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Your Data Won't Speak Unless You Ask It The Right Data Analysis Questions

By Sandra Durcevic in Data Analysis, Jan 25th 2021



In our cutthroat digital age, the importance of setting the right data analysis questions can define the overall success of a business. It is not just important to gather all the existing information, but to consider the preparation of data and utilize it in the proper way, has become an indispensable value in developing a successful business strategy.

That being said, it seems like we're in the midst of a data analysis crisis. Although organizations spend millions of dollars on collecting and analyzing data with various [data analysis tools](#), it seems like most people have trouble actually *using* that data in actionable, profitable ways.

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Data Is Only As Good As The Questions You Ask

However, the truth is that no matter how advanced your IT infrastructure is, your data will not provide you with a ready-made solution unless you ask it specific questions regarding data analysis.

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you should prepare a set of questions that will smoothly walk you through the [online data analysis](#) and help you arrive at relevant insights.

For example, you need to develop a sales strategy and increase revenue. By asking the right questions, utilizing [sales analytics software](#) that will enable you to mine, manipulate and manage voluminous sets of data, generating insights will become much easier. An average business user and cross-departmental communication will increase its effectiveness, decreasing time to make actionable decisions and, consequently, provide a cost-effective solution.

Before starting any business venture, you need to make the most crucial step: prepare your data for any type of serious analysis. By doing so, people in your company will become empowered with clear systems that can ultimately be converted into actionable insights. This can include a multitude of processes, like data profiling, data quality management, or data cleaning, but we will focus on tips and questions to ask when analyzing data to gain the most cost-effective solution for an effective business strategy.

“Today, big data is about business disruption. Organizations are embarking on a battle not just for success but for survival. If you want to survive, it’s time to act.” – Capgemini and EMC² in their study [Big & Fast Data: The Rise of Insight-Driven Business](#).

This quote might sound a little dramatic. However, consider the following statistics pulled from [recent research](#) developed by Forrester Consulting and Collibra:

- 84% of correspondents report that data at the center stage of developing business strategies is critical
- 81% of correspondents realized an advantage in growing revenue
- 8% admit advantage in improving customers' trust
- 58% of "data intelligent" organizations are more likely to exceed revenue goals

Based on this survey, it seems that business professionals believe that data is the ultimate cure for all their business ills. And that's not a surprise considering the results of the survey and the potential that data itself brings into companies that decide to utilize it properly. Here we will take a look at data analysis questions examples and explain each in detail.

11 Data Analysis Questions To Improve Your Business Performance In The Long Run

While considering the industry you’re in, and competitors your business is trying to outperform, data questions should be clearly defined. Poor identification can result in faulty interpretation, which can directly affect business efficiency, general results, and cause problems.

Here at datapine we have helped solve hundreds of data analysis problems for our clients. All of our experience has taught us that data analysis is only as good as the questions you ask. Additionally, you want to clarify these questions regarding data analysis now or as soon as possible – which will make your future business

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foundation for solving business problems.

That's why we've prepared this list of data analysis questions – to make sure you won't fall into the trap of futile, “after the fact” data processing, and to help you start with the right mindset for a proper [data-driven decision-making](#) process while gaining actionable business insights.

1) What exactly do you want to find out?

It's good to evaluate the well-being of your business first. Agree companywide what KPIs are most relevant for your business and how do they already develop. Research different KPI examples and compare to your own. Think in what way you want them to develop further. Can you influence this development? Identify where changes can be made. If nothing can be changed, there is no point of analyzing data. But if you find a development opportunity, and see that your business performance can be significantly improved, then a [KPI dashboard software](#) could be a smart investment to monitor your key performance indicators and provide a transparent overview of your company's data.

Next step is to consider what your goal is and what decision-making it will facilitate. What outcome from the analysis you would deem a success? These introductory data analysis questions are necessary to guide you through the process and help focus on key insights. You can start broad, by brainstorming and drafting a guideline for specific questions about data you want to uncover. This framework can help you to delve deeper into the more specific insights you want to achieve.

Let's see this through an example and have fun with a little imaginative exercise.

