

Analytical Approaches to Sales Challenges at GameCo

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Scenario 1: Puzzle Game Sales Decline

GameCo's marketing team has noticed that puzzle game sales are down this year. The finance director wants a report on what's causing this drop in sales, so the marketing team reaches out to the analysts for help.

Answer: To address the decline in puzzle game sales, I would take a structured approach by using different types of analysis to explore the issue and come up with solutions.

Univariate Analysis (Descriptive Focus)

First, I would start with **Univariate Analysis**, focusing on puzzle game sales. The goal here is to identify any patterns or declines unique to this genre by reviewing sales data over time.

Questions I would ask

- ★ What has been the month-by-month sales trend for puzzle games this year?
- ★ Are there certain months where the decline is more noticeable?

Diagnostic Analysis

Next, I would combine **descriptive** and **diagnostic** analyses to better understand **what happened** and **why it happened**. I would research the **historical data** to compare this year's sales with previous years and with other game genres to get a better idea of how things have shifted.

Questions I would ask

- ★ What are the sales trends for puzzle games this year compared to previous years?
- ★ How does puzzle game performance compare to other game genres?

Predictive Analysis

After gathering the descriptive data and identifying sales trends, I would proceed with a **diagnostic analysis** to explore the reasons behind the drop in puzzle game sales. Using **machine learning algorithms**, I can uncover hidden patterns in player behavior, such as when and why players are disengaging with puzzle games. This approach would allow me to:

- Spot hidden patterns in player behavior and engagement with puzzle games.
- Detect **anomalies** or big changes in sales performance that might not be obvious through manual analysis.

Questions I would ask

- ★ Are there any new or trending games that are pulling attention away

from puzzle games?

- ★ Could machine learning detect hidden patterns, like when and why players are dropping off? that explains why players are disengaging with puzzle game
- ★ Could the current puzzle games be outdated or lacking features that users want?

Prescriptive Analysis

Once I have identified the reasons for the decline, I'd focus on **prescriptive analysis** to recommend a solution. Based on **predictive analysis** using historical data, I would forecast how sales might change in the future and whether specific updates or modifications could help reverse the decline.

Questions I would ask

- ★ What are the predicted sales for puzzle games in upcoming months based on past trends?
- ★ How might competitor games or seasonal trends influence future sales?

Prescriptive Analysis for Actionable Solutions

Once I have predictions in hand, I would focus on **Prescriptive Analysis**, asking the question **what should we do next?** Based on machine learning insights, I would offer recommendations on the best course of action.

Questions I would ask

- ★ Should we update puzzle games with new features or content to re-engage users?
- ★ Is it better to boost marketing efforts, or should we focus on developing new games that fit current trends?
- ★ How can we make the most of the predictions to get the best results for puzzle game performance?

Conclusion

By starting with univariate analysis and working through **descriptive, diagnostic, predictive, and prescriptive analyses**, I'd be able to not only figure out why sales dropped but also recommend clear actions to fix the issue. Using machine learning would help me spot hidden patterns, predict future sales, and make smarter decisions to improve puzzle game performance moving forward.

Scenario 2: Stocking Games Based on Local Demand

The sales team wants to know which games it should stock in each city in order to most effectively meet local customer demand. Shipping rates vary by location, and this difference will need to be reflected in which games are recommended for which locations.

Answer: To help the sales team figure out which games to stock in each city, I took a structured approach using a combination of different analyses. This way, we can make sure we're effectively meeting local customer demand while factoring in shipping costs.

Descriptive Analysis

First, I would start with **descriptive analysis** to understand past performance. I would check the sales data to see how many games of each genre were sold in different cities. This will provide a clear picture of what's been popular in each location and which genres have performed well historically.

Questions I would ask

- ★ What are the top-selling game genres in each city?
- ★ Are there specific genres that consistently perform better in certain regions?

Multivariate Analysis

Next, I would use **multivariate analysis** to look at the relationship between game genres, sales, and shipping rates in different regions. By analyzing multiple variables (genre performance, shipping costs, and regional demand), This will help us figure out if stocking certain genres is worth the cost of shipping to each city.

Questions I would ask

- ★ How do shipping rates affect the profitability of stocking certain game genres in specific cities?
- ★ Are there cultural or regional preferences that explain why some genres aren't popular in certain locations?

