

**ECO 595: Assignment Coversheet**

Assignment for Course:      ECO-595: Applied Business Research

Submitted to:                 Dr. Saurabh Srivastava

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Title of Assignment: Knowing the Way- Case 6 (Business Research Methods, by WilliamG. Zikmund)

CERTIFICATION OF AUTHORSHIP: I certify that I am the authors of this paper and that any assistance received in its preparation is fully acknowledge and disclosed in the paper. We have also cited any sources from which we used data, ideas of words, whether quoted directly or paraphrased. I also certify that this paper was prepared me specifically for this course.

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Professor’s Grade on Assignment:

Professor’s Comments:

**Team Project**

**ECO 595- 84B fall 2022**

***Read Case 6 from the textbook and use the provided dataset to answer the following questions. All answers (including analysis outputs) should be submitted in a word document. Only one team member needs to submit for the team.***

Q1: Summarize the entire case in your own words. (Should not be more than 1 page.

Q2: Run descriptive analysis on gender, others, and age. Identify any problems with coding. Take necessary corrective actions.

Q3: Compute summated/composite scale for SQ and VAL items. (Need to first input the missing values in the dataset).

Q4: Write an appropriate hypothesis for RQ1, RQ2, RQ3, RQ4, and RQ5. Provide reasonable explanation for each hypotheses. Perform an appropriate statistical test for RQ1, RQ3, and RQ5. Explain the results in detail and make inferences based on the result.

Q5: List an additional research question that can be tested with one-way ANOVA. Write an appropriate hypothesis for this research question. Provide reasonable explanation for this hypothesis. Test the hypothesis. Explain the results in detail and make inferences based on the result.

Q6: List an additional research question that can be tested with regression model. Write an appropriate hypothesis for this research question. Provide reasonable explanation for this hypothesis. Test the hypothesis. Explain the results in detail and make inferences based on the result.

Q7: Based on the results explain whether the park should invest in navigation system and coupon technologies.

**Abstract**

**Purpose:** To investigate whether the newly implemented mobile application and coupons help SPM in improving the service quality along with upgrading for the season pass.

**Methodology/Approach:** A survey questionnaire collected from 200 patronsis used for interpreting the results. Z-Test, Regression, Chi-square, and ANOVA one way are carried out for statistical inferences.

**Findings:** The use of Mobile apps and coupons showed a negative impact on upgrading for the season pass, and even the service quality did not improve with app usage.

**Paper type:** ECO-595 Final Project Case Study

**Q1: Summarize the entire case in your own words.**

The Swamp Palace Museum is an interactive museum where hundreds of exhibitors demonstrate the ecology of the swamps and the habits of animals and insects. The SPM has fast food and full-service restaurants including a swimming pool with several other thrill rides. The Museum is run successfully over some time but couldn’t achieve break-even. The SPM is interested in studying the root cause analysis for not achieving the break-even and addressing the less turnout of visitors. The SPM has hired Marketivity Group for doing exploratory research by placing a physical observer on the field, interacting, and enquiring about the problems they face and knowing their expectations, and collecting feedback in the short conversation.

Upon subsequent research, the key findings are as follows:

* Unhappy with the quality.
* The low-quality theme, for the charged admission price.
* Lack of proper directions & navigation inside the SPM.
* Unhappy to accompany others to the park.

The SPM started to cogitate on the issues based on the findings and identified the key questions to be focused on for improving the situation.

1. Use of a technology-based mobile app for navigation around the museum.
2. Increase the turnout of visitors.
3. Participation in an online coupon program to increase patronage and value.

The SPM has introduced a new visual mobile-app-based navigation system for better navigation around the museum and started giving coupon discounts for subscribers on the internet. Now, the management is keen to know whether the new changes incorporated make a remarkable difference in improving the situation. They have acquired a sample of 200 visitors and the questionnaire recordings on different aspects such as the quality, food service, overall service, value to the visitors, etc. They wanted to test whether the new inclusions had a significant difference in bringing a positive response from the user by using the new app-based navigation system and availing of the coupon discounts.

