Week 4 Case Study- Franchise Restaurant

Student’s Name

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Date

**Introduction**

The purpose of this paper is to analyze the prices of three items or vegetables supplied by three different suppliers. The analysis of the prices is done to understand the difference in prices and the relationship which exists based on the mean of the prices of the products. The three suppliers are Bonner, Enz and Walker and the items supplied are vegetable 1, vegetable 2, and vegetable 3. Therefore, this paper compares the mean prices of items from three suppliers and it illustrates whether the means are statistically different or not.

**Compare the mean prices of items from the three suppliers:**

**Vegetable 1**

The analysis of mean prices of vegetable 1 indicates that the prices of the means of vegetable 1 supplied by the three suppliers Benner, Enz, and Walker are different. The mean of vegetable 1 supplied by Benner is 0.66 Enz is $1.26 and Walker is $0.98. It, therefore, means that Enz supplied vegetable 1 at a higher price compared to Walker and Bonner and Bonner prices are the most affordable at $0.66. This is indicated in figure 1 below of descriptive statistic.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Bonner** |  | **Enz** |  | **Walker** |  |
|  |  |  |  |  |  |
| Mean | 0.663333333 | Mean | 1.266666667 | Mean | 0.98 |
| Standard Error | 0.118509259 | Standard Error | 0.049777282 | Standard Error | 0.078102497 |
| Median | 0.61 | Median | 1.25 | Median | 0.99 |
| Mode | #N/A | Mode | #N/A | Mode | #N/A |
| Standard Deviation | 0.205264058 | Standard Deviation | 0.086216781 | Standard Deviation | 0.135277493 |
| Sample Variance | 0.042133333 | Sample Variance | 0.007433333 | Sample Variance | 0.0183 |
| Kurtosis | #DIV/0! | Kurtosis | #DIV/0! | Kurtosis | #DIV/0! |
| Skewness | 1.09029058 | Skewness | 0.837392774 | Skewness | -0.330831815 |
| Range | 0.4 | Range | 0.17 | Range | 0.27 |
| Minimum | 0.49 | Minimum | 1.19 | Minimum | 0.84 |
| Maximum | 0.89 | Maximum | 1.36 | Maximum | 1.11 |
| Sum | 1.99 | Sum | 3.8 | Sum | 2.94 |
| Count | 3 | Count | 3 | Count | 3 |

**Figure 1: Descriptive statistic for the mean price of vegetable 1**

**Vegetable 2**

The analysis of item vegetable 2 indicates that the mean prices of vegetable 2 are different as well. The mean of vegetable 2 supplied by Bonner is $1.02, Enz is $1.36 and Walker is $1.69. The analysis of the mean prices of vegetable 2 indicates that Walker had higher prices compared to the rest of the supplier and therefore, Bonner is more affordable at $1.02, followed by Enz at $1.36 and Walker at $1.69.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Bonner** |  | **Enz** |  | **Walker** |  |
|  |  |  |  |  |  |
| Mean | 1.023333333 | Mean | 1.366666667 | Mean | 1.696666667 |
| Standard Error | 0.116237305 | Standard Error | 0.03929942 | Standard Error | 0.029059326 |
| Median | 1.05 | Median | 1.39 | Median | 1.69 |
| Mode | #N/A | Mode | #N/A | Mode | #N/A |
| Standard Deviation | 0.201328918 | Standard Deviation | 0.068068593 | Standard Deviation | 0.05033223 |
| Sample Variance | 0.040533333 | Sample Variance | 0.004633333 | Sample Variance | 0.002533333 |
| Kurtosis | #DIV/0! | Kurtosis | #DIV/0! | Kurtosis | #DIV/0! |
| Skewness | -0.585582726 | Skewness | -1.361301396 | Skewness | 0.585582726 |
| Range | 0.4 | Range | 0.13 | Range | 0.1 |
| Minimum | 0.81 | Minimum | 1.29 | Minimum | 1.65 |
| Maximum | 1.21 | Maximum | 1.42 | Maximum | 1.75 |
| Sum | 3.07 | Sum | 4.1 | Sum | 5.09 |
| Count | 3 | Count | 3 | Count | 3 |

