Homework Assignment-6

POM 500 Statistical Analysis

Note: Attempt all questions as per rubric. Problems including case study has a weightage of 10 marks each. The maximum you can score is 50. Use Excel function wherever possible.

Problem-1

A soft drink machine is regulated so that the amount of drink it dispenses follows a normal distribution with a known standard deviation of the drinks dispensed of 20 milliliters.

A random sample of 30 drinks from the machine had an average volume of 373 milliliters. Determine a 95% confidence interval for the average amount of all drinks dispensed by this machine.

Problem-2

A Human Resources Manager is interested in finding the average compensation for financial analysts. Through market research she obtained compensation information for a sample of 57 financial planners

Summary statistics for the sample data is as follows:
mean = $52,746 and standard deviation = $9,528

Calculate a 95% confidence interval for the mean compensation for the population of financial analysts under study

Problem-3

An Excel printout of the descriptive measures of daily checking account balances (in dollars) of customers of First Daisy Bank is shown below. Develop a 95% confidence interval estimate for the mean of the population of the checking balances.

Account Balance Information	
Mean	4828.29
Median	5115.25
Mode	4976.50
Sample Standard Deviation	1143.57
Sample Variance	1307763.49
Kurtosis	8.63
Skewness	-3.06
Range	4968.50
Minimum	600.00
Maximum	5568.50
Sum	173818.50
Count	36.00

Problem-4

A random sample of 200 consoles were examined for a scratch defect. Of the 200 samples, 22 were found to have the defect. Find a 95% confidence interval for the population proportion of consoles with this scratch defect.

Case study: Young Professional magazine

Young Professional magazine was developed for a target audience of recent college graduates who are in their first 10 years in a business/professional career. In its two years of publication, the magazine has been fairly successful. Now the publisher is interested in expanding the magazine's advertising base. Potential advertisers continually ask about the demographics and interests of subscribers to Young Professional. To collect this information, the magazine commissioned a survey to develop a profile of its subscribers. The survey results will be used to help the magazine choose articles of interest and provide advertisers with a profile of subscribers. As a new employee of the magazine, you have been asked to help analyze the survey results.

TABLE 8.6 Partial Survey Results for Young Professional Magazine

Age	Gender	Real estate purchases	Value of investments	Number of transactions	Broadband access	Household income	Children
38	female	no	12200	4	yes	75200	yes
30	male	no	12400	4	yes	70300	yes
41	female	no	26800	5	yes	48200	no
28	female	yes	19600	6	no	9300	no
31	female	yes	15100	5	no	73300	yes

Prepare a managerial report summarizing the results of the survey. In addition to statistical summaries, discuss how the magazine might use these results to attract advertisers. You might also comment on how the survey results could be used by the magazine's editors to identify topics that would be of interest to readers. Your report should address the following issues, but do not limit your analysis to just these areas.

(a) Descriptive Statistics for the quantitative variables follow:

Variable	Sample Size	Mean	Std Dev	Std Error	Minimum	Maximum	Skewness
Age	410	30.112	4.024	0.199	19.000	42.000	-0.03
Investments	410	28538	15811	781	0.000	133400	1.71
Transactions	410	5.973	3.101	0.153	0.000	21.000	1.21
Household Income	410	74460	34818	1720	16200	322500	2.01

(b) Descriptive Statistics for the qualitative variables follow:

Gender	Male: 229	Proportion male: .5585
Plan R.E. purchase	Yes: 181	Proportion yes: .4415
Broadband access	Yes: 256	Proportion yes: .6244
Have Children	Yes: 219	Proportion yes: .5341

1. Develop 95% confidence intervals for the mean age and household income of subscribers. (2 points)

2. Develop 95% confidence intervals for the proportion of subscribers who have broadband access at home and the proportion of subscribers who have children. (2 points)

3. Would Young Professional be a good advertising outlet for online brokers? Justify your conclusion with statistical data. (2 points)

4. Would this magazine be a good place to advertise for companies selling educational software and computer games for young children? (2 points)

5. Comment on the types of articles you believe would be of interest to readers of Young Professional. (2 points)