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Analyzing Local Alcohol Vendor Inventory Management Strategy

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ANALYZING LOCAL ALCOHOL VENDOR INVENTORY
MANAGEMENT STRATEGY

By

Angelo Amore

Submitted in Partial Fulfillment
of the Requirements for
Graduation with Honors from the
South Carolina Honors College

May 2020

Approved:

David Precht
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Second Reader

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For South Carolina Honors College

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MANAGEMENT STRATEGY

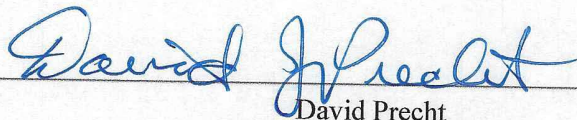
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Executive Summary

This paper attempts to analyze how local alcohol vendors maintain their inventory throughout the year in Columbia, attempting to manage factors such as the season, sporting events, and other public gatherings and events. The research question resulted in contacting over 30 local alcohol vendors in Columbia, to ask them questions regarding their strategy in alcohol inventory management. The responses to these questions were then used to organize the vendors into groups by whether or not they utilize a reorder point to purchase/brew alcohol, or if they utilize periodic ordering. The vendors were also asked to rank the seasons from most to least alcohol sold. The analysis determined that vendors should utilize mathematical models such as the Newsvendor model in order to make accurate predictions to how much alcohol they should order, as opposed to relying on anecdotal evidence to estimate the amount that they should order. The report concludes with three recommendations, including that the vendors should track the amount of alcohol that they order on a periodic basis, implement a model in order to aid with inventory management and demand planning, and conduct an accurate pre and post analysis of performance of the entire process of maintaining records and using models to predict inventory and demand planning. These recommendations all serve to help the vendors become more profitable and more efficient.

Research Question

With approximately 35,000 total students, and located in the center of Columbia, SC, the University of South Carolina (U of SC) has a great effect on the entire city of Columbia. Every aspect of life in the city of Columbia is affected by the presence of the University population. One aspect of the University that has a particularly large effect on the city of Columbia would be that U of SC participates in Division One of National Collegiate Athletic Association, reserved for the largest and most competitive universities. One industry that is particularly affected by this is the food and beverage industry. The U of SC football team attracts 80,000 plus fans for a game at Williams-Brice Stadium, which certainly affects the food and beverage industry. The level of this affect is unknown, beyond the fact that demand increases. The focus of this paper is centered around alcohol vendors in Columbia, including stores, bars, restaurants, liquor stores and beverage centers. This paper attempts to analyze how local alcohol vendors maintain their inventory throughout the year in Columbia, attempting to manage factors such as the season, sporting events, and other public gatherings and events.

Methodology

The research question resulted in contacting over 30 local alcohol vendors in Columbia, to ask them questions regarding their strategy in alcohol inventory management.

The questions that were used to gather data for the paper are listed below:

1. Is your organization a small, medium, or large organization?
 - a. “Small”: < 50 employees , “Medium”: 50-250 employees, “Large”: > 250 employees
2. When you do your repurchasing, do you follow a corporate policy or local strategy?
3. Are alcohol sales your organization’s primary source of revenue?
4. Do you reorder alcohol when you reach a certain (low) amount in your inventory?
5. Do you reorder alcohol periodically? Once a day, once a week, once every two weeks, once a month, etc.
6. Is your strategy different from the ones just mentioned? What is the strategy?
7. Do you take into account what the season is when making alcohol sales?
8. During which season do you purchase the most alcohol?
9. Do you purchase more in the summer than the winter?
10. Do you purchase more in the fall than the spring?
11. Rank the season from purchasing the most to purchasing the least
12. Are there any specific events that you support with alcohol sales?
13. If they answered that they support football games... Do you take into account football games when purchasing?
14. If they answered that they support football games... Do you have a different strategy regarding purchasing for home games vs away games?
15. If they answered that they support football games... Do you have a different strategy when the football team is having a good season or a bad season?

16. If they answered that they support football games... Are there any other factors used to make a decision regarding purchasing alcohol?

The alcohol vendors that provided answers are listed below:

1. Walmart
2. River Rat Brewery
3. World of Beer, The Vista
4. Columbia Craft Brewing Company
5. J's Corner Restaurant & Lounge
6. Twisted Spur Brewing
7. Tin Roof
8. Craft and Draft Beer
9. Hickory Tavern
10. Home Team BBQ

Data

Walmart

The Walmart that was contacted was the one located at 1326 Bush River Rd, Columbia, SC. Walmart is a large organization that follows a corporate policy when purchasing alcohol and maintaining inventory. According to the manager that was contacted, Walmart makes alcohol purchases periodically, three times a week, without taking into account seasonality when purchasing alcohol. They also do not take into account the football season when purchasing alcohol. There are no specific events that Walmart supports with the sale of alcohol.

