

The Voice Analyst's Playbook: Turning Data into Strategy

Mahek Patel

Northwest University

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Professor Peggy Summerhays

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Organizations today generate enormous amounts of data from customer interactions, operational processes, digital platforms, and connected technologies. While access to information has increased significantly, the ability to transform that information into meaningful business insights remains a critical challenge. Data analytics helps organizations convert raw data into knowledge that supports decision-making, improves performance, and creates competitive advantages (Clarke, 2022). As businesses continue to adopt data-driven strategies, leaders increasingly rely on analytics to understand customer behavior, evaluate organizational performance, and identify opportunities for improvement.

Voice assistant technologies provide a valuable example of this challenge. Products such as voice-enabled devices and digital assistants generate large volumes of interaction data that can reveal how customers engage with technology. Although these systems are designed to simplify everyday tasks, their success depends on more than the ability to recognize spoken commands. Users expect voice assistants to provide accurate responses, complete tasks efficiently, and deliver a positive overall experience. When these expectations are not met, customer satisfaction and continued usage may decline. Research suggests that failures in voice assistant interactions can influence user trust and future engagement with technology (Baughan et al., 2023). As a result, organizations must use analytics to understand not only how customers interact with voice assistants, but also why certain features succeed while others fail.

This paper examines how analytics supports strategic decision-making within a voice assistant product environment. The study is based on an interview with a Senior Product Manager whose work focuses on voice assistant product analytics and customer experience measurement. The interview is supplemented by relevant research and an analysis of a public

voice-command dataset to demonstrate how data can be prepared, organized, and visualized for business use. In addition, the paper evaluates the interviewee's leadership approach, explores key analytical competencies, identifies critical areas of data analytics, and recommends a dashboard solution that supports informed decision-making. Together, these findings demonstrate how effective analytics can transform raw data into actionable insights that support organizational goals, guide strategic decision-making, and improve customer experience.

Interview and Business Context

To connect the research topic with a real business setting, I interviewed a Senior Product Manager working in voice assistant product analytics within the technology and consumer devices industry. The interviewee was selected because of their extensive experience in both analytics and product leadership. Over the course of approximately 12 to 15 years, they progressed from a Data Analyst role to Team Leader, Project Manager, and ultimately Senior Product Manager. This career path provided valuable insight into how analytical skills evolve into strategic leadership capabilities over time, making the interviewee particularly well suited to explain how data-driven decisions influence both day-to-day operations and long-term product strategy. Their experience also offered a unique perspective on how organizations use data not only to evaluate performance but also to guide product strategy and improve customer experiences.

In their current role, the interviewee works closely with product managers, engineering teams, operations groups, and executive stakeholders to evaluate product performance, identify customer behavior trends, prioritize product initiatives, and support business decision-making. Their responsibilities extend beyond analyzing data to translating analytical findings into recommendations that influence product strategy, customer experience improvements, and

resource allocation decisions. Because of this combination of technical expertise and leadership responsibility, the interviewee provided a strong example of how data analytics supports organizational strategy and long-term business objectives.

The organization's analytical needs are closely tied to product usage, customer engagement, and overall product performance. Common reporting requests include weekly business reviews, product performance dashboards, customer usage summaries, feature adoption reports, KPI scorecards, and analyses of error patterns. These reports help leaders answer important business questions, such as whether product performance is improving, which features provide the most value to users, where customers experience difficulties, and what areas should receive additional investment or attention. This reflects a broader principle of data analytics: information only becomes valuable when it is organized and communicated in a way that supports decision-making (Clarke, 2022).

During the interview, one of the most significant business challenges discussed was understanding why users stop using certain voice assistant features after only one or two interactions. While a feature may initially attract attention, long-term success depends on whether users continue to find it helpful, accurate, and easy to use. The interviewee explained that low repeat usage can result from several factors, including inaccurate responses, task failures, confusing interactions, limited functionality, or a mismatch between user expectations and actual performance. As a result, simply measuring how many times a feature is used is often insufficient for understanding customer behavior.