Predictive Analysis

Once we understand the current and past trends, I would move on to **predictive analysis** to forecast how sales might go in the future. By predicting demand, we can determine which genres will continue to perform well. This analysis will help us determine whether it will remain profitable to continue stocking certain game genres in these cities long term.

Questions I would ask

- ★ What do the sales trends tell us about the future demand for different game genres in each city?
- ★ Are there any upcoming events or local trends that could boost or drop sales for certain genres?

Prescriptive Analysis

Finally, I would apply **prescriptive analysis** to make recommendations on stocking the right games in each location. By looking at both past sales and future predictions, I'd advise the sales team on which genres to prioritize while taking into account shipping costs and regional demand.

Questions I would ask

- ★ What's the best mix of game genres to stock in each city based on past sales and future forecasts?
- ★ Should we adjust our strategy for certain locations based on upcoming events or cultural trends?

Combining Descriptive and Inferential Statistics

Throughout this process, I would use a combined **descriptive** and **inferential statistics** to make sure we're accurately collecting and interpreting data.

Descriptive statistics would help summarize past sales trends for each location, while **inferential statistics** would allow us to generalize these findings to predict future sales in other regions.

For example, by gathering customer data from local markets we can utilize this information to understand their preferences and select the appropriate genres for each

city. This way, we can make sure we're meeting both current demand and future opportunities.

Questions I would ask

★ What patterns can we see in customer behavior across different cities? ★
How can we ensure that the games we stock meet both current demand and future opportunities?

Conclusion

By using a combination of **descriptive, multivariate, predictive, and prescriptive analyses**, i would be able to provide the sales team a solid plan for stocking the right games in each city. By Factoring in shipping rates and regional preferences, we can make sure we're not only meeting local demand but also making smart, data-driven decisions about which games will perform best in each location.

Scenario 3: Sales by Month for GameCo Presentation

A GameCo executive is due to give a presentation at an upcoming gaming conference, and they want to know how sales vary by month of the year.

Answer: To help the GameCo executive prepare for their presentation at the upcoming gaming conference, I focus on analyzing how sales vary by month using a combination of different analytical approaches, and I include a graph to visually show the final results.

Descriptive Analysis

I started by organizing the sales data using the **pivot table**. This will allow me to easily break down the data by month and year, giving us a clear view of how sales fluctuated over time. giving insights into historical month-by-month sales trends.

Questions I would ask

★ Which months consistently have higher or lower sales?
★ Are there certain months with significantly different sales patterns compared to the overall trend?

Diagnostic Analysis

Next, I would conduct a **diagnostic analysis** to understand **why** sales fluctuated during certain months. I'd look for patterns like seasonal trends, holidays, or major events such as game releases. By understanding these factors, the executive can explain the reasons behind sales fluctuations in their presentation, which makes the data more actionable and insightful.

Questions I would ask

- ★ What external factors or events (e.g., holidays, game releases,) might explain the patterns in sales?
- ★ Are there specific trends (e.g., seasonal dips or peaks) influencing sales during certain months?

Machine Learning for Anomaly Detection

To make sure we don't miss anything, I utilize **machine learning** to help detect any anomalies in the data. Machine learning could help highlight any unusual spikes or dips

in sales during specific months that may be linked to specific events, such as a major gaming tournament or the launch of a competing product.

Questions I would ask

- ★ Are there any unusual spikes or dips in sales that might be linked to specific events?
- ★ What anomalies does machine learning detect in month-by-month sales patterns?

Predictive Analysis

Once I've identified the patterns and anomalies, I move to **predictive analysis** to forecast how sales are likely to fluctuate in the upcoming months learning from patterns we've seen in previous years. This can help explain when the most revenue is likely to be generated in the upcoming months. This will help the executive anticipate revenue peaks and drops, offering valuable insight for future planning.

Questions I would ask

- ★ What are the predictions for future sales based on historical month-by-month trends?
- ★ How likely is it that sales will peak during specific months in the future?
- ★ How can the executive use this data to maximize revenue in the months where sales are typically higher?

