

Week6Final.docx

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Introduction

A statistical procedure refers to a method that is used for analyzing or representing statistical data. I will be evaluating three specific statistical procedures in this paper. The first statistical procedure is data representation through tables, charts and/or graphs. The data from the research studies was analyzed and the results presented in graphs, charts and tables. The second procedure will be hypothesis testing. There are two types of hypotheses; ⁶the null hypothesis and ¹the alternative hypothesis. A decision has to be made based on the analysis whether ¹to reject or accept the null hypothesis. The last one ¹is inferential statistical analysis tests or correlation or regression techniques. These techniques determine the relationship that exists among the variables used in ¹the research study. ¹This paper will explore the research questions in three research studies; evaluate how the above ¹statistical procedures have been used to answer these research question, ¹explain how the statistical procedures helped to answer each research question and finally ¹analyze the value, strengths and weaknesses of each statistical technique in answering formal and informal research questions.

Literature Review

¹The three research studies that were used to analyze for my final paper were based on past research projects. They include; the difference in ⁸stress level and sleep quality between international students and American students, ²²the effects of electronic banking on financial performance of banks and the influence of social media on the choice of restaurants.

Study 1; The Difference in ⁸Stress Level and Sleep Quality Between International Students and American Students

Research Questions

- ⁸1. What is the correlation between stress level and sleep quality?
2. What is the frequency of nervousness between American domestic students and international students?

Statistical procedures;

- 1) Hypothesis testing

²³Ho: stress level and sleep quality are positively correlated.

²³H₁: stress level and sleep quality are negatively correlated.

- 2) Correlation between sleep quality and frequency of nervous or stressed

A bivariate especially Pearson correlation was applied to establish ²⁶the nature of the correlation between sleep quality and frequency of nervous or stressed. The results were as displayed in the table below:

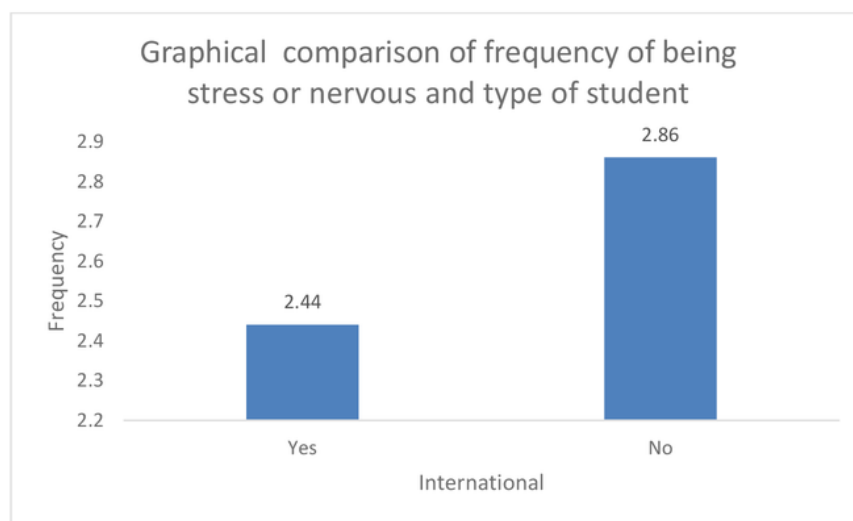
Correlation

	Sleep quality	Nervous or stressed
¹⁸ Sleep quality Pearson Correlation	1	-.216
 Sig. (2-tailed)		.251

N		30	30
Pearson Correlation		-.216	1
Nervous or stressed	Sig. (2-tailed)	.251	
	N	30	30

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The above shows the correlation between sleep quality and nervous or stressed ($r=-0.216$, p value=0.216). The two variables were negatively weakly related with insignificant linear relationship at 95% level of significance (p value=0.216).



The two research questions were answered using correlation analysis approach and presentation using graphs. From the correlation analysis, the first research question was answered. Since sleep quality and stress level are negatively correlated, the decision is to reject the null hypothesis and accept the alternative hypothesis. The graph answered the second research question. The

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frequency of international being stressed or nervous was 2.86 while American 2.44. Thus, international students reported slightly higher rate of nervous or stressed than American students.

Study 2: The Effects of Electronic Banking on Financial Performance of Banks

Research questions;

1. What is the nature and the relationship between electronic banking and the financial performance of banks?
2. what is the distribution of electronic banking platforms?
3. What is the effect of electronic banking on financial performance of banks

Statistical techniques;

1) Correlation Analysis and regression analysis

	ROA	Mobile Banking	ATM	Online banking
ROA	1			
mobile banking	0.2929478	1		
ATM	0.1724551	0.776899191	1	
online banking	0.2645699	0.994635188	0.7421309	1

According to the above correlation analysis, financial performance and electronic banking have a positive correlation. ROA and mobile banking have the highest correlation factor of 0.2929 while ATMs have the lowest correlation factor of 0.1724.

