**Milestone -3 / Whitepaper**

**Background**:

The craft beer industry has witnessed a remarkable surge in popularity, driven by consumer preferences for unique flavors, local authenticity, and a departure from mass-produced options. This section provides an overview of the craft beer phenomenon, outlining its historical roots and the factors fueling its contemporary growth.

**Business Problem Statement**:

Despite the burgeoning popularity of craft beer, many breweries face challenges in maintaining consistent product quality, navigating fluctuating market trends, and effectively differentiating themselves in an increasingly competitive landscape. This white paper seeks to address these business challenges by providing actionable insights into brewing parameters, market dynamics, and emerging trends.

**Objective:** Develop a data-driven market expansion strategy for a beverage distribution company operating in the United States by analyzing brewery distribution and types to identify optimal regions for growth.

**Analytical Insights:**

**Regional Brewery Landscape**

Brewery Types: Brewpubs are the most prevalent type of brewery, followed by microbreweries, while MultitapBars are the least common.

State-wise Brewery Counts: California leads in the number of breweries, followed by Colorado and Oregon. This indicates regional variations in brewery prevalence.

**Brewery Type Distribution by State**

Spatial Patterns: Certain states exhibit stronger presences of specific brewery types. For instance, the West Coast has a high concentration, while the Midwest has fewer breweries due to various factors.

Expansion Opportunities: Identified regions like the Mountain West and Southeast as potential areas for expansion due to diverse markets and a lack of certain brewery types.

**Urban-Rural Analysis**

Identified Urban Regions: Highlighted major populous cities with fewer breweries, pinpointing expansion opportunities. Cities like Omaha, Honolulu, and Nashville have fewer than 50 breweries each, indicating potential for growth.

Growing Cities: Highlighted cities like Frederick, Conway, and Norman, known for specific attributes, presenting opportunities for brewery market expansion.

**Population Correlation**

Correlation Analysis: Demonstrated a direct relationship between population size and brewery concentration. Higher population areas tend to host more breweries, emphasizing the influence of population on brewery distribution.

**Online Presence**

Digital Engagement: Found that 99.7% of breweries have an online presence, emphasizing the importance of websites for engagement and market reach in the industry.

**Recommendations:**

Focus Regions: Concentrate on the Mountain West and Southeast regions for expansion due to diverse markets and untapped potential.

Urban Expansion: Target populous cities with fewer breweries like Omaha and Nashville for market penetration.

Growing Cities Strategy: Explore markets in growing cities known for specific attributes like Frederick and Norman.

Digital Engagement: Emphasize online presence and digital strategies for market reach and competitiveness.

Charts and Graphs:

A screenshot of a computer

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This scatter plot illustrates each state, positioned based on its population size (scaled by 10,00,000) and brewery count, with different hues denoting urban and rural areas. The visualization highlights the relationship between population size and brewery distribution based on urban-rural classification.

While previous bar plots focused on city-level correlations, this scatter plot affirms a trend: higher population correlates with a greater number of breweries. This factor significantly influences brewery distribution across diverse regions.

A bar graph with different colored bars

Description automatically generated

The visual representation offers a comprehensive insight into the spread of diverse brewery types like Brewpubs, Microbreweries, and Contract Breweries across various states. By observing the bar heights within each state, it becomes apparent which brewery type dominates in specific regions. This facilitates a clear comparison of each state's brewery landscape, aiding in swift analysis.

The chart serves as a rapid identification tool for prevalent brewery types, which proves invaluable for market analysis and decision-making processes.

The Southeast Region, encompassing states like Alabama, Arkansas, Florida, and Georgia, emerges as a potential expansion market. The relatively shorter bars for these states indicate room for growth. The region's rising affinity for craft beer, coupled with favorable regulations and a robust tourism industry, presents an encouraging market prospect.

States bordering the Midwest and West regions, including Kansas, Nevada, and Wyoming, exhibit shorter bars, signifying comparatively smaller brewery markets and lower population density. While these areas may attract tourists, the consistency and breadth of their appeal might not match more popular tourist destinations across the country.

A bar graph with different colored bars

Description automatically generated

The bar plot showcasing the distribution of breweries across various states in the US. It begins by collecting data on the number of breweries in each state and then arranges this information in descending order to highlight the states with the most significant brewery presence. California has the most whereas puertorico has the least.

A white screen with colorful squares

Description automatically generated

The brewpub stands out as the most prevalent brewery type across the U.S., totaling 1320 establishments, while the MultitapBar emerges as the least frequently found among them.

**Conclusion:**

The analysis identifies patterns in brewery distribution, emphasizes correlations with population and urban-rural settings, and pinpoints potential expansion regions. Leveraging these insights will enable the beverage distribution company to strategically expand its market presence and capitalize on emerging opportunities in the brewery industry. From brewing parameters that shape product quality to navigating market dynamics and embracing innovation, craft breweries have a wealth of opportunities for growth. By staying attuned to consumer preferences, fostering community engagement, and maintaining a commitment to quality, craft brewers can continue to carve their niche in this dynamic industry.

**Reference :**

[**https://www.kaggle.com/code/utkarshchhadva/chhadva-inst627-fall2023/notebook**](https://www.kaggle.com/code/utkarshchhadva/chhadva-inst627-fall2023/notebook)

[**https://www.kaggle.com/datasets/brkurzawa/us-breweries?resource=download**](https://www.kaggle.com/datasets/brkurzawa/us-breweries?resource=download)

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[**https://pos.toasttab.com/blog/on-the-line/brewery-industry-trends-and-statistics**](https://pos.toasttab.com/blog/on-the-line/brewery-industry-trends-and-statistics)