
Research Proposal for Xiabuxiabu Hotpot



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Full Research Study Proposal: <http://rpubs.com/DCHOW99/936327>

Research Background & Problem

Hot Pot Industry

- Popular
- Competitive
- Expanding worldwide

Of all the cuisines in mainland China, hot pot accounts for the largest Chinese food market share at 14.1% (2019). Popularity also brings strong competition. According to the 2020 China Hotpot Category Special Report, the number of hot pot restaurants nationwide has exceeded 400,000 as of the first half of 2020.



Who is XBXB?

What is the Goal?



A XBXB restaurant



Profit



Quality



Satisfaction

- Flagship chain restaurant brand
- Standard, and expandable business model
- Bad performance in 2021
- Plan to improve overall quality and customer satisfactory in 2022

XBXB is the flagship chain restaurant brand of the listed company XBXB Catering Management (China) Holdings Co., Ltd. The business model of XBXB is simple, standard, and expandable, and all its restaurants adopt standardized interior design, menu, and operation procedures (Chang, 2015).

XBXB shut down nearly 200 of its restaurants due to the pandemic and market impact in 2021 (Chinanews, 2021). XBXB's strategic plan for 2022 involves repositioning the brand by improving overall quality and customer satisfaction.

Problem

Planning to expand to the U.S. market

American Consumers

- Evaluate Chinese restaurants based on the **quality of food** and **service**
- Expect **high-quality**, **responsive** and **reliable service** from restaurants

High homogeneity of the hot pot industry

An Industry-wide Problem

- Almost all hot pot dishes are offered with **minimal culinary processing**

The need to differentiate

Service Is the Way to Differentiate

- Unsure if the **additional revenue** from improved service would **outweigh the costs**

Service Models

On-demand service

Provide only the **necessary service** to facilitate the dining experience

- Offering menu, water, food
- Taking orders
- Giving and collecting checks

Additional services are provided only upon request

Active service

Provide a **comprehensive, personalized service** to each of the customers starting from their entrance to the restaurant

Provide additional services that are not typically provided by restaurants

- Shoe polish
- Nail polish
- Children play room

Research Question & Importance

Research Question

Research Question

Relative to the **on-demand service model**, will the **mean profit (EBIT)** increase by employing the **active service model** in XBXB's U.S. restaurants?

Null Hypothesis

H_0 : The mean profit of the restaurants employing the active service model will exceed the mean profit of the restaurants employing the on-demand service model.

$$H_0: P_{Active} - P_{On-demand} \leq 0$$

Alternative Hypothesis

H_A : The mean profit of the restaurants employing the active service model will exceed the mean profit of the restaurants employing the on-demand service model.

$$H_A: P_{Active} - P_{On-demand} > 0$$

Importance of Study

The Result is Beneficial

- Provide a strategic direction for XBXB entrance to the U.S. market
- Improve XBXB's competitiveness in the highly homogeneous and saturated hot pot industry

The Risk is Minimal

- On-demand service
 - XBXB's current practice
- Active service
 - Could improve XBXB's brand image
 - Increase customers' satisfaction

No Related Research

- Conducting this study is the only way to understand the research question

Research Plan

Experimental Design

Population of Interest

All the 50 XBXB restaurants that are expected to be opened in the U.S.



Sample Selection

From the 50 restaurants, **25** restaurants would be randomly assigned to employ the **active service** model and **25** restaurants would be randomly assigned to employ the **on-demand service** model.

On-demand Service 25

Active Service 25

Timeline

File for approval from the
Institutional Review Boards

Recruit and train
employees

Analyze the outcomes
and report the results

2 Weeks

1 Month

1 Month

3 Months

1 Month

Coordinate with the HR, Finance & Accounting
departments to prepare for the study

Operation period

6 Months

Approximate total time to execute proposal

Statistical Simulation

Statistical Simulation

```
# function for analyze experiment
analyze.experiment <- function(data) {
  require(data.table)
  setDT(data)
  the.test <- t.test(x = data[service == "on-demand", profit],
                    y = data[service == "active", profit],
                    alternative = "less")
  the.effect <- the.test$estimate[1] - the.test$estimate[2]
  upper.bound <- the.test$conf.int[2]
  p <- the.test$p.value
  result <- data.table(effect = the.effect, upper_ci = upper.bound, p = p)
  return(result)
}
```

Two-sample, One-sided t-test

A two-sample, one-sided t-test would be applied to the outcomes from data to evaluate the alternative hypothesis that employing the active service model would bring significant increase in profits (EBIT) to XBXB's restaurants.

Meaningful & Significant

P-value less than 0.05

An expected 5% of increase in mean profit (EBIT)

Measured Values

- Estimated Effect
 - 95% Confidence Interval
 - P-value
-

Simulation Result & Limitations

Simulation Result

| Scenario | Mean Effect in Simulated Data | 95% Confidence Interval of Mean Effect (upper bound) | False Positive rate | True Negative rate | False Negative rate | True Positive rate |
|--|-------------------------------|--|---------------------|--------------------|---------------------|--------------------|
| No effect (\$100 increase in mean profit) | \$32.15 | \$4056.38 | 4.6% | 95.4% | | |
| 5% increase in mean profit | \$7781.85 | \$3757.62 | | | 5.3% | 94.7% |

Participants exposed to both treatments

Unmeasured confounding factors

- From customers
- From service
- From food ingredients
- From human error

Different employees' behaviors after knowing they are participating the experiment

Limitations