To investigate this issue effectively, leaders need access to several different types of information. Metrics such as feature adoption, repeat usage, task completion rates, abandonment rates, error frequencies, and customer feedback provide a more complete picture of the user

experience. In addition, comparing first-time users with returning users can help reveal whether a feature continues to deliver value over time. These insights allow product teams to move beyond basic usage statistics and develop a deeper understanding of the factors that influence customer satisfaction and retention.

Another important theme that emerged from the interview was the role of analytics in supporting strategic decision-making. Rather than viewing analytics as a reporting function, the interviewee emphasized using data to identify opportunities for improvement and prioritize future actions. This approach reflects the growing importance of data-driven leadership, where analytical findings are used to guide decisions that affect customers, products, and business outcomes. By focusing on meaningful metrics and customer behavior, leaders can make more informed decisions and allocate resources more effectively. This approach is effective because it moves beyond operational reporting and focuses on metrics that directly influence product strategy, customer satisfaction, and long-term engagement.

The interview ultimately helped shape the direction of this paper by demonstrating that voice assistant analytics is not simply about collecting large amounts of information. The true value of analytics comes from using data to understand customer experiences, identify performance challenges, and support continuous improvement. In this case, the central business question is why some users continue using voice assistant features while others discontinue usage after only a few interactions. The following sections examine the data, analytical processes, and visualization techniques that can help organizations better understand and address this challenge.

Business Need and Data Requirements

Once the interview clarified the main business problem, the next step was to identify what data would help explain it. The issue is not simply whether users try a voice assistant feature. The more important question is what happens after the first interaction. A user may try a feature because it is new or convenient, but continued use depends on whether the feature feels accurate, helpful, and easy to use.

Several critical areas of data analytics are relevant to this business problem. First, descriptive analytics helps organizations understand user behavior through measures such as feature adoption, repeat usage, task completion rates, abandonment rates, and customer feedback. These metrics provide insight into how users interact with voice assistant features and whether they continue to find value over time. Second, data governance and quality management help ensure that information collected from multiple systems remains accurate, consistent, and reliable for decision-making. Finally, privacy and security are important considerations because voice assistant data may involve sensitive interactions, connected accounts, and stored voice-related information (Federal Trade Commission, 2022).

This type of analysis also connects user trust. A failed voice assistant interaction can affect whether users are willing to rely on the system again in the future (Baughan et al., 2023). Because of this, product teams should not only measure how often a feature is used, but also where the experience may be weakening user confidence. At the same time, voice assistant data must be handled responsibly because it can involve sensitive interactions, connected accounts, and stored voice-related information. Privacy and security should therefore be considered before the data is used in reports or dashboards (Federal Trade Commission, 2022).

In a real organization, this kind of information would likely come from multiple systems, including product telemetry, cloud data warehouses, customer feedback tools, operational

reports, and possibly ticketing or support systems. This creates another challenge because data from different sources may not always use the same definitions or formats. For example, one team may define a successful task differently from another team, or one system may track an event that another one misses. These issues show why the data must be cleaned, organized, and clearly defined before it can support reliable reporting.

Since actual company voice assistant data is private, this paper uses a public dataset to demonstrate the preparation and visualization process. The Google Speech Commands dataset doesn't show customer retention, satisfaction, or real product usage behavior. However, it does provide a useful example of how raw voice command files can be organized into labels, grouped into broader categories, and reviewed for relevance. This makes it a practical dataset for showing how an analyst can begin turning voice-related data into a cleaner structure for business analysis.

Data Source, Preparation, and Analysis

To demonstrate the analysis process, a publicly available dataset was selected as a practical example. The Google Speech Commands dataset from Kaggle was used because it contains labeled voice recordings that can be categorized, summarized, and visualized. The dataset doesn't include customer retention, satisfaction, or long-term product engagement, so it should not be treated as actual voice assistant usage data. Instead, it serves as a useful proxy for showing how voice-related records can be prepared and analyzed.

The dataset was stored as audio files organized into folders by command label. Each folder represented a spoken word or audio category, such as "yes," "no," "stop," number words, directional words, or other spoken labels. To prepare the data for analysis, the files were imported into Excel through Power Query. The folder path was used to extract the command

label, and the file name was used to count the number of audio samples in each category. This preparation step was necessary because raw files alone didn't provide a clean summary for business analysis. Data quality and organization matter because business insights depend on data that is accurate, consistent, and usable for the question being asked (Gartner, 2025).