Let's say that you have access to an all-knowing business genie who can see into the future. This genie (who we'll call Data Dan) embodies the idea of a perfect data analytics platform through his magic powers.

Now, with Data Dan, you only get to ask him three questions. Don't ask us why – we didn't make the rules! Given that you'll get exactly the right answer to each of them, what are you going to ask it? Let's see....

Talking With A Data Genie



You: Data Dan! Nice to meet you, my friend. Didn't know you were real.

Data Dan: Well, I'm not actually. Anyways – what's your first data analysis question?

You: Well, I was hoping you could tell me how we can raise more revenue in our business.

Data Dan: (Rolls eyes). That's a pretty lame question, but I guess I'll answer it. How *can* you raise revenue? You can do partnerships with some key influencers, you can create some sales incentives, you can try to do add-on services to your most existing clients. You can do a lot of things. Ok, that's it. You have two questions left.

You: (Panicking) Uhhh, I mean – you didn't answer well! You just gave me a bunch of hypotheticals!

Data Dan: I exactly answered your question. Maybe you should ask better ones.

You: (Sweating) My boss is going to be so mad at me if I waste my questions with a magic business genie. Only two left, only two left... OK, I know! Genie – what *should* I ask you in order to make my business the most successful?

Data Dan: OK, you're still not good at this, but I'll be nice since you only have one data analysis question left. Listen up buddy – I'm only going to say this once.

The Key To Asking Good Data Analysis Questions

Data Dan: First of all, you want your questions to be extremely specific. The more specific it is, the more valuable (and actionable) the answer is going to be. So, instead of asking, “*How can I raise revenue?*”, you should ask: “*What are the channels we should focus more on in order to raise revenue while not raising costs very much, leading to bigger profit margins?*”. Or even better: “*Which marketing campaign that I did this quarter got the best ROI, and how can I replicate its success?*”

These key questions to ask when analyzing data can define your next strategy in developing your company. We have used a marketing example, but every department and industry can benefit from a proper data preparation process. By using a multivariate analysis, different aspects can be covered and specific inquiries defined.

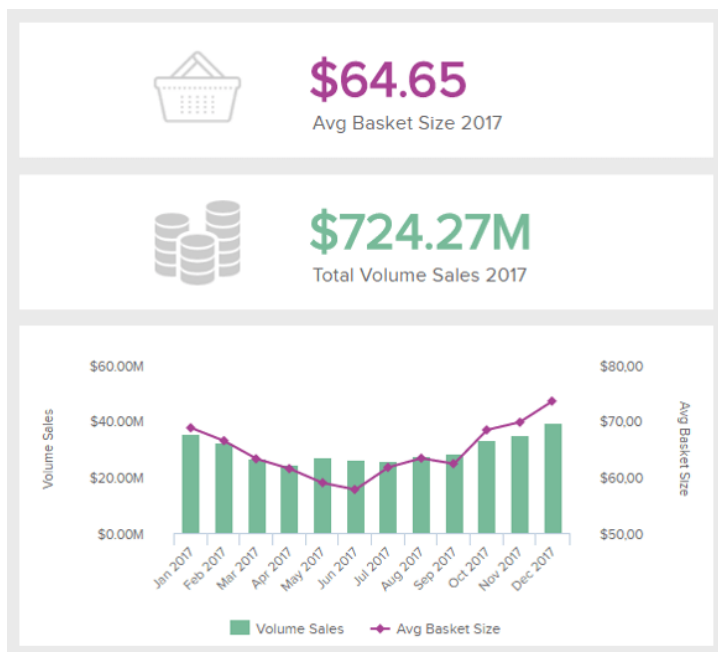
2) What standard KPIs will you use that can help?

Think about it like this: your goal with business intelligence is to see reality clearly so that you can make profitable decisions to help your company thrive. The questions to ask when analyzing data will be the framework, the lens, that allows you to focus on specific aspects of your business reality.

Once you have your data analytics questions, you need to have some standard KPIs that you can use to measure them. For example, let's say you want to see which of your PPC campaigns last quarter did the best. As Data Dan reminded us, "did the best" is too vague to be useful. Did the best according to what? Driving revenue? Driving profit? Giving the most ROI? Giving the cheapest email subscribers?