**Q2: Run descriptive analysis on gender, others, and age. Identify any problems with coding. Take necessary corrective actions.**



From the above descriptive analysis, we notice that the gender variable has a coding problem. In the Nominal data from the instruction given, the male is coded as 2, and the female is coded as 1, but further running descriptive analysis confirms the problem with coding with another number 3 included, which is not a part of the set constraint. Thus the coding needs to be rectified.

**Q3: Compute summated/composite scale for SQ and VAL items. (Need to first input the missing values in the dataset).**

**A3: Please refer the Excel workbook attached, with sheet named Q3-WorkedOutData.**

**Q4. : Write an appropriate hypothesis for RQ1, RQ2, RQ3, RQ4, and RQ5. Provide reasonable explanation for each hypotheses. Perform an appropriate statistical test for RQ1, RQ3, and RQ5. Explain the results in detail and make inferences based on the result.**

**RQ1-H0:** Average of Patrons who use mobile app navigation has less service quality.

**RQ1-H1:** Average of Patrons who use mobile app has greater service quality.

**RQ2-H0:** The proportion of upgrades is the same as for those who use a Mobile app and those who don’t.

**RQ2-H1:** The proportion of upgrades is different for those who use a Mobile app and those who don’t.

**RQ3-H0:** Average of Patrons using coupons has less price perception.

**RQ3-H0:** Average of Patrons using coupons has a greater positive price perception.

**RQ5-H0:** Attractions and Services are not related to improving value perception.

**RQ5-H1:** Attractions and Services are related to improving value perception.

**RQ1 Hypothesis Test:**

**RQ1-H1:** Average of Patrons who use mobile app navigation have greater service quality.

**Test Method/Explanation: Z-Test,** as we compare the two groups of people on whether to check, the one who uses the mobile app has a significant difference in having greater service quality. The sample size is more than 20 observations, we chose to do a right-tail Z-Test.

|  |
| --- |
| **H0: µYes <= µNo** |
| **H1: µYes > µNo** |
|  |
|  |

**Test Statistics :**



**Test Inferences:** The stats outcome, suggests with a very low p-value of 0.012 at a 95% confidence interval it is statistically significant. Considering the z-value -2.23 and a z-critical value of 1.64, the z-value falls in the acceptance range and we fail to reject the null hypothesis.

**RQ2 Hypothesis Test:**

**RQ2-H1:** The proportion of upgrades is different for those who use a Mobile app and those who don’t.

**Test Method: Chi-Square Test,** we compare whether the people who use the mobile app have a greater response in upgrading to the pass. The categorical variables observed and expected frequencies are tabulated to know the following distribution. Chi-Square test is used to study the relationship between categorical variables, Here mobile app usage and upgrades are two categorical variables.

**Test Statistics:**

**Test Inferences:** The following test outcomes, with a p-value of 0.75 infer that the test is insignificant at a 95% confidence interval. The Chi-square value is 0.56 and the critical value is 5.99, Chi-Square value falls under the acceptance region ad we fail to reject the Null hypothesis.

**RQ3 Hypothesis Test:**

**RQ3-H1:** Average of patrons using coupons has a greater positive price perception.

**Test Method: Z-Test**, we compare the two groups of samples whether to check the patrons using the coupons have greater price perception. As the sample size is more than 20 observations, we applied the right tail z-test to test the hypothesis.

**H0: µYes <= µNo**

**H1: µYes > µNo**

**Test Statistics :**

**Test Inferences:** The following test outcome project a p-value of 0.13, with a 95% confidence interval which is statistically insignificant. Considering the z-value of 1.08 and the z-critical value of 1.64, the z-value falls under the acceptance region. We fail to reject the null hypothesis.

**RQ5 Hypothesis Test:**

**H1:** Attractions and Services are related to improved value perception.

**Test Method: Correlation Matrix & Regression Analysis,** we are testing which factors improve value to the customers, here the correlation between the factors is considered to analyze the strength between the variables, and then we are finding the significance to support our statement with the regression test analysis.