River Rat Brewery

River Rat Brewery is a medium-sized organization that follows a local inventory strategy that is determined by the brew-masters. Alcohol sales are the primary source of revenue for them. River Rat re-brews and purchases alcohol once they reach a reorder point. River Rat brews and purchases the most alcohol in the spring, followed by the winter, summer, and then fall. They do not specifically support football games but do support private events that can be booked with them.

World of Beer, the Vista

World of Beer is a medium-sized organization that follows a corporate policy when purchasing alcohol. Alcohols sales are the primary source of revenue for them. They have a mixed strategy when it comes to ordering alcohol, as they utilize a reorder point, and order certain beers periodically, approximately once a week. They purchase the most alcohol in the fall and winter, followed by the spring, then summer. They support football games, weddings, company events, LGBTQ+ events, and local artists with alcohol sales. They take

into account football games when making purchasing decisions and have a different strategy for home and away games. They factor in whether or not the away team has a fanbase that is more likely to travel to Columbia for the game before deciding how much alcohol to purchase. For example, teams such as Alabama and Clemson have fanbases that will travel to Columbia, which leads to more demand for alcohol at the World of Beer. They also support events at the Colonial Life Arena due to their close proximity to the arena.

Columbia Craft Brewing Company

Columbia Craft Brewing Company is a small organization that follows a local inventory strategy when making purchasing and brewing decisions. Alcohol sales are the primary source of revenue for them. They have a mixed strategy when it comes to brewing and ordering alcohol, as they utilize a reorder point, as well as reorder certain beers twice a week. One factor for them that was interesting is that they purchase and brew different beers depending on the season. They purchase the most alcohol during the spring, followed by the fall, winter, and then summer. They do not support football games or any other specific events.

J's Corner Restaurant & Lounge

J's Corner is a small organization that follows a local strategy when purchasing alcohol. Alcohol sales are the primary source of revenue for them. They utilize a reorder point when purchasing alcohol. They purchase the most alcohol in the summer, followed by the fall, spring, and then winter. They support football games, as well as weddings, the Super Bowl, basketball games, the World Series, and events such as private parties, and U of SC basketball games as well. Due to their close proximity to Williams-Brice stadium, they have a different strategy for home games as opposed to away games, as they purchase more

alcohol for home games because they expect more demand before and after the games. The manager also mentioned that holidays are a big factor for them.

Twisted Spur Brewing

Twisted Spur Brewing is a small organization that follows a local strategy when brewing and purchasing alcohol. Food and alcohol sales are approximately even sources of revenue for them. They have a mixed strategy when it comes to brewing and ordering alcohol, as they reorder depending on the season and rotation, as well as purchase certain beers that are rotated and brewed as often as possible. They utilize seasonality for determining which beers to brew and purchase, but season does not affect quantity brewed or purchased. They support football games, the Super Bowl, and events such as food and wine festivals in Columbia, and regular NFL games. They also have a lot of business when U of SC games are happening in Columbia because customers that show their game tickets get a discount for that day. They take into account football games when making purchasing decisions and have a different strategy for home and away games. They factor in whether or not the away team has a fanbase that is more likely to travel to Columbia for the game before deciding how much alcohol to purchase. For example, teams such as Alabama and Clemson have fanbases that will travel to Columbia, which leads to more demand for alcohol at the Twisted Spur.

Tin Roof

Tin Roof is a small organization that has an alcohol inventory strategy that is a mix between corporate policy and local strategy. Certain beers are required to be carried in all Tin Roof bars, but the rest of the beers and alcohol are decided by the local management team. Alcohol sales are the primary source of revenue for them. They have a mixed strategy when it comes to ordering alcohol, as they order certain beer each week, but other products are

reordered utilizing a reorder point. They purchase the most alcohol in the fall, followed by the spring, summer and then winter. They support football games, weddings, the Super Bowl, concerts, and other local events such as games at the Colonial Life Arena, Soda City farmers market, parades, and charity runs. They factor in whether or not the away team has a fanbase that is more likely to travel to Columbia for the game before deciding how much alcohol to purchase. For example, teams such as Alabama and Clemson have fanbases that will travel to Columbia, which leads to more demand for alcohol at the Tin Roof.