All of these [KPI examples](#) can be valid choices. You just need to pick the right ones first and have them in agreement company-wide (or at least within your department).

Let's see this through a straightforward example.



You are a retail company and want to know what you sell, where, and when – remember the specific questions for analyzing data? On the example above, it is clear that the amount of sales performed over a set period of time tells you when the demand is higher or lower – you got your specific KPI answer. Then you can dig deeper into the insights and establish additional sales opportunities, and identify underperforming areas that affect the overall sales of products.

Now let's proceed to one of the most important data questions to ask – the data source.

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3) Where will your data come from?

OK – so far, you’ve picked out some data analysis questions, and you’ve found KPIs to measure them. Our next step is to identify data sources you need to dig into all your data, pick the fields that you’ll need, leaving some space for data you might potentially need in the future, and gather all the information into one place. Be open-minded about your data sources in this step – all departments in your company, sales, finance, IT, etc., have the potential to provide insights.

Don’t worry if you feel like the abundance of data sources makes things seem complicated. Our next step is to “edit” these sources and make sure their data quality is up to par, which will get rid of some of them as useful choices.

Right now, though, we’re just creating the rough draft. You can use CRM data, data from things like Facebook and Google Analytics, financial data from your company – let your imagination go wild (as long as the data source is relevant to the questions you’ve identified in step 1 and 2). It could also make sense to utilize [business intelligence software](#), especially since datasets in recent years have expanded in so much volume that spreadsheets can no longer provide quick and intelligent solutions needed to acquire a higher quality of data.

3.5) Which scales apply to your different datasets?

WARNING: This is a bit of a “data nerd out” section. You can skip this part if you like or if it doesn’t make much sense to you.

You’ll want to be mindful of the level of measurement for your different variables, as this will affect the statistical techniques you will be able to apply in your analysis.

There are basically 4 types of scales:

Type of descriptive statistic	Level of measurement			
	Nominal	Ordinal	Interval	Ratio
Mode, counts, frequency	Yes	Yes	Yes	Yes
Median, minimum, maximum, range.	No	Yes	Yes	Yes
Mean, variance, standard deviation.	No	No	Yes	Yes

Statistics Level Measurement Table

- **Nominal** – you organize your data in non-numeric categories that cannot be ranked or compared quantitatively.

Examples:

– Different colors of shirts

- **Ordinal** – [GraphPad](#) gives this useful explanation of ordinal data:

“You might ask patients to express the amount of pain they are feeling on a scale of 1 to 10. A score of 7 means more pain than a score of 5, and that is more than a score of 3. But the difference between the 7 and the 5 may not be the same as that between 5 and 3. The values simply express an order. Another example would be movie ratings, from 0 to 5 stars.”

- **Interval** – in this type of scale, data is grouped into categories with order and equal distance between these categories.

Direct comparison is possible. Adding and subtracting is possible, but you cannot multiply or divide the variables. Example: Temperature ratings. An interval scale is used for both Fahrenheit and Celsius.

Again, GraphPad has a ready explanation: “The difference between a temperature of 100 degrees and 90 degrees is the same difference as between 90 degrees and 80 degrees.”

- **Ratio** – has the features of all three earlier scales.

Like a nominal scale, it provides a category for each item, items are ordered like on an ordinal scale and the distances between items (intervals) are equal and carry the same meaning.

With ratio scales, you can add, subtract, divide, multiply... all the fun stuff you need to create averages and get some cool, useful data. Examples: height, weight, revenue numbers, leads, client meetings.

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4) How can you ensure data quality?

Insights and analytics based on a shaky “data foundation” will give you... well, poor insights and analytics. As mentioned earlier, information comes from various sources, and they can be good and bad. All sources within a business have a motivation for providing data, so the identification of which information to use and from which source it is coming from should be one of the top questions to ask about data analytics.

Remember – your data analysis questions are designed to get a clear view of reality as it relates to your business being more profitable. If your data is incorrect, you’re going to be seeing a distorted view of reality.

