DAT 220 Final Project

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# Introduction: Business Problem

The overall business problem that is to be solved is identifying opportunities in the restaurant, physical and online stores. To do so, first the Bubba Gump Shrimp Company needs to identify were they are excelling and where they can improve based on historical data and customer feedback. The focus will be on understanding the customer needs and looking for ways to create new revenue. What needs to change in order to ensure customer satisfaction and profitability?

# Introduction: Analytic Method

Since we don’t know yet in what areas the Bubba Gump Company needs to improve to achieve goal in customer understanding and satisfaction, the first step would be to analyze the customer survey of the 500 sampled customers. Identify any aspects that stand out. Identifying trends in the collection of data could help the company observe what customers are most interested in purchasing. If we see that many customers visit the online store, but do not make purchases, we could assume they are not finding anything worth purchasing. On the other hand if most all customers who visit the web store go on to make purchases, we can assume the products offered are favorable.

Analysis Tools  
 The data mining tool to be used for this analysis is JMP. This is the chosen tool due to easy availability and simplicity. There is no need to download additional software or applications if using JMP. This tool can provide easy to understand graphs and charts that summarize customer activity and trends.

Data Visualizations  
 Histograms could be used to compare the fields within the data such as what locations see most business or from what state does more online purchasing. Histograms are a quick easy way to start to understand the data that has been collected. I would also like to look at trends to see what if there is a correlation between specific purchases and customer satisfaction. For this, a dot plot or something similar would be best to show correlation.

Research Question  
 The research question should be based on the data that was collected. In this case, the data that was collected contains customer information such as age and native location. Additional information related to each customers purchase is also included. Assumptions could be made based on customer activity such as how frequent the customer makes a purchase and how much money was spent. Specifically, what trends can be observed and what gaps can be filled to ensure customer satisfaction and profitability for the company? What areas of the business can be considered if Bubba Gump Shrimp Company would like to increase profits and reach more customers?

Research Measurement  
 Looking at trends or correlations within the data can help to answer the research question. The data may show that there is a high frequency in customers who visit the restaurant that go on to purchase items from the web store. We can look more specifically at if the frequency at the restaurant impacts web store purchases.

Follow-Up Questions  
 A follow up questions could be to introduce new services or products to the customers. Follow up questions could be asked after a change occurs and compare it to the initial results. Lets say that the menu was updated after the first set of data was collected. We can see how this influences repeat business. Adding QR codes to the menu can also provide guests with easy access to the website while in the restaurant.

Research and Support  
 The company can compare them selves to other like restaurants to determine differences in customer experiences. At this time, there are no outside sources considered researched. There are a few items that could impact the company such as changes in travel habits, changes in sea food prices and the customers interest in the novel store. This could either drive business to the stores and restaurants or dive it away. These would be example of external factors that may change the data, but not controlled by changes made by the company.

# Analysis Organization

The first step in the analysis is to look at the raw data and review the information that was collected. The information provided looks at the customers activity at the restaurant and on the webstore. Next, observe any trends in the raw information by looking for clusters. By identifying trends we can make predications on what may influence customers to return and make purchases. These are only predictions and there is a limited amount of information collected on each customer.

# Sources of Error

One error that was noticed in the raw data was the column labeled THIRD\_VISIT. For this I expected to see a 1 if a customer returned for a third visit and a 0 if a customer did not return. In the data, there are some customers that returned more than three times and the values in the THIRD\_VISIT column are 2 or 3. In order to correct this, two additional columns were created for the customers fourth and fifth visits and using 1 if the customer returned and a 0 if the customer did not return a number of times.

# Meaningful Patterns

One meaningful pattern discovered was that the more a customer visited the webstore, the more likely they are to spend. This same pattern is also seen when the customer returned for the third time. Since the data is focused on the number of times a customer returns to the restaurant or webstore, the research question that comes to mind would be why the customers continue to return and how can the company influence customers to return.

# Inaccurate Depictions of Data

One inaccurate depiction of data would be the column labeled WEB\_PURCH\_YN. It seems that the field is expected to see a Y or an N for if there was a web purchase, instead the numbers 0 or 1 are used. In this case all values of 0 were changed to N and all values of 1 were changed to Y.

# Alternative Analytic Methods

To better understand the data, I chose to use the Graph Builder tool to identify any trends in two variables. It was easy to look at trends in purchases based on if a web purchases was made or if the customer was married or not. I could also filter out customers that did not make a web purchase to find out how much customers were spending only if they made a purchase at all.

Scatter chart

Description automatically generated with low confidence

# Display and Interpretation

One trend that we are trying to identify is if customers who visit the webstore more frequently actually spend more money at the web store. For this, I have created a Fit Y by X chart to show a positive correlation between these two variables shown below in the chart to the left. We can also see if customers who come to the restaurant more frequently and web store purchases are correlated. This is shown in the cart to the right. The slope of the line is less as expected since not all users who visit the restaurant go on to make purchases at the web store however, there is a positive coloration.

Chart, scatter chart

Description automatically generated Chart, scatter chart

Description automatically generated

We can also look at from what state the customers are using the web store more frequently. Only about 38% of the customers go on to make web store purchases. Most of those customers are from California, New Jersey and New York.

Chart

Description automatically generated

The data for the number of restaurant visits looks similar in that the same sates have the highest frequency of customers coming to the restaurant. Shown below.

A picture containing chart

Description automatically generated

# Validity, Reliability, Limitations

The data only shows customers that visited the restaurant at least once. This leaves out the information of customers who have only visited the web store. The data also assumes that when a purchase was made that the customer name was recorded. There could be more customers returning to the restaurant that did not provide their name/information. The data set also leaves out customers who returned to the restaurant a second time.

# Resulting Decision Influence

The data presented shows customer activity both in the restaurant and at the webstore. It does not include the physical merchandise stores that are also available. Information around the customer experience is not collected. For the customers who only visited the restaurant once, were they satisfied with their experience? Would they recommend to a fiend or family member? The are data points that could be paired with the already collected information.

# Visual Evaluation

The reports presented here show the customer activity but do not show customer satisfaction. Further data would need to be collected to understand feedback from the customer. The results show trends in spending for when a customer returns to either the webstore or the restaurant, but it does not show the data over time. Dates for when customers made purchases could be helpful to see if the traffic on the web store is increasing or decreasing.

# Next Steps

Next steps could include gathering more data on the sample of customers. Sending an online survey could help identify some gaps within the company and customer experience. Questions such as if the customer will return to the restaurant and why would be helpful indications for where the company is successful and where it may need to allocate recourses. Advertising of the web store inside the restaurants could also be an action that could boost web purchases. A second analysis could be performed after advertising to see if customers are interested in the web store offerings.