Craft and Draft Beer

Craft and Draft is a small organization that follows a local strategy when making brewing and purchasing decisions for alcohol. Alcohol sales are the primary source of revenue for them. They brew and reorder alcohol periodically, as opposed to utilizing a reorder point. They brew and purchase the most alcohol in the fall and spring, followed by the summer and then winter. They support football games, as well as the Super Bowl and basketball games. They do not take into account home or away games when brewing and purchasing alcohol.

Hickory Tavern

Hickory Tavern is a medium-sized organization that follows a mixed strategy for purchasing alcohol. They have 24 beers on tap, and 18 of those beers are determined by corporate policy. They reorder alcohol periodically, as opposed to utilizing a reorder point. They purchase more alcohol in the fall, followed by winter, spring, then summer. They support football games, as well as the Super Bowl, basketball games, the World Series, the Stanley Cup, NASCAR races, and other corporate events. They have a different strategy regarding home games and away games. They have a special on games days which is \$15 for

5 beer buckets, which generates a low of business for them, and requires them to purchase a lot of domestic beer.

Home Team BBQ

Home Team BBQ is a medium-sized organization that follows a local strategy when purchasing alcohol. They utilize a reorder point for purchasing alcohol, but also order some items on a weekly basis. They purchase the most alcohol during the fall, followed by the summer, winter and then spring. They support football games as well as St. Patrick's Day, due to their location in the heart of Five Points. They have a different strategy regarding home games or away games.

Results

After collecting the responses from the alcohol vendors, it became clear there are three major takeaways. The first major takeaway is that there is nearly an even split between vendors that utilize a reorder point, and vendors that either reorder/brew alcohol periodically or have a mixed strategy. 40% answered that they do reorder/brew alcohol when they reach a certain low amount in their inventory, 40% answered that they do not reorder/brew alcohol when they reach a certain low amount in their inventory, and 20% said that they have a mixed strategy and do something different than those two options. When asked if they reorder periodically, for example once a week, every two weeks, once a month, etc.... 20% of vendors said that they do not, while the other 80% do it to a certain extent in their own way. A summary of the responses to this question is shown below.

	Continuous/reorder point	Periodic & Frequency	Mixed
Walmart		Yes – three times a week	
River Rat Brewery	Yes		
World of Beer	Yes	Yes – weekly	
Columbia Craft Brewing Company		Yes – twice a week	
J's Corner Restaurant and Lounge	Yes		
Twisted Spur Brewing			Mix of Seasonal beers and beers rotated/brewed as often as possible
Tin Roof		Yes - beer	Beer ordered weekly
Craft and Draft Beer		Yes	
Hickory Tavern		Yes	
Home Team BBQ	Yes	Yes – certain items will come in weekly	

A second way to categorize the results would be to sort the vendors by those that take into account the season when making inventory decisions, and those that do not. Although nine out of the ten vendors said that they take into account the season when making inventory decisions, there were many different rankings and orderings of the seasons that the vendors purchased/brewed the most alcohol to the least alcohol. 80% of vendors claimed that they take into account which season it is when making alcohol purchasing/brewing decisions in order to manage inventory, while 10% of vendors claimed that they do not take into account the season, because demand is essentially evenly distributed throughout the whole year. The remaining 10% claimed that depending on the season they will brew different beer and have different beer in stock, but quantity demanded remains the same.

The season rankings featured many different results. 40% of the vendors said spring was the season that they purchased/brewed the most alcohol, 30% said the fall, and 20% said they do not preference any season, and the remaining 10% said fall and winter are approximately even for demand. The rankings for each vendor are broken down below:

Vendor Name	Winter	Spring	Summer	Fall	No Ranking
Walmart					x
River Rat	2	1	3	4	
World of Beer	2	3	4	1	
Columbia Craft Brewing Company	3	1	4	2	
J's Corner Restaurant and Lounge	4	3	1	2	
Twisted Spur Brewing					x
Tin Roof	4	2	3	1	
Craft and Draft Beer	4	1	3	1	

Vendor Name	Winter	Spring	Summer	Fall	No Ranking
Hickory Tavern	2	3	4	1	
Home Team BBQ	3	4	2	1	
Ranking	3 – tied	2	3 – tied	1	x
(Average)	(3)	(2.25)	(3)	(1.625)	

The third major takeaway has less to do with the results, and more with how the vendors were able to provide their responses. Many of the managers that provided answers had been with the vendor for multiple years, and recalled the answers based on anecdotal evidence, as opposed to observational data. Although many of the vendors are locally owned as opposed to a chain or corporate company, it was interesting that they did not report having records for demand of alcohol over the past several years, even for a simple metric such as seasonal volume.