That’s why your next step is to “clean” your data sets in order to discard wrong or outdated information. This is also an appropriate time to add more fields to your data to make it more complete and useful. That can be done by a data scientist or individually, depends on the size of the company.

- 60% of the time in organizing and cleaning data (!).
- 19% of the time is spent on collecting datasets.
- 9% of the time is spent in mining the data to draw patterns.
- 3% of the time is spent on training the datasets.
- 4% of the time is spent on refining the algorithms.
- 5% of the time is spent on other tasks.

57% of them consider the data cleaning process the most boring and least enjoyable task. If you are a small business owner, you probably don't need a data scientist, but you will need to clean your data and ensure a proper standard of information.

Yes, this is annoying, but so are many things in life that are very important.

When you've done the legwork to ensure your [data quality](#), you'll have built yourself the useful asset of accurate data sets that can be transformed, joined, and measured with statistical methods.

5) Which statistical analysis techniques do you want to apply?

There are dozens of statistical analysis techniques that you can use. However, in our experience these 3 statistical techniques are most widely used for business analysis:

- **Regression Analysis** – a statistical process for estimating the relationships and correlations among variables.

More specifically, regression analysis helps one understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed.

In this way regression analysis shows which among the independent variables are related to the dependent variable, and to explore the forms of these relationships. Usually, [regression analysis](#) is based on past data, allowing you to learn from the past for better decisions about the future.

- **Cohort Analysis** – it enables you to easily compare how different groups, or cohorts, of customers, behave over time.

For example, you can create a cohort of customers based on the date when they made their first purchase. Subsequently, you can study the spending trends of cohorts from different periods in time to determine whether the quality of the average acquired customer is increasing or decreasing over time.

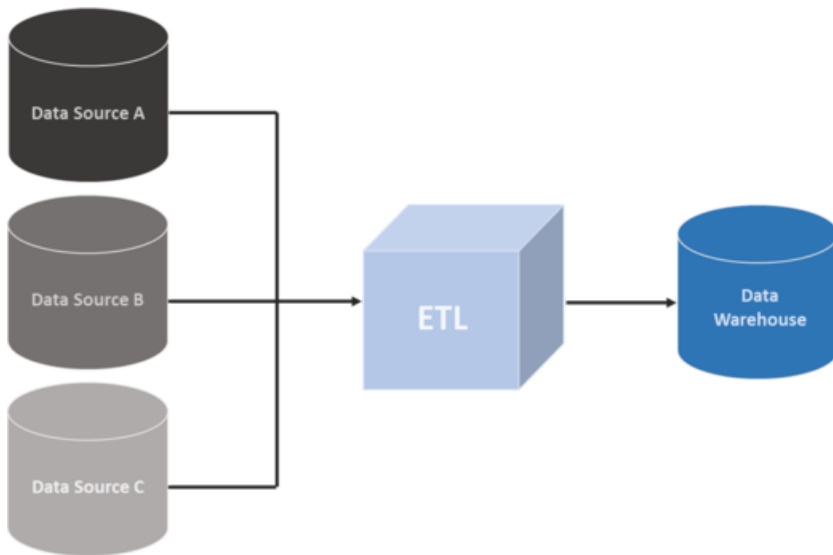
[Cohort analysis tools](#) give you quick and clear insight into customer retention trends and the perspectives of your business.

- **Predictive & Prescriptive Analysis** – in short, it is based on analyzing current and historical datasets to predict future possibilities, including alternative scenarios and risk assessment.

We've already explained them and recognized them as one of the biggest [business intelligence trends](#) for 2021. Your choice of method should depend on the type of data you've collected, your team's skills, and your resources.

6) What ETL procedures need to be developed, if any?

One of the crucial questions to ask when analyzing data is if and how to set up the ETL process. ETL stands for Extract-Transform-Load, a technology used to read data from a database, transform it into another form and load it into another database. Although it sounds complicated for an average business user, it is quite simple for a data scientist. You don't have to do all the database work, but an [ETL service](#) does it for you; it provides a useful tool to pull your data from external sources, conform it to demanded standard and convert it into a destination data warehouse. These tools provide an effective solution since IT departments or data scientists don't have to manually extract information from various sources, or you don't have to become an IT specialist to perform complex tasks.



