

K Pizza Study Design Memorandum

Submitted on December 6, 2021

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PROMPT

Enter the text from your memorandum into the text box provided. If desired, you can use *text formatting* to increase the readability of your memorandum.

Hi Tasty Pizza CEO

Pizza Study Design Memorandum to support your upcoming marketing campaign

Key Actors

Our pizza company - Tasty Pizza

Competitor - Other Pizza

2 strengths of our company - Tasty Pizza

1. Unique and tasty topping combinations
2. Speed of service

Research Questions

1. What is the **market size/share relative to Other Pizza and other pizza competitors**?
- 2a. What are the **customer demographics** for each of our pizza topping combinations?
- 2b. What are the customer demographics for each of Other Pizza's topping combinations?
- 3a. What are the **historical and predicted sales trends** for each of our pizza topping combinations?

3b. What are the historical and predicted sales trends for each of Other Pizza's topping combinations?

4a. What do **customers love** about Tasty Pizza?

4b. What do customers love about Other Pizza?

5a. **How fast do we serve pizzas in store or on food ordering applications**, from the time we receive a pizza order to the time a customer receives his/her pizza?

5b. How fast does Other Pizza serve pizzas in store or on food ordering applications, from the time we receive a pizza order to the time a customer receives his/her pizza?

Study Design

-Population we are interested in: People across the US states where we have a market (let's say we are present in 10 US states)

-Method of survey: Combination of in-store survey (e.g. through an in-store order app) and in-app survey form

-Survey of 1,000 people across the US states where we have a market - Each strata is a state (out of the set of 10 US states). Therefore, each strata/state should have 100 people being surveyed.

-Within each state, segment on

>gender - 2 categories - Males, Females; (LGBTQs can choose whichever gender they identify with)

>mode of purchase - 2 categories - {store purchase, app user (whether a purchaser or not)}

-Therefore, within each state, we would survey approximately 25 people within each "gender-mode of purchase" combination.

Variables to collect data on - What to measure, how to measure, how to summarise dataset

1. What is the **market size/share relative to Other Pizza and other pizza competitors?**

Measure - Aggregate Sales data over the past few years (and next year) and growth rate for Other Pizza and other pizza competitors in the markets we are in.

There are 2 ways to obtain this dataset

(a) free dataset from publicly available financial statements/SEC filings,

(b) buy dataset from market research firms such as Nielsen (especially useful if these firms have extensive market share data for **public and private pizza companies**)

Present our dataset in **graph** form:

- Aggregate sales for Tasty Pizza and Other Pizza per year (Same bar chart with a set of Tasty Pizza and Other Pizza bars every year)

- **Proportion** of aggregate sales for Tasty Pizza and Other Pizza per year (Same bar chart with a set of Tasty Pizza and Other Pizza bars every year)

- **Proportion** of aggregate sales for Tasty Pizza, Other Pizza and other competitors per year

2a. What are the **customer demographics** for each of our pizza topping combinations?

2b. What are the customer demographics for each of Other Pizza's topping combinations?

Collect the following data from survey questions

Categorical/Dimensions - Gender, Age, Number of friends, Household size, Number of times you eat out per month, Number of times you eat at a pizza joint per month, Number of events per month where you catered food, Average size of events, Number of times you ordered pizza per month, Annual income range

Measures - Preferred pizza sizes (allow multiple selections), Preferred pizza toppings (allow multiple selections), Preferred number of toppings (allow multiple selections)

Conduct exploratory data analysis using visualisations of:

- Separate histograms of pizza sizes and preferred number of toppings

- Barplot of preferred toppings

- Explore how the measures vary based on the dimensions to identify common patterns and customer sub-segments to target for different pizza sizes/toppings/number of toppings

- Target marketing with tailored messages on identified customer sub-segments

3a. What are the **historical and predicted sales trends** for each of our pizza topping combinations?

3b. What are the historical and predicted sales trends for each of Other Pizza's topping combinations?

Measure - Granular Sales data over the past few years for each of our topping combinations.

- Extract **historical** dataset from our internal sales database.

- Extract **predicted** market share for the upcoming year from our corporate development department.

Present our dataset in **graph and table** form:

- Aggregate sales per topping combination per year (Bar chart with hue on 'topping combination', unstacked table)

4a. What do **customers love** about Tasty Pizza?

4b. What do customers love about Other Pizza?