The first visual was created to understand the dataset at its most basic level: the number of audio samples by command label. This view helped show how the raw dataset was distributed before any additional grouping or interpretation was applied.

Figure 1

Number of Audio Samples by Command Label

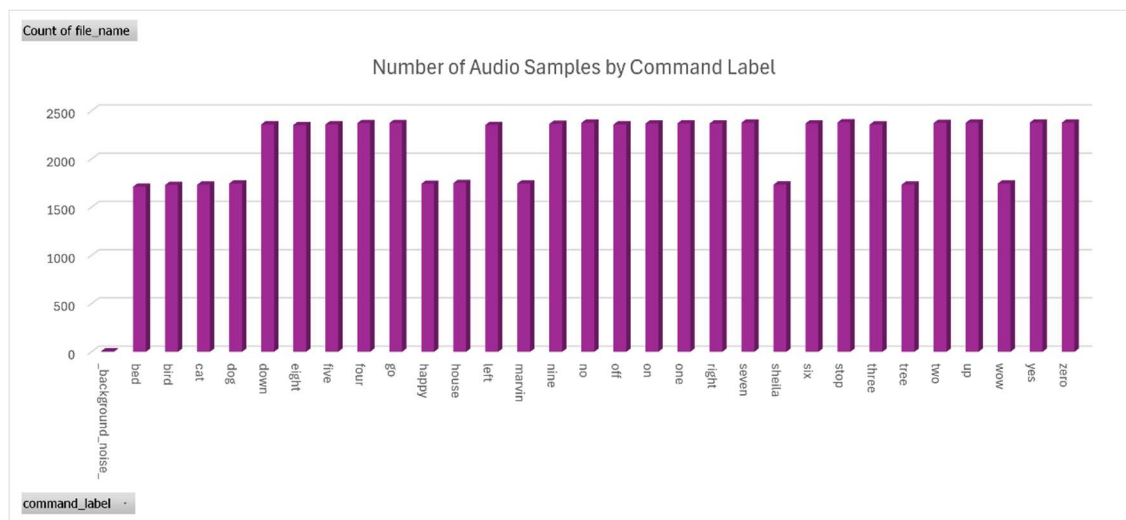


Figure 1 shows that the dataset contains many different command labels, but the labels do not all serve the same purpose for a voice assistant product analysis. Some labels such as “yes,” “no,” “stop,” and number words, connect more directly to common voice assistant commands, while labels such as animal names or personal names are less directly tied to the product question in this paper. This shows why an analyst should review the dataset before drawing conclusions from it.

To make the dataset easier to interpret, the command labels were grouped into broader categories. Control included go, off, on, and stop. Directions included down, left, up, and right. Numbers included zero through nine. Response included yes and no. Noise included background noise files. Others included labels such as bed, bird, cat, etc.

Figure 2

Number of Audio Samples by Command Group

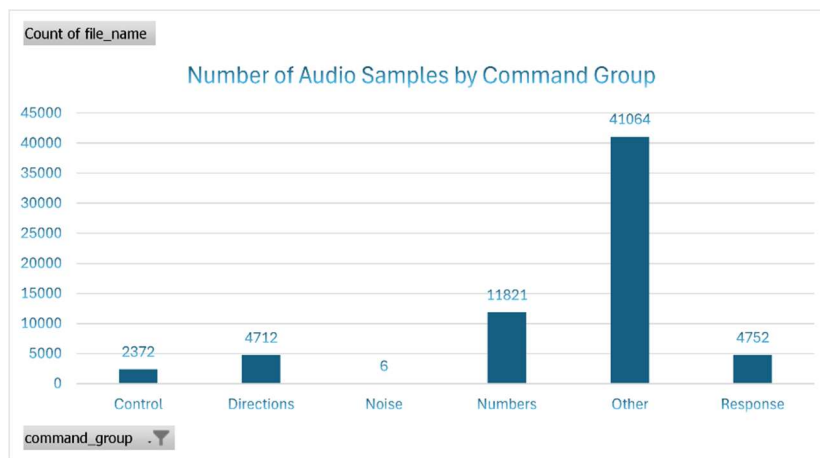


Figure 2 shows that the largest group in the dataset is Other, with 41,064 audio samples, meaning that a large portion of the data isn't directly relevant to the product analysis question.

