ESSAY*

Decision Making in the Innovation Process: Data-Driven vs. Data-Informed

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***Essays** advance a new idea, summarize a development, or initiate or engage in discussion. They may be narrower in scope than the above categories, but the subject matter should be of general scholarly interest.

Abstract
There has been a growing trend in the use of data-related buzzwords, and "data-driven decision-making" is one of them. This buzzword is often confused with "data-informed decision-making," emphasizing the need to understand the role of data for effective decision-making. The article explains this misconception through tables and insights from experts like Geoffrey Moore, Tendayi Viki and Alexander Osterwalder. It emphasizes the need for a balanced approach, using both qualitative and quantitative data, and suggests starting with qualitative insights before moving to quantitative analysis. Ultimately, it stresses the importance of aligning organizational structures to leverage data effectively for innovation.

Introduction

There has been a growing trend in the use of data-related buzzwords, and "data-driven decision-making" is one of them. This buzzword is often confused with "data-informed decision-making," emphasizing the need to understand the role of data for effective decision-making.

This article aims to clarify the difference between data-driven and data-informed decision-making approaches and the role of data in the innovation process.

Data-Driven Decision-Making Approach

Data-driven decision-making involves utilizing facts, metrics, and data to reach a confident decision (Nelson, 2022).

Even though quantitative data is essential in the decision-making process, a drawback of the data-driven approach is its tendency to ignore the bigger picture. Some organizations over-emphasize data-driven decisions, which are heavily influenced by statistical analysis and empirical evidence, minimizing the role of intuition, creativity, experience, and personal insights, which are still qualitative data.

Data-Informed Decision-Making Approach

Instead of solely focusing on quantitative data to make decisions, data-informed decision-making involves research, creativity, experience, and personal insights alongside data (Schildkamp et al. 2019).

Maintaining a human element in decision-making is crucial, as well as avoiding complete dependence on quantitative data alone to reach a decision.

Table 1: Differences Between Data-Informed and Data-Driven Decision-Making Approaches

Factors	Data-Informed Decision Making	Data-Driven Decision Making
Approach	Data is used to inform decision-makers, but it cannot dictate them, and it is also one of the several elements considered in the decision-making process.	Data is the primary driver of decision-makers in this approach. Decisions are heavily influenced by statistical analysis and empirical evidence.
Flexibility	It's more flexible because it includes other elements, such as experience, intuition, and expert judgment, alongside statistical analysis and empirical evidence.	This approach potentially limits flexibility in the decision-making process. Decision-making relies heavily on quantitative data.
Human Element	Acknowledges the importance of experience and intuition alongside data.	Data can be prioritized over human judgment, potentially underestimating the importance of qualitative insights.

Source: Table created by the author

Table 2: Similarities Between Data-Informed and Data-Driven Decision-Making Approaches

Factors	Shared Aspects
Goal Oriented	Both are aligned with the overall organizational goals, ensuring that decisions contribute to achieving desired outcomes.
Reliance on Data	Both heavily rely on the use of data (qualitative and quantitative) to inform decision-making processes.
Iterative Approach	Both support an iterative decision-making process where feedback from previous decisions is used to refine and improve future decisions.

Source: Table created by the author

As you can see from the tables above, data-informed decision-making incorporates data as one of several factors in the decision-making process, allowing for flexibility by considering experience, intuition, and expert judgment. It recognizes the importance of the human element alongside data, acknowledging the value of qualitative insights. On the other hand, data-driven decision-making places a stronger emphasis on data as the primary driver, potentially limiting flexibility and prioritizing empirical evidence over human judgment.

Despite these differences, both approaches are goal-oriented, aligning with overall organizational goals to ensure decisions contribute to desired outcomes. Additionally, they share common ground in relying heavily on data, employing an iterative approach that leverages feedback from previous decisions for continuous improvement.

Clarifying the Role of Data in The Innovation Process

It is important to be clear about whether decisions should be data-driven or data-informed in the innovation process.

As can be seen from the above definitions, decision-making should be informed by data rather than solely driven by it, as there are other crucial elements involved in the innovation process, and quantitative data is simply one of them.

When gathering insights regarding the role of data in the innovation process, Geoffrey Moore, an American organizational theorist, management consultant and author known for his work Crossing the Chasm (1991), provided me with a valuable explanation. According to Moore's perspective, in the life cycle of disruptive innovation, data can help drive better decision-making in the mid-term to advanced stages of innovation. That's because each round of innovation can build on prior experience, be that with customers, suppliers, competitors, or product performance. Conversely, earlier in the life cycle of disruptive innovation, the more one needs to rely on intuition, experimentation, anecdotal evidence, and an iterative approach that expects to "fast fail" its way to a viable outcome.

