

A Nuts and Bolts Handbook: Product Management Metrics in Interviews and Work

Metrics in Interviews and Work

“Metrics” interviews test a PM’s ability to leverage quantitative information to get product work done.

Metrics interviews have prompts such as the following.

1. “Define success metrics for product X.”
2. “Your team’s north star metric dropped by Y%. What do you do?”
3. “Your new feature has increased your team’s north star metric by Z%, but has decreased another team’s north star metric by W%. What do you do?”
4. “You are the PM for product X. A teammate suggests changing the sign up flow by altering Y. What would you do?”

These aren’t artificial questions manufactured for the purpose of interviewing. These are real questions that product managers must answer while completing real product work at companies that ask these interview questions. For these companies, interviews are miniature versions of real work.

If you would like to learn how to address the above questions in interview situations as well as in real work situations, please read on.

This Book's Target Audience

Some PMs find themselves in positions that do not give them an opportunity to learn and practice first-principle product management metrics concepts.

- Some PMs never had to worry about defining new metrics because they never had to build a new feature or product that warranted new metrics. These PMs always used metrics that had already been defined before they arrived.
- Some PMs had to launch a new product once and had weeks to define new metrics. You weren't sure if the metrics were appropriate and nobody gave you feedback.
- Some PMs in the enterprise space never had to worry about metrics other than sales dollars.
- Some PMs were busy completing projects that were deemed critical by management and never had to measure anything. Completion was enough to declare success.
- Some PMs only had to care about acquisition. The cost of acquisition and the lifetime value of users were the only metrics of concern.
- Some PMs never worked in an organization that structured their work with quarterly or semi-annual Objectives and Key Results (OKRs).
- Some PMs never worked in a large enough organization to have features that benefit one team but hurt others.

These PMs are at a disadvantage in getting offers from companies that test candidates on their product management metrics skills.

Good news! This book explains first-principle concepts that years of hands-on experience can teach you. This book highlights the key topics; no single book can cover all of product management metrics.

Some PMs get offers and join companies that tested their metrics skills. These PMs used frameworks that they found on the web or in online courses, and managed to "pass." Now, they are staffed on a team with a dozen engineers. It's roadmapping season and these PMs must define their team's success metrics for the half. Somehow, the frameworks that helped them interview don't help in this real situation. Some teammates are saying that "metric X, Y, Z" are the right ones, and others say "metric A, B, C" are the right ones.

These PMs need foundational metrics skills and not just interview frameworks to complete their work.

Good news again! This book explains first-principle concepts that help you construct your own perspective. You won't ever have to repeat a teammate's ideas or something you found on the web without true comprehension.

After reading this book, you'll actually understand what you're talking about. You won't have to act confident; you'll simply be confident because your metrics will be founded on first-principles.

This Book is Different from Other Resources

This book is different from websites that list “key metrics that great product managers use”. These websites list metrics without explanations of which metrics are used for what purpose. These websites don’t tell you what’s appropriate for your particular product.

This book is different from interview guide websites. These websites provide frameworks such as “Goals, Actions, Metrics.” But how do you identify which goals and user actions are important to discuss during a metrics interview? How do you define metrics?

This book is different from online interview courses that provide videos of “good” interviews. Some videos highlight what makes an interview great with explanations such as “The interviewee did a great job talking about the product mission.” But what was great about it? The fact that the product mission was mentioned? Or was the product mission expressed well? Why is it important to do this?

With only these materials, you end up imitating what you saw on the videos and repeating phrases that sound good in your interviews. You mention some key metrics that are listed in websites. You follow a framework that you thought made the most sense to you. You get lucky and get an offer.

This book helps you build up key skills to make you a more competent product manager who can breeze through metrics interviews. It teaches you first-principle knowledge, explains a variety of skills, and provides examples that apply the knowledge and skills. In explanations of first-principle concepts, it explains peripheral concepts so that you can contrast them with ones interviewers test frequently.