The next visual separates voice command files from background noise files. This matters because background noise can be useful for understanding speech recognition conditions, but it should not be interpreted as a spoken command.

Figure 3

Voice Command Files vs. Background Noise Files

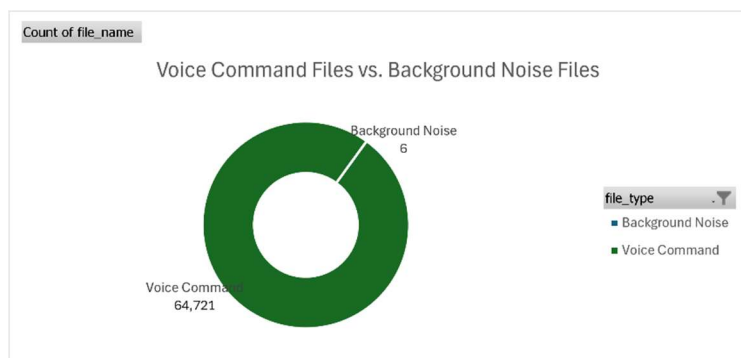


Figure 3 shows that the dataset contains 64,721 voice command files and 6 background noise files. Although background noise makes up a very small part of the dataset, separating it improves clarity and prevents different file types from being treated as the same kind of record.

The final visual focuses on relevance to the product analytics question. Product-relevant commands included the Control, Directions, Numbers, and Response groups. Other or non-core labels included the remaining spoken labels, and background noise was kept separate.

Figure 4

Dataset Relevance for Voice Assistant Product Analysis

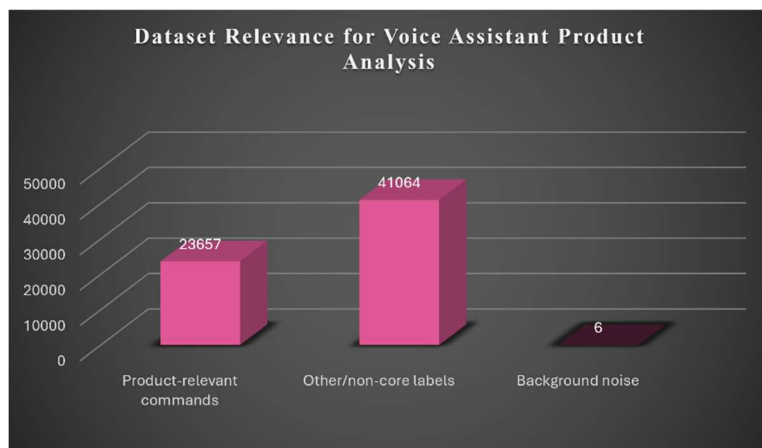


Figure 4 shows that 23,657 files were classified as product-relevant commands, 41,064 files were classified as other or non-core labels, and 6 files were classified as background noise.

This doesn't mean the other labels have no value. It means they are less directly related to the specific business question being studied. This supports an important visualization principle: data should be selected and presented in a way that helps the audience understand the message without being overwhelmed by unnecessary detail (Knafllic, 2015).

This preparation process shows how raw voice-related files can be shaped into a more useful analytical structure. The analysis moved from individual labels to broader command groups, separated background noise, and identified which parts of the dataset were most relevant. In a real product environment, the same logic would apply to customer interaction data before it could be used in a dashboard or leadership report.

Recommendation: Voice Assistant Product Analytics Dashboard

The analysis above shows that voice-related data becomes more useful when it is organized around a clear business question. For this reason, I recommend a voice assistant product analysis dashboard focused on feature adoption, repeat usage, and interaction quality. The dashboard should not try to include every possible data point. Instead, it should help leaders quickly understand whether users are trying a feature, completing tasks, returning to use it, or stopping after a poor experience.

The dashboard should include a small set of key performance indicators that connect directly to the business problem. KPI dashboards help organizations monitor performance by presenting important metrics in a centralized format that supports timely decision-making and organizational alignment (Tableau, n.d.). The most important KPIs would be feature adoption rate, repeat usage, task completion rate, error rate, abandonment rate, user retention, and customer satisfaction. These measures would help leaders understand both the amount of product

activity and the quality of the user experience. For example, a feature with high adoption but low repeat usage may show that users are curious at first but do not find enough value to keep using it. A feature with a high error rate and high abandonment rate may point to a technical or design issue that needs attention.

