**Final Case Assessment**

**Case-Store24 (A): Managing Employee Retention**

Sarah Jenkins is the new intern hired to assist in the development of a new employee-attraction and retention strategy for the tight New England labor market, since she had received training in data analysis as a part of her MBA curriculum. The business objective of the company is to increase store level employee retention.

Jenkins uses data from a recent report containing fiscal year 2000 store performance results. The data is stored in the excel sheet **Store24** and attached along with. Read the case **Store24 (A): Managing Employee Retention** carefully and understand the variables under study from exhibit 2 of the case.

Answer the following questions related to the case.

**For the calculations, paste the phstat output in the workbook itself. Do not paste screenshots of the outputs. The workbook in its current format for submission required, submissions of excel sheets are needed.**

1. Examine the relationship between **employee tenure** and **store level performance**. Compute the **coefficient of correlations**. Specifically, examine the relationship between manager tenure (**MTenure**) and store level performance (**Profit**). Examine the relationship between crew tenure (**CTenure**) and store level performance (**Profit**). What conclusions can you reach about the relationship between employee tenure and store level performance? (2+1+1=4 points)

2. Examine the relationship between **employee skill** and **store-level performance**. Compute the **correlation coefficients**. Specifically, examine the relationship between manager skill (**MgrSkill**) and store level performance (**Profit**). Examine the relationship between crew skill (**CrwSkill**) and store level performance (**Profit**). What conclusions can you reach about the relationship between employee skill and store level performance? (2+1+1=4 points)

3. **Mtenure** is the average manager tenure during FY-2000 where tenure is defined as the number of months of experience with Store24 (refer exhibit 2). The CEO and President of Store24 ‘Bob Gordon’ explained that his analysis showed that manager tenure in the top ten profitable stores was almost four times the level of manager tenure in the least profitable store (refer exhibit 1). The file Store24 contains the **Mtenure** for n=75. (1 \*4 =4 points)

a. At the .05 level of significance, using the critical value approach is there evidence that the mean tenure of manager is different from 27.4? State the hypotheses as well.

b. Determine the p-value and explain the decision made in (a) using the p-value approach.

c. Construct a 95% confidence interval estimate of the population mean of manager’s tenure.

d. Compare the results of (a) and (c). What conclusions do you reach?

4. **Ctenure** is the average crew tenure during FY-2000 where tenure is defined as the number of months of experience with Store24 (refer exhibit 2). The CEO and President of Store24 ‘Bob Gordon’ explained that his analysis showed that crew tenure in the top ten profitable stores was almost four times the level of crew tenure in the least profitable store (refer exhibit 1). The file Store24 contains the **Ctenure** for n=75. (2\*2 = 4 points)

a. At the .05 level of significance, using the critical value approach is there evidence that the mean tenure of crew is less than 22.7? State the hypotheses as well.

b. Determine the p-value and explain the decision made in (a) using the p-value approach.

5. The CEO and President of Store24 ‘Bob Gordon’ explained in his analysis that site location is traditionally considered one of the primary drivers of store success. The variable **Res** refers to site location (Exhibit 2). **Res** is a dummy variable and is coded as located in residential (1) vs. located in industrial area as (0). (2\*2=4 points)

a. Construct a pivot table that computes the count of the variable **Res**.

b. At the 0.05 level of significance, is there evidence that more than 4% of the site location is in industrial area.

6. The file Store24 contains **Profit** which is the Fiscal Year 2000 Profit before corporate overhead allocations, rent, and depreciation (Exhibit 2). (2\*2=4 points).

a. Construct a 95% confidence interval estimate for the population mean of **Profit** for Fiscal Year 2000.

b. Interpret the interval created in a.

7. Pedestrian access (**PedCount**) is considered traditionally one of the primary drivers of store success (Exhibit 2). Store24 wants to estimate the mean rating of pedestrian foot traffic volume for one fiscal year. Based on data from fiscal year 2000, the standard deviation of **PedCount** is 1 (Exhibit 3). What sample size is needed if executives at Store24 wants to be 99% confident of being correct to within ± 0.25? (4 points)

8. **Hours24** is an indicator of whether a store is open 24 hours or not (Exhibit 2). The executives at Store24 wants to examine how store hours affect store performance. According to the data from fiscal year 2000 stored in file Store24 16% of the stores were not opened 24 hours. Based on past research the executives at Store24 have found that store performance is better when stores are not opened 24 hours. To conduct a follow-up study that would provide 99% confidence that the point estimate is within ± 0.04 of the population proportion, how large a sample size is required? (4 points)

9. The executives at Store24 know that service quality (**ServQual**) is an intangible asset and is a non-financial performance measure. This measure has an impact on store performance. The variable **ServQual** stored in file Store24 is approximately normally distributed with a mean of 87.15 and a standard deviation of 12.61. If you select a random sample of 10 stores’ ServQual, (1 + 3 =4 points)

a. What is the sampling distribution of mean?

b. What is the probability that the sample mean is between 85 and 90.

10. The variable **Profit** (fiscal year 2000 profit before corporate overhead allocations, rent, and depreciation, exhibit 2) stored in file Store24 is approximately normally distributed. (2 \* 2 = 4 points)

a. List the five-number summary. Compute the interquartile range.

b. Construct the boxplot and describe its shape.

11. The executives at Store24 ask Sarah Jenkins to examine the possible relationship between Manager tenure (**MTenure**) and Store performance (**Profit**) using some visualization techniques. (2 \* 2 =4 points)

a. Construct a scatter plot with MTenure and Profit.

b. What can Sarah say about the relationship between MTenure and Profit?

12. Construct a side by side bar plot for the following contingency table (4 points)

|  |  |  |  |
| --- | --- | --- | --- |
| **Count of Hours24** | **Store Hours** |  |  |
| **Store Location** | **Not open 24 hrs (0)** | **Open 24 hrs (1)** | **Grand Total** |
| Industrial (0) |  | 3 | 3 |
| Residential (1) | 12 | 60 | 72 |
| **Grand Total** | **12** | **63** | **75** |

13. Describe the empirical rule. (4 points)

14. Explain the probability of Type I and Type II errors. (4 points)

15. What is the central issue of the case? Frame one testable hypothesis based on one of the variables involved with the central issue (for variables refer Exhibit 2, and for summary statistics of the variables refer Exhibit 3)? (4 points)