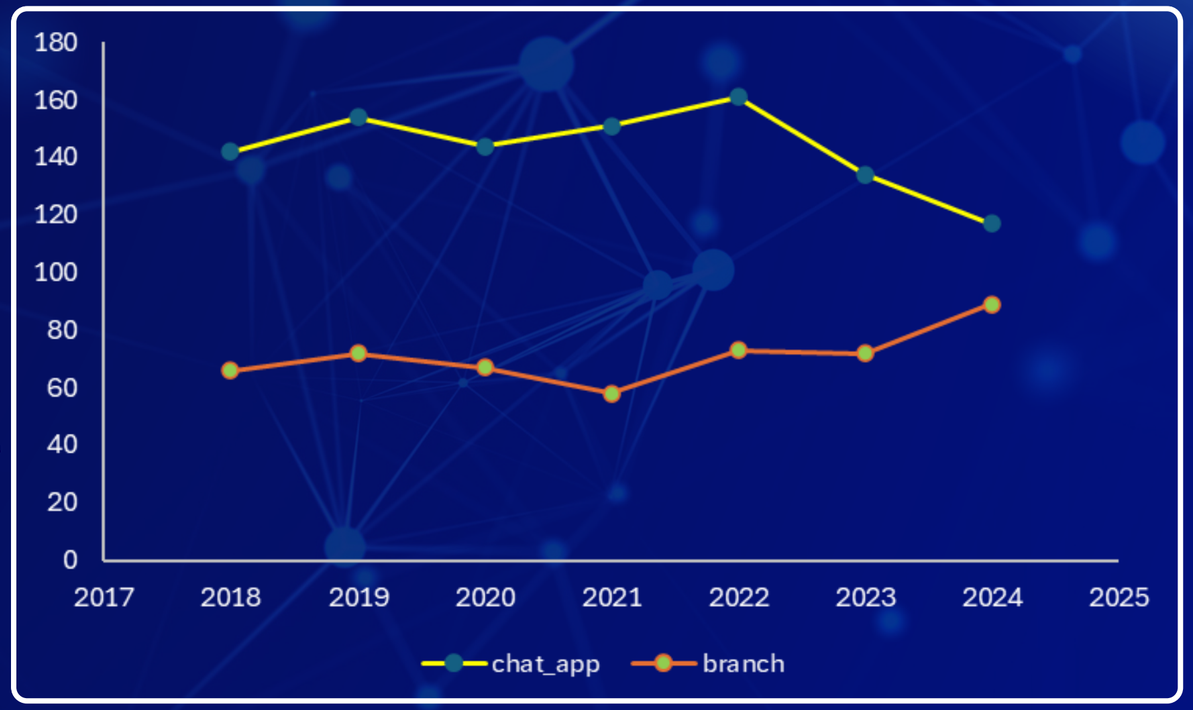
Support Preferences Evolving: Chat/App vs Branch Usage (2018–2024)

🧾SQL Query :

```
select
    year,
    sum(c_a) as chat_app,
    sum(b) as branch
from (
    select
        year(request_date) as year,
        case when channel in ('chatbot', 'app') then 1 else 0 end as c_a,
        case when channel = 'branch' then 1 else 0 end as b
    from support_requests
) as filtered
group by year
order by year asc;
```



💡 Insight:

- After years of digital growth, 2024 saw a rise in branch support — suggesting renewed customer demand for in-person assistance.

