—- **clarifying** —-

Sure! Before jumping into the investigation steps in my mind, I'd like to start with some clarifying questions.

First of all, the retail R sounds pretty high-level, so I'd want to break it down a bit. Could you explain more about this R, like what are the things that are driving the R?

(confirm - Got it. So, sounds like the R we are investigating, is mainly driven by the transaction volumes and the fee charged per trade. Is that correct way to decompose it?)

Ok, so If we decompose R into volume and fee charge, can we see if the drop is driven by one of them?

Got it, thanks. Besides, how exactly is the **20% drop** measured? Is that **week-over-week**, or compared to some longer baseline or same week last year?

———--- —--

Got it. On the high-level, I think there could be multiple reasons causing the drop in R. Before I jump into the details, could I have a moment to structure my thoughts?

(such as fewer active users trading, or changes in fee rates like promotions, or news or event driven changes. (e.g. to bitcoin))

—--- —---

I think I'll start from gathering a bit more context first. And for these questions, I'd like to approach it in several steps. First, I'd like to check the time series for the drop happens. Then, I'll go over some differents buckets of potential causes, such as internal, external, and market events. Lastly, I'd like to check the segmentation of the data to further pinpoint where the drop is happening.

—--**historical trend**—----

So First, for the time-series. I'd like to understand if this 20% drop is a sudden step change? or it happened progressively over the week?

I think If it's a sudden step change, it is suggesting a one-time issue, such as an internal or external event. For example, it could be a technical outage, or market news on crypto.

(if it is progressively dropping, it could be seasonality, or means the cause is still there, and we can dig deeper into data, which I will go through later.)

—--**internal**—----

So, let's first check on the internal cases. Did we see a known issue or bug with the data pipeline or data collection recently?

[if sudden drop] Are there technical problems that coincided with the timeline?

[if progressive drop] is there a new version released on any platform? Such as changes on the user flow to place the trading order?

Did we see an increase in bug reports or user complaints?

Ok, so it sounds like there's no obvious red flags on the internal operations.

—--**exeternal**—----

Next, I'd like to check if any major external events align with the timeline, such as competitors or the crypto market itself.

Did we see a competitor has any major updates, started new promotions, or if we noticed any large movement of users?

Do we have any signal that similar platforms like Binance experienced a similar drop?

(Do we know if there's any news on crypto, like regulations?)

Ok, so it sounds like the drop is (not) directly related to losing traffic to a competitor, or driven by industry trends?

—-- **segmentation**—----

Then, I'd try to break the problem down further by segmenting the data.

[product] I'd like to understand that, on the product side, does this drop happen on a particular asset, crypto, or specific types of trading?

- So all kinds of trading, or all types of crypto experienced the same volume drop?

[region] Is the decline happening in an isolated region?

If this is true, that could point toward **regional regulations**, **currency controls**, or possibly a **new competitor that fits the** special needs of traders in that region.

(I would do more research on that region to understand the changes there, thus understand their needs better, and think about strategies to recover)

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[platform] Is the decline happening on specific platforms, like mobile (iOS, Android) or desktop or others?

I would compare the drop of R (trading volume) across all platforms. For example, if **mobile has a sharpe drop, it could be an app issue**, like maybe a bad release that affected trading UX.

[user] Also, for trading, I'll probably also check the trading experience of users. Did we see the drop on a specific cohort of users? Like power users who trade a lot, or beginners?

—-------**Ending Summary (next steps)**—-------

So given this, I think we have a few hypotheses. (+ summary of the information get)

From here, we can do a deep analysis (by analyzing the user funnel and see if there's a certain step in the user flow that seems broken), or run experiments to confirm.

Once I've identified the root cause, then we can estimated the impact and communicate it to stakeholders

Lastly, we can work on a mitigation plan, such as bug fixes, or proposing some product strategies. And also think about how to improve the monitoring so we can catch this earlier next time

—----------Follow-up: given a data set —----------

Follow-up 1: What can you check if given a table of users' trades

1) find the **Top 1% users by volume**, to see if large accounts stopped trading.

2) check **New vs. returning users** – maybe acquisition is stable, but retention dropped.

–

Follow-up 2: What can you check if given a table of **user_id, coin, timestamp, platform, volume, price, and fee. What's your approach to investigating with it?**

I'd start with exploratory:

1. Group by key dimensions:
   coin → did BTC/ETH fall while altcoins held steady?
   platform → maybe web dropped, but mobile remained stable.
   region (if available via IP or user profile)

2. User-level aggregation:

    Identify users with ≥50% drop in trading volume
    See which cohorts (sign-up month, last active month) are overrepresented

I'd visualize them week-over-week and flag the steepest drop."