**Figure 2: Descriptive statistic for the mean price of vegetable 3**

**Vegetable 3**

The analysis of the mean price of vegetable 3 supplied by Bonner, Enz, and Walker indicates that there are differences of mean pieces. The mean prices of vegetable 3 supplied by Bonner are $1.95, Enz is $1.31 and Walker is $1.73. Based on the result obtained, it is evident that Bonner charged a higher price of $1.95, and Enz is the cheapest at $ 1.31.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Bonner** |  | **Enz** |  | **Walker** |  |
|  |  |  |  |  |  |
| Mean | 1.953333333 | Mean | 1.316667 | Mean | 1.726666667 |
| Standard Error | 0.545903939 | Standard Error | 0.076884 | Standard Error | 0.056075346 |
| Median | 1.99 | Median | 1.25 | Median | 1.75 |
| Mode | #N/A | Mode | #N/A | Mode | #N/A |
| Standard Deviation | 0.945533359 | Standard Deviation | 0.133167 | Standard Deviation | 0.097125349 |
| Sample Variance | 0.894033333 | Sample Variance | 0.017733 | Sample Variance | 0.009433333 |
| Kurtosis | #DIV/0! | Kurtosis | #DIV/0! | Kurtosis | #DIV/0! |
| Skewness | -0.174242264 | Skewness | 1.688202 | Skewness | -1.018682875 |
| Range | 1.89 | Range | 0.24 | Range | 0.19 |
| Minimum | 0.99 | Minimum | 1.23 | Minimum | 1.62 |
| Maximum | 2.88 | Maximum | 1.47 | Maximum | 1.81 |
| Sum | 5.86 | Sum | 3.95 | Sum | 5.18 |
| Count | 3 | Count | 3 | Count | 3 |

**Figure 3: Descriptive statistic for the mean price of vegetable 3**

Based on the analysis of the mean price of three items supplied by the three suppliers Bonner, Enz and Walker, the mean price of three items is statistically differed among the suppliers. The mean prices of the three items differ based on the items provided by the supplier.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Bonner** |  | **Enz** |  | **Walker** |  |
|  |  |  |  |  |  |
| Mean | 1.213333333 | Mean | 1.316666667 | Mean | 1.467777778 |
| Standard Error | 0.25309199 | Standard Error | 0.03218868 | Standard Error | 0.125419051 |
| Median | 0.99 | Median | 1.29 | Median | 1.65 |
| Mode | #N/A | Mode | 1.25 | Mode | 1.75 |
| Standard Deviation | 0.759275971 | Standard Deviation | 0.09656604 | Standard Deviation | 0.376257152 |
| Sample Variance | 0.5765 | Sample Variance | 0.009325 | Sample Variance | 0.141569444 |
| Kurtosis | 2.300658477 | Kurtosis | -1.327512083 | Kurtosis | -1.172823333 |
| Skewness | 1.610046614 | Skewness | 0.337201741 | Skewness | -0.895139459 |
| Range | 2.39 | Range | 0.28 | Range | 0.97 |
| Minimum | 0.49 | Minimum | 1.19 | Minimum | 0.84 |
| Maximum | 2.88 | Maximum | 1.47 | Maximum | 1.81 |
| Sum | 10.92 | Sum | 11.85 | Sum | 13.21 |
| Count | 9 | Count | 9 | Count | 9 |

**Figure 1: Descriptive Statistic**

The analysis of the mean price of the items supplied by Bonner, Enz, and Walker indicates there is a price difference (Peck, Olsen, & Devore, 2016). The mean price of items supplied by Bonner is $1.21, Enz is $1.31 and Walker is $1.46. This means that the mean price of items supplied by the three suppliers is a difference and the difference is based on the item and the supplier.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Anova: Single Factor |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| SUMMARY |  |  |  |  |  |  |
| *Groups* | *Count* | *Sum* | *Average* | *Variance* |  |  |
| Column 1 | 9 | 10.92 | 1.213333 | 0.5765 |  |  |
| Column 2 | 9 | 11.85 | 1.316667 | 0.009325 |  |  |
| Column 3 | 9 | 13.21 | 1.467778 | 0.141569444 |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| ANOVA |  |  |  |  |  |  |
| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
| Between Groups | 0.294762963 | 2 | 0.147381 | 0.607846881 | 0.552693 | 3.402826 |
| Within Groups | 5.819155556 | 24 | 0.242465 |  |  |  |
|  |  |  |  |  |  |  |
| Total | 6.113918519 | 26 |  |  |  |  |

Figure 2: ANOVA

The mean price of each item supplied is different and the mean price of suppliers are also different. This means that the difference in prices is based on the supplier and the items supplied as well. The analysis of the mean prices indicates that the p-value is 0.552. It means that the null hypothesis is accepted and therefore, there is a relationship between the mean price of each item and the supplier (Ali & Bhaskar, 2016). It can, therefore, be concluded that the differences in prices are based on the supplier, not the items supplied.

# References

Ali, Z., & Bhaskar, S. (2016). Basic statistical tools in research and data analysis. *https://www.researchgate.net/publication/308133810\_Basic\_statistical\_tools\_in\_research\_and\_data\_analysis*, 2-35.

Peck, R., Olsen, C., & Devore, J. (2016). Introduction to Statistics & Data Analysis. *https://www.cengage.com/resource\_uploads/downloads/1305115341\_450336.pdf*, 2-35.