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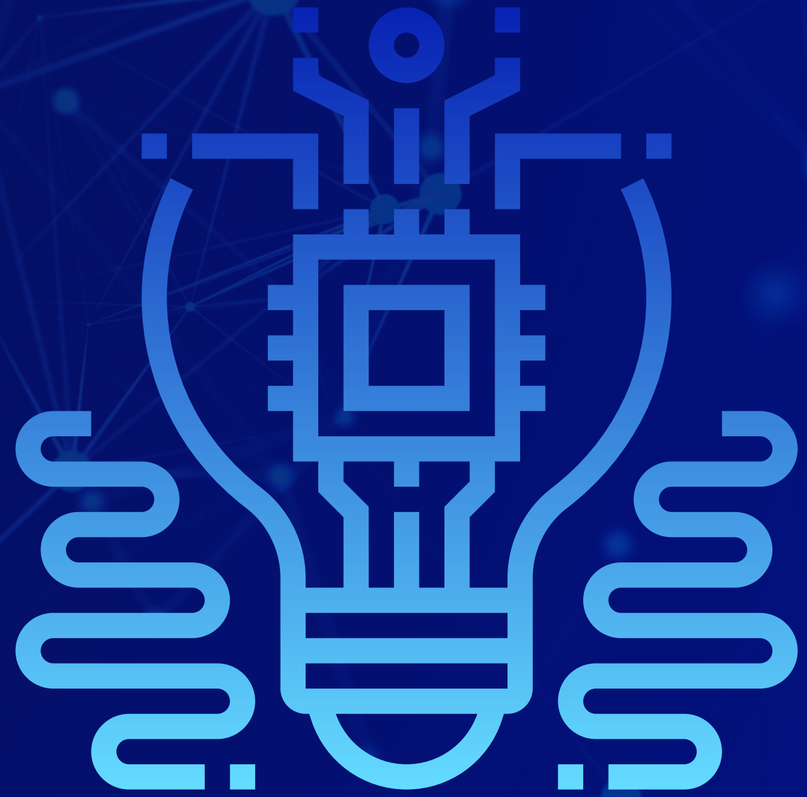
Tools & Technologies Used

SQL

- Data extraction
- cleaning
- and analysis

Advanced Excel

- Visual storytelling
- insight tabulation



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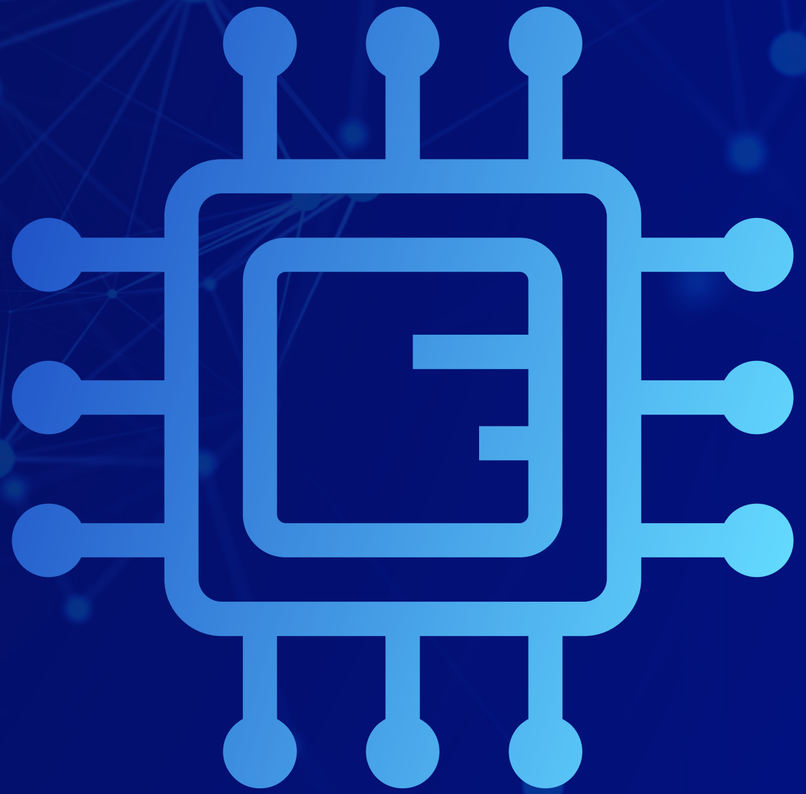
Thank You for Your Time

I hope this project gave you clear insights into how SQL can solve real business problems in the evolving world of digital banking.



If you'd like to discuss this further or explore collaboration opportunities, I'd love to connect.

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