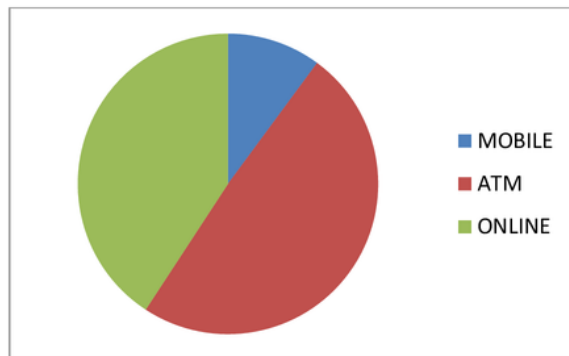
³ Mobile banking and online banking have a correlation of 0.9946 which ²⁵ indicates a very strong association between the two variables.

Regression analysis

	²⁰ <i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	10.2075511	6.530660143	1.56302	0.127885
Mobile Banking	0.0191545	0.000810789	2.362456	0.024401
ATMs	5.701E-05	3.77982E-05	-1.50835	0.141275
Online Banking	0.374749	0.173188893	-2.16382	0.038051

²¹ A multiple regression analysis was used to determine the effects of electronic banking on financial performance of banks. From the analysis, the adjusted R-squared of 13.51 showed a variation in financial performance due to changes in mobile and ¹² online banking. The correlation coefficient also indicated that there is a relationship between financial performance and electronic banking. The conclusion was ³ there is a positive relationship between financial performance and ²⁹ mobile banking as well as online banking

2) Pie chart



The chart shows that ATMs have the highest distribution, followed by online banking and finally mobile banking.

The two techniques, that is correlation analysis, regression analysis and presentation using charts have answered the research questions. Correlation analysis answered the first question on the relationship between variables, the representation using the chart answered the second question on the distribution of the electronic banking platforms and the regression analysis answered the question on the ¹² effect of electronic banking on financial performance of banks.

Study 3: The Influence of Social Media on the Choice Of Restaurants

1. Does social media have any influence on the choice of restaurants?
2. Which social media platform has the greatest impact on the choice of restaurants?

Statistical techniques;

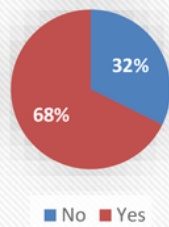
1) Hypothesis testing

H₀: social media influences the choice of a restaurant

²⁷

H₁: social media does not influence the choice of a restaurant

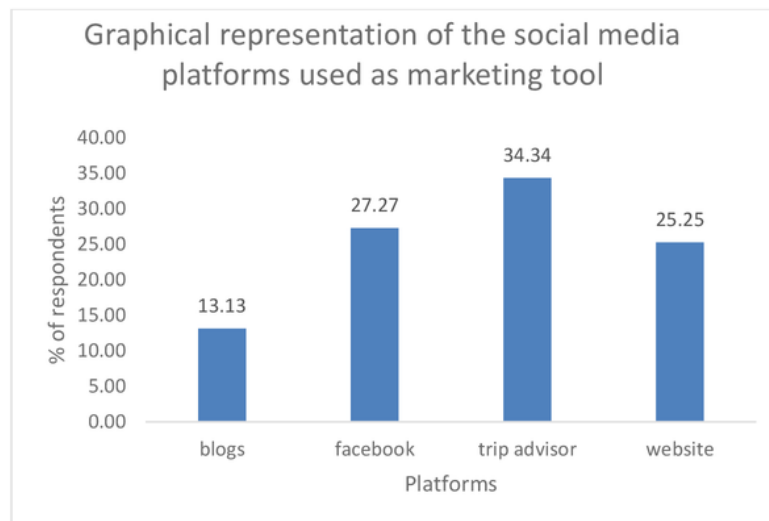
Social media usage platform in choice of restaurant



The chart shows that the number of people who use social media to choose a restaurant are more than those who don't, hence the decision is to accept the null hypothesis and conclude that social media has an effect on the choice of a restaurant. Hence, the first research question is answered.

2) Distribution of social media platforms

Platform	Frequency	Percentage
Blogs	13	13.13
Facebook	27	27.27
Trip advisor	34	34.34
Website	25	25.25
Total	99	100.00



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The graph shows the commonly used social media platforms that restaurants use as marketing tools that was established. It can be seen that most restaurants use trip advisor (34.34%) followed by face book (27.27%), website (25.25%) and finally blogs (13.13%). Trip advisor has the greatest percentage thus the greatest impact. This procedure answers the second research question.