Prescriptive Analysis

After predicting future trends, I would use **prescriptive analysis** to provide recommendations on what actions should be taken based on the data. This step focuses on helping the executive plan how to use this information to highlight the months when sales peak or drop. For example, the executive can schedule marketing campaigns around high-sales months to maximize revenue.

Questions I would ask

- ★ How can the executive use this data to maximize revenue in the months where sales are typically higher?
- ★ What actions can be taken to mitigate revenue drops in low-sales months?

Univariate Analysis and Graph Visualization

Throughout this process, I applied **univariate analysis** to focus solely on how sales vary by month. This allows me to summarize the data clearly and keep the analysis focused on the specific variable of sales fluctuations across the year. To visually represent this data, I'd create a **line graph** that shows:

- The months where sales peak.
- The months where sales drop.
- Any anomalies or outliers, like spikes during special events.

This visual representation would help make the data more digestible for the presentation, allowing the executive to showcase the variations in sales in a clear and impactful way.

Conclusion

By using a combination of **descriptive, diagnostic, predictive, and prescriptive analyses** and enhancing it with **machine learning**, I would be able to provide the GameCo executive with a detailed breakdown of how sales vary by month. Including a graph of the final results making the presentation even more insightful, helping to clearly illustrate the patterns and predictions in sales for each month.

Scenario 4: Olympic Games Sports Game Sales

The Olympic Games will take place in six months. GameCo's operations team wants to forecast how many sports games it will sell in the months before, during, and after the games so it can order the correct amount from the production facility.

Answer: To help GameCo's operations team forecast how many sports games to order before, during, and after the Olympic Games, I'd take a structured approach using a combination of **descriptive, predictive, and prescriptive analyses**.

Descriptive Analysis

I would start with **descriptive analysis** to review historical data from previous Olympic years. This would help us identify how many sports games were sold in the months leading up to, during, and after the games providing a baseline idea of what we can expect this time around.

Questions I would ask

- ★ How many sports games were sold in the months before, during, and after the last few Olympic Games?
- ★ Were there any patterns or spikes in sales tied to specific sports game genres during those periods?

Predictive Analysis

Once I understand the past sales trends, I would move on to **predictive analysis** to forecast how many sports games will likely sell in the months leading up to and after this year's Olympic Games. This analysis will help us predict future sales based on historical trends and external factors.

Questions I would ask

- ★ What types or genres of sports games are expected to perform well during this Olympic season?
- ★ How do we expect sales to fluctuate before, during, and after the games?

Machine Learning for Enhanced Prediction

To make sure our predictions are as accurate as possible, I'd use a machine learning algorithm to analyze the data. Machine learning can help detect patterns that we might miss, such as changes in consumer behavior during major events like the Olympics. Additionally, it would also aid in **diagnostic analysis** by analyzing the relationship between sales and the Olympic months.

Questions I would ask

- ★ Can machine learning detect any hidden patterns or anomalies in past sales data that might affect future sales?
- ★ How do sales typically respond to external factors, like new game releases or special marketing during the Olympics?

Inferential Statistics for Broader Insights

Throughout this process, I would merge both **descriptive and inferential statistics** to summarize and interpret the data collected from various sources, including gaming stores, consumer stores, and digital platforms. This approach will allow us to get a good understanding of the overall trends and help generalize the findings to a broader population.

Questions I would ask

- ★ How can we summarize data from multiple sources (e.g., retail, digital) to ensure we're forecasting accurately for all platforms?
- ★ What does the data tell us about general consumer behavior around sports games during the Olympic years?

Prescriptive Analysis

After gathering predictions and identifying trends, I'd use **prescriptive analysis** to recommend the optimal quantity of sports games to order before, during, and after the Olympic Games. This approach helps minimize the risk of over- or under-ordering, ensuring that GameCo can meet demand efficiently.

Questions I would ask

- ★ How can we best adjust our orders to meet demand while minimizing the risk of excess or shortage?
- ★ What inventory strategies can we implement based on the predicted sales and potential sales fluctuations?

By combining **descriptive, predictive, and prescriptive analyses** and using **machine learning** to enhance accuracy, I would be able to help GameCo's operations team determine how many sports games to order before, during, and after the Olympic Games. This approach ensures GameCo is prepared to meet demand while maximizing sales opportunities and minimizing the risk of over- or under-ordering, making the most of the Olympic Games.