**Test Statistics:**

**Correlation Matrix:**



**Regression Analysis:**

**Test Inferences:**  Fromthe above stats outcome, the significance of F is 7.07x10-35, indicating the test is significant at a 95% confidence interval. The R2 value is 0.58 which indicates a 58% relation among the factors which in turn we can comment that there is a positive influence/relation to increasing the value of the perception. Considering the p-values of Employee\_SQ (0.038), Attractions (0.0002), Service (0.009) & Quality (0.016) at a 95% confidence interval suggest there is a significant relationship for increasing the value perception. H1 is supported.

**Q5: List an additional research question that can be tested with one-way ANOVA. Write an appropriate hypothesis for this research question. Provide a reasonable explanation for this hypothesis. Test the hypothesis. Explain the results in detail and make inferences based on the result.**

**Research Question:** How do different age groups of patrons react to service quality upon their experiences?

**H0:** Patrons with different age groups have the same service quality perception.

**H1:** Patrons with different age groups have different service quality perceptions.

**Test Method:** **ANOVA Test,** as we have different groups (i.e. more than 2 variables to test) of patrons with different age categories, we are testing whether these categories are significantly different or not. We test whether the different groups have different service quality perceptions from this test.

From this hypothesis test, we can analyze the perceptions of different age groups, and who so ever has the lowest service quality satisfaction level can be further researched in depth for what betterment can the SPM offer them to improve the satisfaction rate.

For e.g., from the below stats, the group with <=18 has the lowest satisfaction rate recorded for service quality. Further to this analysis, the question before us is, why is the group experiencing low service quality rate? Does SPM have not enough amusements or thrill rides to match their expectations? The “target audience” strategy can be used to improve the situation to some extent.

**Test Statistics:**

**Test Inferences:** From the tabulated results, we have a p-value of 0.67 at a 95% confidence interval, which is statistically insignificant. But comparing the values from the above stats, it is evident to confirm that there is no difference in service quality perceptions among different age groups. Hence, we fail to reject H0.

**Q6: List an additional research question that can be tested with regression model. Write an appropriate hypothesis for this research question. Provide reasonable explanation for this hypothesis. Test the hypothesis. Explain the results in detail and make inferences based on the result.**

**Research Question:** Do their feelings affect the patronage value?

**H0:** Patronage value is not dependent to their recorded feelings.

**H1:** Patronage value is greatly dependent to their recorded feelings.

**Test Method: Regression Analysis,** To test the relationship between the variables, we use regression analysis to know the strength of the relationship. We use the Pearson correlation coefficient to know the strength of the relationship. But with the regression analysis, we get the standardized estimates to know whether the relationship is moving in the same direction. We notice whether the independent variable has a significant influence on the dependent variable, with the known significance from the regression analysis, we can judge the relation between the dependent and independent variables.

**Test Statistics:**

**Test Inferences:** From the above-tabulated test results, the significance of F is greater than the alpha value which is at 95% confidence interval, which infers it is statistically insignificant. The coefficient of determination(R2) suggests there is a 0.8% relation, which suggests a very poor relationship between the dependent and independent variables. The p-value is 0.54 for the feelings suggest the test is insignificant and have no relationship. From the results, we can infer that there is no impact of patron value on their feelings. Hence we fail to reject the null hypothesis.

**Q7: Based on the results explain whether the park should invest in navigation system and coupon technologies.**

**A7:** Use of the mobile app has not made a significant difference in creating upgrades for the visitors. The tested result from RQ2 supports the statement of having a negative statistical response toward the upgrade. Though the mobile app neither helped in creating the service quality for the visitors. This explains service quality is defined by other factors and need not be compared with mobile app.

Coupons, from the tested results, it is a very close call to comment on. Though statistically, the test resulted in visitor coupons having less price perception constrained to this dataset. Alongside this, the SPM needs to give apex attention to building good attractions and maintaining service quality.

**Conclusion:** Mobile app & Coupons does not make a significant difference in improving SPM Service Quality and Increasing upgrades. Therefore, we can refrain from implementing mobile apps & coupons, strictly confined to the particular given data set.

**References**

William G.Zikmund. (Ninth Edition). *Business Research Methods*. Retrieved from Comprehensive Cases: Case-6,Knowing the way-The Swamp Palace Museum case study.