Analysis

After reviewing the data and comparing the results, the question became, why are alcohol vendors in the same city and consumer environment operating in such different ways? How much of this can be attributed to the differences between the vendors services, demand, customer base, and overall atmosphere? How much can be attributed to the vendors not operating as efficiently as they could be?

When vendors need to make decisions regarding inventory and demand planning, they have to take into account many different factors, including seasonality, consumer preferences, the price of over or understocking, as well as safety stock preferences. It seems that most of the vendors utilize experience and anecdotal evidence for the seasonality and consumer preference factors, as opposed to quantifiable knowledge that supports the price of over or understocking, and safety stock preferences. There may be a lack of understanding of the value that statistical analysis and forecasting can have for a vendor. For example, the Newsvendor model is able to take into account the cost of overstocking and understocking in order to calculate how much of an item to order. The cost of understocking could be considered the revenue that is lost when the vendor does not have a product in stock that a consumer wants to purchase, while the cost of overstocking could be considered the cost of buying excess alcohol for one period and not selling it. For example, if a bar is planning how much beer to have in stock the weekend of a football game, it is essential to have an accurate estimate, in order to reduce unnecessary costs associated with excess beer and lost revenue associated with running out of beer. This could ultimately allow the vendor to differentiate itself from competitors that have not yet instituted this form of analysis into their inventory management strategy.

There are also forecasting techniques of varying complexity that can assist vendors in predicting future demand based on historical data. There are simple and weight moving

averages, which are able to capture the level of previous data and apply that information to future predictions. There are also linear regression and double exponential smoothing models, which can capture the trend of historical data and apply that information to future predictions. The most complex models involve seasonality indices and regression analysis, as well as triple exponential smoothing, in order to use historical data to build very accurate future predictions. Overall, these models are meant to aid vendors in their inventory and demand planning strategy and can be implemented very easily with relatively little strain on the vendor.

Recommendations

I would like to provide the following three recommendations based on the information gathered.

Recommendation #1

The first recommendation applies to all vendors that do not currently maintain records of alcohol demand and inventory, regardless of overall success in Columbia, SC. All vendors should do their best to maintain accurate records for what they purchase and brew over the course of a season. They should keep a specific count on how much they purchased/brewed, what kind of alcohol they purchased/brewed, how many customers they had for the season, and keep track of whether they purchased/brewed once they reached a certain low inventory amount, or periodically. These records will assist the vendor each year as they will have historical observational points to reference when making purchasing and brewing decisions, as opposed to solely anecdotal recollections.

Recommendation #2

Implement a model in order to aid with inventory management and demand planning. As mentioned in the “Analysis” section above, there are varying degrees of complexity in the models. Each vendor should choose a model that best suits their needs given the resources they currently have available to dedicate to utilizing the model. For example, a gas station that is run by a single owner and few employees probably does not have the time nor the resources to utilize and maintain a triple exponential smoothing model effectively, nor would it be beneficial to find and dedicate resources to it. This model makes much more sense for a corporate chain that has the ability to dedicate workers to provide this service over a variety

of locations and products. Regardless of a vendor's overall capabilities, all would benefit from implementing any of the models, in order to become a better predictor of what the future demand will be. Relying on anecdotal evidence is an informal process that can be affected a manager's emotions and future outlook, as opposed to historical data, and in the long run will prove to be less accurate and successful. The model will utilize the records suggested in the first recommendation in order to help the vendor minimize inventory will meeting demand for their products. For example, even tracking how much alcohol was purchased during each season for a calendar year can help managers plan how much to purchase for each season during the upcoming calendar year. This requires no additional resources, solely the effort of the managers and the team to be diligent in tracking inventory and purchasing records for a year. After maintaining seasonal records of demand, and reducing overall inventory and costs, vendors can choose to expand their efforts to include more sophisticated models such as the Newsvendor model that will continue to improve demand planning and inventory levels, ultimately reducing cost and increasing the vendor's profitability. It is crucial that vendor's take the first step going from anecdotal evidence to tracking data, in order to eventually utilize models that can be used for future predictions.