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Follow-up 3: Let's say you see the drop is mostly from U.S. iOS users trading ETH. What would you do next?

I'll first further analyze, for example

- Check ETH market conditions – like was there any change on the price volatility or negative news to reduce trading volume?
- Cross-check incident reports – any bugs on the iOS app?
- Compare competitors – did the competitor launch a promotion for ETH

Based on findings, I think we can recommend next steps, such as a bug fix, or product strategy targeting the competitor change (e.g., promotions)

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Follow-up 4: If it turns out to be caused by an iOS app bug, how would you **estimate the R impact and recovery potential**?

I'd identify affected users (e.g. iOS + ETH traders) and measure:

- Pre-bug R baseline (e.g. average daily ETH R from iOS)
- Actual R during bug window
- Drop = baseline - actual

For recovery estimation:

- Look at historical post-incident recovery curves.
- Measure how many of the affected users returned in 7/14 days post-fix.
- If needed, simulate impact of sending incentives to re-engage lost users."

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想问一下，drop之后diagonosis的一般套路是啥子呀？
1. historical trends to see if this is a sudden drop or part of a longer-term pattern.
2. segment the data to pinpoint where the drop is happening
3. external factors like market conditions, competitor activity, and economic trends.
4. internal operations to see if there are any obvious red flags

套路:
1. 讨论Sudden drop vs. static drop。Sudden drop可能有是由某些内部或外部因素引起。Static drop可能由市场，季节引起的。
2. 其他产品。用户的变化可能由内部类似的产品引起的，或者是别的公司的竞争产品引起的。
3. 细分产品。可以讨论哪些细分类别变化了，那些没变。
4. 细分用户。可以讨论哪些用户群体变化了，那些没变。例如地区，语言，平台。
5. 最后总结已经做一个推荐。

Analyze product metric decrease
* Clarify. Ask for clarification if you are unclear about what the interviewer is asking.
* List high-level reasons. Start by listing the high-level reasons, components, or user behaviors that are causing the problem
* Gather context information. Ask questions to understand the context of the problem. For example, is the problem regional? Is the problem a one-time event or progressive?
* TIME: Is the decline in engagement a one-time event or has it happened progressively? If it is a one-time thing, then it is possible a technology glitch caused the problem, such as a downtime in the services that support Facebook Groups. Therefore, I would ask if there were technical problems that coincided. If the decline in engagement is progressive, then the cause is still there, and we can dig deeper into data, which I will go through later.
* REGION: Is the decline happening in an isolated region? If this is true, the problem might be related to a country's regulations or a competitive product in that region. For example, if there is a new competitive social-group product that is more suited to the social mores of the region than Facebook, I would do some ethnographic studies on that population to understand their needs better; and I would consider developing features for those needs.. X
* PLATFORMS: Is the decline happening on specific platforms, like iOS, Android or others? If so, I would compare the drop of Facebook Groups engagement on each platform with engagement across all platforms. As long as the overall engagement metric is steady, I would not worry much about the decline of engagement on a particular platform. Users could be, for example, switching mobile platforms and still using Facebook Groups.
* OTHER FEATURES: Is the decline in engagement happening in other Facebook features besides Facebook Groups? If so, then there is a much bigger problem, and we would need to look at the overall engagement of the entire platform..
* COMPETITORS: Is the decline in engagement also happening in competitive products? This data is difficult to come by, but if this were true, then the cause is also affecting other companies. For example, the decline in engagement could be a PR problem with privacy perceptions about social networks. This kind of problem would be out of scope for a product team and best handled by a corporate management team.

* Discard issues outside of scope. If the answers to questions about context are outside the scope of Facebook Groups features, discard them.
* Establish a theory of probable cause. For each of the high-level reasons, components or behaviors you mentioned, recursively ask yourself why are these problems occurring, and list possible causes.
* Explain how to test your theory and fix the problem. Describe how you would test each probable cause. If possible, explain how you would resolve the problem.

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例子：假设daily active user上个月降低了10%，请你描述一下要怎么分析这个变化

1. Check whether this is a sudden change or gradual change
2. Is this a company issue or industry trend?
3. Is there any seasonal events or special event?
4. Check if the data is correct (data error, system issue, new feature release)
5. Breakdown the metric into sub metrics
6. Breakdown the metric by region, user segment, age, device, platform, browser
7. Funnel analysis

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DEC:

1. Define the metric change.
2. Explore possible root causes of the change.
3. Conclude.