This book describes additional exercises that you can do outside of this book so that you can gain fluency. Fluency will give you the strength to apply these concepts in situations you have never encountered. You will ace interviews not just because you got the answers but because you applied the knowledge and the skills that led you to the answers.

This book gives you an efficient and focused way to get better at metrics. With this book, you don’t have to tease out insights from a mountain of material on websites or in online courses. This book gives you the nuts and bolts of metrics.

Doing product work is different from acing interviews because interviews are time constrained. This book also gives you methods of demonstrating your metrics skills in short time frames.

For interviews, this book gives you:

1. Knowledge and skills you need to demonstrate
2. Methods of demonstrating them in a short timeframe

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For work, this book gives you a reference that helps you get product work done once you get the job.

Reading this book once won't get you the offer. In the same way that you had to practice your reading and math skills to get better, you'll also have to practice these metrics concepts to get better. There's no getting better without practicing.

Please review the Table of Contents for this book before purchasing this book.

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For the second example, let's define maturity as the variety of content users have consumed or the variety of services users have used on an app. This meaning of maturity is useful when a user who uses a greater variety of offerings are less inclined to churn. Uber Eats can categorize its users who have only ordered restaurant delivery and those who have ordered restaurant and grocery delivery. Spotify can categorize its users who have only listened to music and those who have listened to music and podcasts.

The lowest maturity status is "used one type of content/service" and the highest maturity status is "used X types of content/service."

1. Used 1 content/service
2. Used 2 content/services
3. ...
4. User X content/services

Skill - Define Engagement Metrics

Understanding the foundational ingredients that make up metrics can help PMs design metrics that are suitable for what the PM needs to get done. PMs who don't have this foundation are trapped repeating metrics such as

1. DAU, MAU
2. Bounce Rate
3. Conversion Rate
4. Retention Rate
5. NPS

They say them without knowing that some aren't engagement metrics.

We'll focus on engagement metrics category because this category is the prime target for interviewers; all PMs must have mastery in measuring how users use their product.

Typical Formats - Headcount, Action, Duration Metrics

Engagement metrics count the following things in a timeslice:

1. Headcount - unique users
2. Actions with respect to objects - actions such as creating, reading, viewing, listening against objects such as for-sale listing, social media post, video, podcasts
3. Duration of time spent taking actions - duration of time spent viewing videos on Youtube, viewing/commenting/liking on Facebook, listening to music on Spotify

Headcount metrics follow the format:

<Count of unique users> + <criteria to isolate only the users I want to count> + <in a set timeslice.>

Often, the “criteria to isolate only the users I want to count,” is defined by some action that users have taken in a set timeslice.

That is:

<Count of unique users> + <who have taken action X at least/at most Y number of times> + <in a set timeslice.>

Note that with this template, we can define Daily and Monthly Active Users.

Daily Active Users or DAU for an app is equivalent to:

<Count of unique users> + <who have opened the app> + <in a time period of 1 day.>

Monthly Active Users or MAU for an app is equivalent to:

<Count of unique users> + <who have opened the app> + <in a time period of 30 days.>

Some people may define the “who have opened the app” criteria differently for their DAU and MAU, but the general idea is the same.

Leveraging the above format, you can define a variety of other metrics by changing the criteria that isolates the users that you want to count:

<Count of unique users> + <who published at least 1 post> + <in a time period of 7 days.>

<Count of unique users> + <who published at least 1 post with at least 1 photo> + <in a time period of 7 days.>

<Count of unique users> + <who published at least 1 post that received at least 1 comment> + <in a time period of 7 days.>

Action metrics follow the format:

<Count of actions between user and object> + <criteria to isolate only the users I want to count actions for> + <in a set timeslice.>

“Actions between user and object” can be unique or non-unique actions. “Unique” means that you are not repeatedly counting a particular user’s repeated action against a particular object. For example, if John Smith views a detailed apartment listing for 100 Main Street three times, it still counts as one time because we are counting the unique action between John Smith and the listing for 100 Main Street. “Non-unique” means that you are counting repetitions.