Collect the following data from survey questions

Dimensions - Customers Love (allow multiple selections and an 'other' selection for comments)

Example of selection options - Type of Toppings, Variety of Toppings, Available across channels, Speed of service, Quality of service, Price, Others

Conduct exploratory data analysis using visualisations of:

- Barplot showing count across features/categories which 'Customers Love'
- Explore how the barplot vary based on the customer demographic fields to identify common patterns and customer sub-segments to target
- Target marketing with tailored messages on identified customer sub-segments

5a. **How fast do we serve pizzas in store or on food ordering applications**, from the time we receive a pizza order to the time a customer receives his/her pizza?

5b. How fast does Other Pizza serve pizzas in store or on food ordering applications, from the time we receive a pizza order to the time a customer receives his/her pizza?

Dimension - 'App customers love' field which stores multiple tags of what app customers loved about their order

Measure - 'time of order' Datatimestamp which users place an order at our cashier or in a food ordering mobile app, 'time of delivery' Datatimestamp which the delivery team clicks on 'food delivered', Number of stars (1 star is bad, 5 star is good) for each pizza sales order,

Data preparation - Find the 'time from order to delivery' time difference in minutes between 'time of delivery' and 'time of order'

Conduct exploratory data analysis using visualisations of:

- Scatterplot of 'time from order to delivery' against 'number of stars'
- Explore how the barplot of 'App customers love' features vary based on the customer demographic fields to identify common patterns and customer sub-segments to target

RUBRIC

This memorandum should be written to be understandable to the company's CEO who has basic statistical literacy.

Comment on the degree to which this was achieved.

1. What parts were written well?
2. What parts would be more difficult to understand?

Word count: Minimum 30 words



1. Абсолютно все части меморандума были изложены качественно и подробно, интересно разобрана вся тема, и я не вижу возможных исправлений в данной работе. 2. Я не смог обнаружить каких-либо частей меморандума трудно разбираемыми.



César Padilla

Congratulations, I think the overall design was written very well. You really paid a lot of attention to detail, and went very, very much into what needed to be done, exactly how, etc. Apart from a few, very minor typos, I found nothing lacking in this presentation, good job.



all are written well.and good job.

The study design should be described in this memo. Comment on proposed research questions or claims that would be addressed.

1. What is described well?
2. What is missing? How might the description be improved?

Word count: Minimum 30 words



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César Padilla

The research questions that you posed are very accurate and detailed. However, I don't think that the connection between the research questions and the 2 strengths of the company are so clear. The idea was to create a study to showcase these strengths in a marketing campaign, and this study is much more geared as a market analysis in general, I perceived.



all are written well.and good job.

Comment on the description of the proposed variables that would be recorded.

1. What is described well?
2. What is missing? How might the description be improved?
3. Do they generally align well with the proposed research questions or claims?
4. Is there enough detail so the company's CEO will generally understand what is proposed to be measured and how it would be measured?

Word count: Minimum 30 words



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César Padilla

I don't feel that the proposed variables in the study have a direct connection to the 2 strong points of the company: speed and unique

toppings. The statistical findings you are describing are not really measuring any of these variables, but rather the results in regards to market share, sales, etc. I could not find the variables regarding to speed of service or topping selection/uniqueness in your proposed variables.



all are written well.and good job.

Comment on the proposed graphical and numerical summaries.

1. What is described well?
2. What is missing? How might the descriptions be improved?
3. Do they generally align well with the proposed research questions or claims? Do they align with the type of data that is being recorded?

Word count: Minimum 30 words



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César Padilla

The proposed numerical and graphical summaries would make an excellent job of describing the data and categories that you wish to explore. However, I don't feel that they necessarily would present anything related to the 2 main focus areas (speed and variety), but more to market analysis.



all are written well.and good job.

Thinking about your written assessment of the four components of the learners' memorandum, please provide an overall grade for the assignment that is consistent with your carefully written observations.



10 points

The memorandum fully addressed all aspects of the grading rubric, including:



- being understandable to a stakeholder with basic statistical literacy
- a clear description of study design
- complete description of proposed variables
- complete description of proposed graphical and numerical summaries.



8 points

The memorandum mostly addressed aspects of the grading rubric, with only a few areas needing improvement.



6 points

The memorandum partially addressed aspects of the grading rubric, with several areas needing improvement.

CP



1 point

The memorandum did not address the aspects of the grading rubric, with nearly all components missing or needing significant improvement.