****ETL data warehouse****

If you have large data sets, and today most businesses do, it would be wise to set up an ETL service which brings all the information your organization is using and can optimize the handling of data.

7) Who are the final users of your analysis results?

Another significant of your data analytics questions refers to the end users of our analysis. Who are they? How will they apply your reports? You must get to know your final users, including:

- What they expect to learn from the data
- What their needs are
- Their technical skills
- How much time they can spend analyzing data?

Remember that internal and external users have diverse needs. If the reports are designed for your own company, you more or less know what insights will be useful for your staff and what level of data complexity they can struggle through.

However, if your reports will also be used by external parties, remember to stick to your corporate identity. The visual reports you provide them with should be easy-to-use and actionable. Your final users should be able to read and understand them independently, with no IT support needed.

Also: think about the status of the final users. Are they junior members of the staff or part of the governing body? Every type of user has diverse needs and expectations.

8) What data visualizations should you choose?

Your data is clean and your calculations are done, but you are not finished yet. You can have the most valuable insights in the world, but if they're presented poorly, your target audience won't receive the impact from them that you're hoping for.

And we don't live in a world where simply having the right data is the end all, be all. You have to convince other decision makers within your company that this data is:

1. Correct
2. Important
3. Urgent to act upon

Effective presentation aids in all of these areas. There are dozens of data charts to choose from and you can either thwart all your data-crunching efforts by picking the wrong data visualization (like displaying a time evolution on a pie chart) or give it an additional boost by choosing the right [data visualization type](#).

There are a number of [online data visualization tools](#) that can get the hard work done for you. These tools can effectively prepare the data and interpret the outcome. Their ease of use and self-service application in testing theories, analyzing changes in consumer buying behavior, leverage data for analytical purpose without the assistance of analysts or IT professionals has become an invaluable resource in today's data management practice.

By being flexible enough to personalize its features to the end user and adjust to your prepared questions for analyzing data, the tools enable a voluminous analysis that can help you not to overlook any significant issue of the day or the overall business strategy.

Artificial intelligence implemented in these tools react to any anomaly that happened and instantly send a [data alert](#). Getting these alerts can also inspire you to ask additional questions about data.

9) What kind of software will help?

Continuing on our previous point, there are some basic and advanced tools that you can utilize. Spreadsheets can help you if you prefer a more traditional, static approach, but if you need to tinker with the data on your own, perform basic and

With the expansion of [business intelligence solutions](#), data analytics questions to ask have never been easier. Powerful features such as basic and advanced analysis, countless chart types, quick and easy data source connection, and endless possibilities to interact with the data as questions arise, enable users to simplify oftentimes complex processes. No matter the analysis type you need to perform, the designated software will play an essential part to make your data alive and "able to speak."

Moreover, modern software will not require continuous manual updates of the data but it will automatically provide real-time insights that will help you answer critical questions and provide a stable foundation and prerequisites for good analysis.

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10) What else do I need to know?

Before finishing up, one of the crucial questions to ask about data analytics is how to verify the results. Remember that [statistical information is always uncertain](#) even if it is not reported in that way. Thinking about which information is missing and how would you use more information if you had it could be one point to consider. That way you can identify potential information that could help you make better decisions. Keep also in mind that by using simple bullet points or spreadsheets, you can overlook valuable information that is already established into your business strategy.

Always go back to the original objectives and make sure you look at your results in a holistic way. You will want to make sure your end result is accurate and that you haven't made any mistakes along the way. In this step, important questions for analyzing data [should be focused on](#):

- Does it make sense on a general level?
- Are the measures I'm seeing in line with what I already know about the business?

Your end result is equally important as your process beforehand. You need to be certain that the results are accurate, verify the data, and ensure that there is no space for big mistakes. In this case, there are some data analysis types of questions to ask such as the ones we mentioned above. These types of questions will enable you to look at the bigger picture of your analytical efforts, and identify any points that need more adjustments or additional details to work on.