Tendayi Viki, corporate innovation expert and author of Pirates in The Navy (2022), The Corporate Startup (2019) and The Lean Product Lifecycle (2018), helped me understand how customers use data in their innovation process. Based on insights I gained from him, innovation teams conduct experiments to test their business ideas and utilize the findings to make data-informed decisions. It is always a mix of using data and creativity to design value propositions and business models based on learnings.

During the "Why Innovators and Product Managers Should Talk" webinar (2023), I asked Alexander Osterwalder, who is a Swiss business theorist, author, speaker, consultant, and entrepreneur known for his work on business modelling and the development of the Business Model Canvas (2010), about the role of data in the innovation process. Osterwalder prefers to call it evidence-based decision-making, wherein people show whether some of their assumptions are true or not. According to him, there are two buckets you need to look at in the innovation process. He shared: ''One is 'strategic fit,' and the other is 'evidence that supports the idea.' In the first one, you interpret if the idea fits with the organization's vision and where the organization wants to go. In this stage, it has nothing to do with data. However, there's the other part where the organization funds the team's progress. In this stage, the organization supports the team to the next stage only when the team presents compelling evidence confirming the validity of certain hypotheses.''

As a result, different types of data play different roles in the innovation process. While organizations may not often consider creativity, experience, personal insights, and intuition as data, they play an essential role in building qualitative data. It's important to remember that data is not limited to numerical figures alone.

Table 3: Differences Between Quantitative Data and Qualitative Data in the Innovation Process

Factors	Quantitative Data	Qualitative Data
Nature of Data	Numerical information that can be measured and quantified	Non-numerical information that cannot be measured
Nature of Insights	Offers statistical patterns and numerical trends, enabling the identification of broad patterns and the measurement of variables at scale.	Provides rich, contextual insights into the motivations, perceptions, and behaviours of individuals. Useful for exploring new ideas and understanding user experiences.
Data Presentation	Through charts, graphs, tables and numerical	Through words, images or themes

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Factors	Quantitative Data	Qualitative Data
Idea Generation	Applied later in the process for idea validation and prioritization.	Often used in the early stages of innovation for brainstorming and generating new ideas.
Data Integration	Can be complemented by qualitative insights to enhance the interpretation and context of numerical results.	Often integrated with quantitative data to provide a comprehensive understanding of the innovation landscape, combining depth with breadth.

Source: Table created by the author

As can be seen from Table 3, quantitative and qualitative data each possess distinct characteristics and applications within the innovation process. Quantitative data, represented numerically, guides later stages for validation and prioritization. It provides statistical patterns and broad trends through charts and graphs. Qualitative data, non-numerical and narrative-driven, is vital in the early stages for brainstorming and understanding user experiences. Integrating both types offers a comprehensive understanding of the innovation landscape, balancing depth and breadth of insights for more impactful solutions.

Value of Mixed-Method Approach in the Innovation Process

In light of my research and the insights I have gained from experts, the role of data can be examined in two stages in the innovation process. In the earlier phases of the innovation process, reliance on creativity, experience, personal insights, and intuition is crucial for achieving the next step.

In the advanced stages of the innovation process, more quantitative data can help drive better decision-making. At this point, data becomes a strategic advantage and empowers organizations to make more informed and precise decisions.

It should be noted that without the right organizational structures, processes, and governance frameworks in place, it is impossible to collect and analyze data from across the enterprise and deliver insights where they are most needed. A survey by Ernst and Young (EY) (2015) highlights that 81% of companies agree that data should be at the heart of all decision-making. Still, only 31% of companies have significantly restructured their operations to help do this.

As a result, instead of relying heavily on statistical analysis and empirical evidence or experience and intuition, a mixed-method approach should be used for making effective decisions. In the innovation process, it's essential to start with a qualitative approach first and then continue with a quantitative approach. It shouldn't be forgotten that there may still be a need to use a qualitative approach after the collection of quantitative data. This cycle should continue iteratively until one reaches a confident decision.

> "It is a capital mistake to theorize before you have all the evidence. It biases the judgment."
> —1st Sherlock Holmes story – Study in Scarlet (1888) by Sir Arthur Conan Doyle

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