The dashboard should also use visuals that match the type of decision being made. This requires several important analytical competencies, including data interpretation, strategic thinking, communication, data visualization, and cross-functional collaboration. Scorecards can summarize the most important KPIs at the top of the dashboard. Line charts can show whether adoption, completion, or errors are improving or declining over time. Bar charts can compare command groups, feature categories, devices, or error types. A simple table can provide supporting detail for teams that need to investigate specific issues. This approach connects to the idea that visuals should be designed around the audience and the message, rather than adding unnecessary detail that distracts from the main point (Knaflitz, 2015).

To make the dashboard reliable, the organization should also define each metric clearly before reporting begins. Terms such as “task completion,” “repeat usage,” and “abandonment” should have the same meaning across product, engineering, and leadership teams. The dashboard should include data quality checks for missing events, duplicate records, and inconsistent labels. This is important because a dashboard can only support good decisions if the information behind it is accurate and consistent (Clarke, 2022; Gartner, 2025).

Privacy and security should also be built into the dashboard design. Since voice assistant data can involve sensitive interactions, the dashboard should use aggregated reporting whenever possible. Individual-level details should only be available when there is a clear business need and proper access approval. Personally identifiable information should be protected, and dashboard

access should be limited based on role. This supports responsible reporting while still allowing leaders to understand product performance (Federal Trade Commission, 2022).

The recommended dashboard would provide product leaders with a clearer view of voice assistant performance and help them identify where action is needed. By centralizing key metrics in one place, it would also reduce the need for manual reporting. Under normal conditions, the dashboard could be reviewed on a weekly basis, while during product launches or critical issues, it could be updated daily or in near real time. This approach would support a shift from scattered reporting to a more focused, reliable, and action-oriented analytics process.

Reflection as an IT Manager

This project showed me that effective IT management isn't only about choosing tools or building reports. It is also about understanding the business question behind the data. In the voice assistant example, the main issue was not just how many users tried a feature, but whether the feature helped them enough to keep using it. An IT manager needs to be able to guide this type of thinking so that teams do not collect data without a clear purpose.

Another important lesson is that dashboards are only useful when the data behind them is reliable and the visuals are easy to understand. If metrics are unclear, duplicated, or defined differently across teams, leaders may make decisions based on confusing information. An effective IT manager should help create shared definitions, support data quality practices, and make sure reporting focuses on the information leaders actually need. This also includes protecting privacy, especially when working with sensitive data.

Beyond the technical aspects of analytics, this project also changed the way I think about leadership and decision-making. Before completing this research, I viewed analytics primarily as

a tool for measuring performance. However, the interview demonstrated that effective leaders use analytics to understand customer needs, prioritize business objectives, and guide strategic decisions. As I continue developing my career in technology and management, I hope to strengthen my ability to translate data into meaningful recommendations that support both organizational goals and customer experiences. The project reinforced the idea that successful IT leaders must combine technical knowledge, business understanding, communication skills, and ethical responsibility when making decisions that affect users and organizations.

Conclusion

Overall, this voice assistant analytics project demonstrates that data is most useful when it is tied directly to the user experience. The interview, dataset, and visualizations all highlight that information only becomes meaningful when it is properly structured, analyzed, and clearly presented. A well-designed analytics dashboard can help product leaders identify areas of success, pinpoint challenges, and determine where improvements are needed. For an IT manager, this emphasizes the need to balance technical expertise with business insight, ethical awareness, and effective communication.

More importantly, the project demonstrated that effective analytics is not simply about collecting large amounts of information. It requires selecting relevant metrics, maintaining data quality, protecting privacy, and presenting insights in a way that supports decision-making. By focusing on measures such as feature adoption, repeat usage, task completion, and customer satisfaction, organizations can better understand how users interact with products and where improvements are needed. Ultimately, organizations that successfully connect analytics, leadership, and customer needs are better positioned to improve products, strengthen user experiences, and support long-term business success.

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