Statistical Discussion

Correlation technique has various strengths and weaknesses as a statistical analysis method. One of its strengths is that the correlation technique helps in understanding the complex relationships between various different variables easily. It can be represented in table form. If these variables are measured in a realistic setting, more can be learnt on how they really work. This technique also helps researchers to make predictions and can help in determining if two or more variables are related or not. It also

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² allows the researcher to investigate variables that are naturally occurring and maybe impractical to test experimentally. It can further be a pointer for more detailed research. This technique has weaknesses and the first major weakness is that ² correlation is not and cannot be taken to imply causation. Even if the analysis shows ¹⁷ that there is strong correlation between the variables being measured, ¹⁹ the researcher cannot assume that one variable causes another. ¹¹ The strong correlation between the variables maybe misleading. ¹¹ Lack of correlation between variables may not mean that there is no relationship between the variables. Correlation also does not allow analysis beyond the given data.

Hypothesis testing also has its strengths and weaknesses as a statistical technique. Hypothesis testing helps in the ⁵ evaluation of two mutually exclusive statements on any research for instance ⁵ a population and determine which statement is the best based on the sample data. It also helps to easily decide which type of data should be collected and which one is irrelevant and should be ignored. It also helps in creating clarity concerning what should be accepted or rejected based on the data. Hypothesis testing further helps the researcher concentrate only on the relevant factors and ignore the irrelevant ones. The first weakness is that the technique is only helps in decision making since ⁹ testing is not decision making itself. The results of the test are also ⁶ based on probabilities and hence cannot be expressed with full certainty. In cases where the sample is small, the statistical inferences that are ¹³ based on the significance tests cannot be said to be entirely correct evidences about the truth of the hypothesis.

Presentation of statistical analysis using graphs, charts and tables has the following strengths and weaknesses. They are useful in grasping attention because the data is visually presented and can easily be read and interpreted. They are also useful in

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cases where there is ¹ a great deal of details that would take a lot of time explaining. In such cases, tables, charts and graphs help ¹⁵ to compact the information to a visual ¹⁰ summation. They are also powerful in visual presentations if it is done effectively. The disadvantages include; ¹⁵ the different formats that can be used in the creation of graphs and charts can make it hard to choose the effective as well as correct one. If too many charts, graphs or tables are used and not well labeled can be confusing, irrelevant and may lack clarity.

In conclusion, statistical tools are used to summarize, describe and compare data. Quantitative data can be summarized in various ways and can be divided into four types, that is, nominal, ordinal, interval and ratio ¹⁰ data. There are various tools that can be used to ¹⁰ analyze statistical data. Descriptive analysis uses specific tools to summarize, describe and compare ¹⁰ data. They include measures of central tendency, percentages and frequency. The measures of central tendency can be represented by the mean which is the average of specified variables, the mode which is the most common variable and the median which refers to the central variable. Percentages show the proportion of each variable and frequency shows the number of times a variable has occurred in a specified data set. In the research studies, the tools are used to analyze the quantitative data and help in answering the research questions. Based on the data, different tools are used. Each tool has a specific purpose and can be used to answer more than one research question. The statistical techniques greatly help in research but they may have weaknesses which can give outcomes which may be irrelevant and unreliable. Data presentation using ¹ graphs, charts and tables, hypothesis testing as well as inferential statistical analysis tests or regression/correlation approaches vary depending on the data being analyzed. The

Age Group	Don't know	Not a good idea	A good idea	A very good idea	A great idea
18-24	17	11	5	6	1
25-34	2	11	5	9	1
35-44	2	11	5	9	1
45-54	2	11	5	9	1
55+	2	11	5	9	1

Christensen, L. B., Johnson, B., Turner, L. A., & Christensen, L. B. (2011). Research methods, design, and analysis.

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² McLeod, S. A. (2018, Jan 14) *Correlation*. Retrieved from <https://www.simplypsychology.org/correlation.html>

¹⁶ Shaffer, J. P. (1995). Multiple hypothesis testing. *Annual review of psychology*, 46(1), 561-584.

²⁴ Sprinthall, R. C., & Fisk, S. T. (1990). *Basic statistical analysis*. Englewood Cliffs, NJ: ⁷ Prentice Hall.

Taylor, J. K., & Cihon, C. (2004). *Statistical techniques for data analysis*. Chapman and Hall/CRC.

ORIGINALITY REPORT

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SIMILARITY INDEX

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