The action can be a “create” action where a new object is created. That is, actions are not only for existing objects.

The “criteria to isolate only the users I want to count actions for,” can be a user maturity lifecycle stage. There doesn’t have to be a criteria; you can open the count to “all users.”

Duration metrics follow the format:

<Total amount of time spent taking action> + <criteria to isolate only the users I want to count actions for> + <in a set timeslice.>

Duration metrics are applicable for consumption of content because sometimes, it doesn’t make sense to count the number of articles read in Google News or the number of videos watched on Youtube because articles and videos vary widely in length. Duration metrics represent how much value the user is getting out of the product under the assumption that if users are spending a longer amount of time consuming content, then they are getting more value.

Picking Timeslices

Metrics require timeslice boundaries. Without time slices, metric values are meaningless. What would \$ revenue for a company mean without the time slice? Is the company’s revenue of \$1M for 1 day, 1 month, or 1 year? Time slices are critical in defining metrics.

Picking time slices for your metric requires careful thought; don’t just decide on Daily or Monthly because they feel common. You want to select the time slice that is the most appropriate for what you want to know under the circumstances. Do users typically take an action once in a quarter? Or is it something that users do regularly in a course of a week? Or is it something that users do daily no matter whether it’s a weekday or weekend day?

What’s worth noting is that if you want to compare one time period to another equivalent time period, then it’s important that the time periods are comparable. For example, the month of January is NOT comparable to the month of February. The reason is that the total number of days in each month is different. Also, the count of Saturdays and Sundays in each month may differ and people in general behave differently on the weekend than they do on weekdays.

This is why measuring the lagging 7 days or lagging 28 days are good ways to measure comparable periods of time. Multiples of 7 keep the number of each day of the week constant.

Counting Headcount vs. Counting Actions

You may be asking, when do I use headcounts rather than count of actions?

Headcounts are good for counting the number of participants. For example, the count of organizers creating at least 1 event in the lagging 7 days, is good for counting how many engaged organizers there are on Facebook Events.

Action counts are good for situations where the action generates an object and the object is of great interest. For example, for Facebook Events, the total number of objects created in a time period is a good measure of the rate of events-inventory creation. If you want to measure the count of “attractive events” then you can count the total number of events that went live with at least 2 RSVPs of “Yes’s” in the lagging 7 days.

Counts vs. Ratios

Product managers care for metrics that are both counts and ratios. Examples of counts include total counts of users who create a free account and are the total count of users who buy a premium subscription in the last 28 days. Examples of ratios can be percentages such as click through rates or conversion rates for the last 28 days. Ratios are calculated from counts.

In real work, the metrics that a PM needs to see changes depending on what he/she is trying to accomplish. Is the PM focusing on optimizing a drop off point in an acquisition funnel with a feature? Is the PM reporting the incremental number of users who are flowing into the product to management?

In most success metrics interviews, the totality of the impact the product is having is of greater interest than conversion rates. Total counts represent how many users are benefiting and how deeply they are benefiting from the product. Ratios such as conversion rates hide the totality of the impact that your product is having. For example, for YouTube, does the total number of minutes watched in a week represent the benefit users are getting? Or does the conversion rate from free account holder to premium subscription subscriber over a week better represent the benefit? The total number of minutes is the better representation.

Skill - Define Engagement Metrics for Each Step of User Journeys

Now that we know how to define the user journeys and metrics, let’s combine the two skills to list engagement metrics that map to each step of the user journey.

Let’s define the user journey that is the path that all stakeholders in an ecosystem take to achieve their user goals. In an interview situation, you will be pressed for time, so you want to limit the number of steps in the user journey to 3 or 4 steps.

Let’s walk through an example for eBay starting with “the look of success.” Remember, without understanding “the look of success,” there is no way to measure success.

eBay is a mature product that is at the “Improve UX” stage. Therefore, we will focus on engagement metrics.

eBay’s company and product mission is “We connect people and build communities to create economic opportunity for all.”