You can also test your analytical environment against manual calculations and compare the results. If there are extreme discrepancies, there is something clearly wrong, but if the results turn accurate, then you have established a healthy data-environment. Doing such a full-sweep check is definitely not easy, but in the long term, it will bring only positive results. Additionally, if you never stop questioning

11) How can you create a data-driven culture?

Dirty data is costing you.

Whether you are a small business or large enterprise, the data tell its story, and you should be able to listen. Preparing questions to ask about data analytics will provide a valuable resource and a roadmap to improved business strategies. It will also enable employees to make better departmental decisions, and, consequently, create a cost-effective business environment that can help your company grow. Dashboards are a great way to establish such a culture, like in our example below:

Financial KPI Dashboard

Current Working Capital

Current Assets	\$129,000
Cash	\$34,000
Accounts Receivable	\$59,000
Inventory	\$31,000
Pre-Paid Expenses	\$5,000

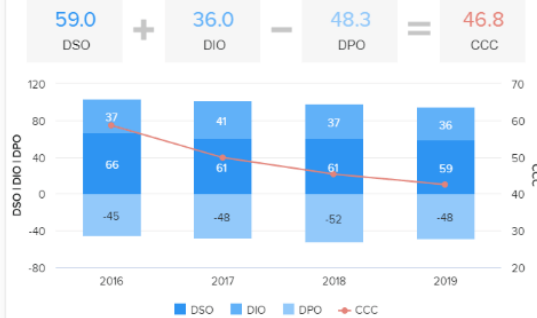
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Current Liabilities	\$68,000
Accounts Payable	\$25,000
Credit Card Debt	\$2,000
Bank Operating Credit	\$27,000
Accrued Expenses	\$9,000
Taxes Payable	\$5,000

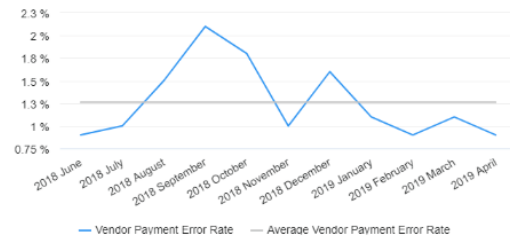
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Working Capital	\$61,000
Current Ratio	1.90

Cash Conversion Cycle in Days - Last 3 Years



Vendor Payment Error Rate - Last 12 Months



click to enlarge

In order to truly incorporate this data-driven approach to running the business, all individuals in the organization, regardless of the department they work in, need to know how to start asking the right data analytics questions.

They need to understand why it is important to conduct data analysis in the first place.

However, simply wishing and hoping that others will conduct data analysis is a strategy doomed to fail. Frankly, asking them to use data analysis (without showing them the benefits first) is also unlikely to succeed.

Instead, lead by example. Show your internal users that the habit of regular data analysis is a priceless aid for optimizing your business performance. Try to create a [beneficial dashboard culture](#) in your company.

Data analysis isn't a means to discipline your employees and find who is responsible for failures, but to empower them to improve their performance and self-improve.

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Start Your Analysis Today!

We just outlined an 11-step process you can use to set up your company for success through the use of the right data analysis questions.

With this information, you can outline questions that will help you to make important business decisions and then set up your infrastructure (and culture) to address them on a consistent basis through accurate data insights. These are good questions to ask when looking at a data set but not only, as you can develop a good and complete data-strategy if you utilize them as a whole. Moreover, if you rely on your data, you can only reap benefits in the long run and become a data-driven individual, and company.

To sum it up, here are the most important data questions to ask:

1. **What exactly do you want to find out?**
2. **What standard KPIs will you use that can help?**
3. **Where will your data come from?**
4. **How can you ensure data quality?**
5. **Which statistical analysis techniques do you want to apply?**
6. **What ETL procedures need to be developed, if any?**
7. **Who are the final users of your analysis results?**
8. **What data visualizations should you choose?**
9. **What kind of software will help?**
10. **What else do I need to know?**
11. **How can you create a data-driven culture?**

To start your own analysis, you can try our software for a [14-day trial](#) - completely free!

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