

Usmaan Nasim

ADM 2304 Assignment 3

March 21st, 2013

Professor Patrick

Personal Ethics Statement Individual Assignment: By signing this Statement, I am attesting to the fact that I have reviewed the entirety of my attached work and that I have applied all the appropriate rules of quotation and referencing in use at the Telfer School of Management at the University of Ottawa, as well as adhered to the fraud policies outlined in the Academic Regulations in the University's Undergraduate Studies Calendar. I further attest that I have knowledge of and have respected the "Beware of Plagiarism" brochure found on the Telfer School of Management's doc-depot site.

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3.

Source	SS	DF	MS	F
Income Level	10377.3	2	5188.65	140.42
Gender	681.6	1	681.6	18.45
Interaction	2355.3	2	1177.65	31.87
Error	866.8	24	36.95	
Total	14301.0	29		

a) This is an observational study. The reason behind this is because somebody else collected the data. We will only be observing the results and try to formulate conclusions. On a side note, the data was not manipulated in order to come to certain conclusions.

b) There are a total of 3 income levels

$$\begin{aligned} \text{c) } SST_{\text{Total}} &= SSA + SSB + SSAB + SSE \\ SSE &= SST - (SSA + SSB + SSAB) \\ &= 14301.0 - (10377.3 + 681.6 + 2355.3) \\ &= 866.8 \end{aligned}$$

d) This is a 2 way ANOVA test

H Not: hypothesize that the effect of gender and income level, individually and collectively for online spending during the holidays are the same.

H Alt: hypothesize that the effect of gender and income level, individually and collectively for online spending during the holidays are not the same.

$$\begin{aligned} \text{e) } MSA &= SSA/DF \\ &= 10377.3/2 \end{aligned}$$

$$= 5188.65$$

$$\begin{aligned} \text{MSB} &= \text{SSB}/\text{DF} \\ &= 681.6/1 \\ &= 681.6 \end{aligned}$$

$$\begin{aligned} \text{MSAB} &= \text{SSAB}/\text{DF} \\ &= 2355.3/2 \\ &= 1177.65 \end{aligned}$$

$$\begin{aligned} \text{MSE} &= \text{SSE}/\text{DF} \\ &= 866.8/24 \\ &= 36.95 \end{aligned}$$

$$\begin{aligned} \text{Fa} &= \text{MSA}/\text{MSE} \\ &= 5188.65/36.95 \\ &= 140.42 \end{aligned}$$

$$\begin{aligned} \text{Fb} &= \text{MSB}/\text{MSE} \\ &= 681.6/36.95 \\ &= 18.45 \end{aligned}$$

$$\begin{aligned} \text{Fab} &= \text{MSAB}/\text{MSE} \\ &= 1177.65/36.95 \\ &= 31.87 \end{aligned}$$

Conclusion:

Reject F_a if $F_a > \alpha$
 $140.42 > 3.4$

Therefore we reject the null hypothesis because there is sufficient evidence to suggest that income level affects online spending during the holidays.

Reject F_b if $F_b > \alpha$
 $18.45 > 4.26$

Therefore we reject the null hypothesis because there is sufficient evidence to suggest that gender affects online spending during the holidays.

Reject F_{ab} if $F_{ab} > \alpha$
 $31.87 > 3.40$

Therefore we reject null hypothesis

In conclusion, there is not enough evidence to conclude that gender and income level whether it is individually or collectively affect holiday spending. We reject all three null hypotheses which mean there is large interaction effect. We should not talk about the overall effect of income level and gender but the best approach is to make the discussion specific to the income level and the gender individually.

4.

We perform a generalization Wilcoxon Test because we have more than two independent groups to compare

H not: All three types are related equally

H Alt: All three types are not related equally, at least one of them is different (unsure of which one is different)

Anova results showed that there is a significant difference in the fat content of the three groups. Breeds may have an effect on the fat content of the groups because animals are also falling into different breeds. This will impact our conclusion because breeds of animals will have an impact. Therefore we may be making a conclusion about the difference in fat content by only observing fodders.

In order to improve this test, we should use the randomized block design due to the fact that we can measure how the fodder would affect the fat content under the consideration that we would not be measuring the breeds. We would need to take into consideration that breed may have an impact so that there is a direct link between the breed and the fodder. In conclusion we should restructure the experiment by using randomized block design to display the link between the two factors.