Recommendation #3

Conduct an accurate pre and post analysis of performance of the entire process of maintaining records and using models to predict inventory and demand planning. The pre and post analysis should consist of metrics regarding amount of money spent on alcohol during each season and inventory records in order to track amount of a product that they had in stock. Another metric to utilize would be "Dwell time" which in this context is the amount of a time a product is in inventory before being sold. For example, it would be useful to keep track of how long it takes to sell a case of a particular beer, to understand whether a manager

purchased the right amount. If a vendor sells out all of a particular beer on one day, and has to repurchase it the next day, and it arrives a few days later, there is a significant amount of time lost that the vendor could have been selling the product. If a vendor purchases too much of a particular beer and cannot sell it for a few weeks, then the beer is occupying inventory space that could be utilized by another beer that would be selling more during that time. Maintaining records of cost, inventory levels, and dwell time can all serve to cut costs and increase profitability for the vendor. This analysis can be conducted annually, seasonally, or on another periodic basis in order to establish a level of continuous improvement throughout the organization. The pre and post analysis will reveal if the change implemented has had a positive or negative effect. If the analysis shows a negative effect, then the goal will be to determine what the vendor did wrong with the model. If the analysis shows a positive effect, then the goal will be to double down on aspects they did well and manage areas of improvement. Another potential result of a positive pre and post analysis would be to proceed to a further complex demand planning model, in order to attain a more accurate prediction. The pre and post analysis will continue to allow the vendor to improve its methods and become more profitable during the process.

Conclusion

The research in this paper supports the need for demand planning models in alcohol vendors in Columbia, SC. Currently, many vendors in the city do not take into account as much as they should when determining inventory levels and predicting demand for the upcoming season. Vendors rely on anecdotal evidence and opinions to determine inventory levels and predict demand, which can end up harming the bottom line of many of these vendors. Maintaining purchasing and brewing records, as well as number of consumers per season, implementing a demand planning model, and conducting an accurate pre and post analysis of the change all serve to help the vendors become more profitable and more efficient.

Appendix

Alcohol Vendor Questionnaire

* Required

Email address *

Your email

Do you have a purchasing manager I can speak with?

- ☐ Yes
- ☐ No

Is your organization a small, medium, or large organization?

- ☐ Small (<50 employees)
- ☐ Medium (50<250)
- ☐ Large (250<)

When you do your repurchasing, do you follow a corporate policy or local strategy?

- ☐ Corporate Policy
- ☐ Local Strategy
- ☐ Other: _____

Are alcohol sales your organization's primary source of revenue?

- ☐ Yes
- ☐ No
- ☐ Other: _____

Do you reorder alcohol when you reach a certain (low) amount in your inventory?

- ☐ Yes
- ☐ No
- ☐ Other: _____

Do you reorder alcohol periodically? Once a day, once a week, once every two weeks, once a month, etc

- ☐ Yes
- ☐ No
- ☐ Other: _____

Is your strategy different from the ones just mentioned? What is the strategy?

- ☐ Yes
- ☐ No
- ☐ Other: _____

Do you take into account what the season is when making alcohol sales?

- ☐ Yes
- ☐ No
- ☐ Other: _____

During which season do you purchase the most alcohol?

- ☐ Spring
- ☐ Summer
- ☐ Fall
- ☐ Winter
- ☐ Other: _____

Do you purchase more in the summer than the winter?

- ☐ Yes
- ☐ No
- ☐ Equal
- ☐ Other: _____

Do you purchase more in the fall than the spring?

- ☐ Yes
- ☐ No
- ☐ Equal
- ☐ Other: _____

Rank the season from purchasing the most to purchasing the least

Your answer _____

Are there any specific events that you support with alcohol sales?

- ☐ Football games
- ☐ Weddings
- ☐ Super Bowl
- ☐ Basketball games
- ☐ World Cup
- ☐ World Series
- ☐ NHL Championship
- ☐ Nascar Races
- ☐ Other?
- ☐ Other: _____

If they answered that they support football games... Do you take into account football games when purchasing?

- ☐ Yes
- ☐ No
- ☐ They do not support football games
- ☐ Other: _____

If they answered that they support football games... Do you have a different strategy regarding purchasing for home games vs away games?

- ☐ Yes
- ☐ No
- ☐ They do not support football games
- ☐ Other: _____

If they answered that they support football games... Do you have a different strategy when the football team is having a good season or a bad season?

- ☐ Yes
- ☐ No
- ☐ They do not support football games
- ☐ Other: _____

If they answered that they support football games... Are there any other factors used to make a decision regarding purchasing alcohol

- ☐ Yes
- ☐ No
- ☐ They do not support football games
- ☐ Other: _____

Is there anything that I should have asked you that I didn't?

Your answer _____

Allow them time to speak about their organization

Your answer _____

Follow-up information (time, contact info, are they okay with it)

Your answer _____

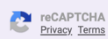
For personal use... when did I contact them, was it a good or bad time to contact them, were they helpful or not helpful

Your answer _____

☐ Send me a copy of my responses.

Submit

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