BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF AGRICULTURE AND ENVIRONMENTAL SCIENCE

AGM 415

Department of Agricultural Economics and Extension
BSc. Agricultural Economics and Management Part IV Examination

APPLIED ECONOMETRICS

OCT 2023

3 HOURS (100 Marks)
INSTRUCTIONS

Answer any ***FOUR*** questions. Each question carries **25 marks.**

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1. One of the BSc Agricultural Economics students wanted to determine the factors affecting pig production by small-scale farmers for her research project. She expressed her dependent variable as "number of growers(pigs bred for sale)" whilst predictors were as follows: Membership or belonging to a cooperative, feed type used, access to credit, sex of the household head, use of vaccinations for the pigs and the revenue of the farmer. To explore the relationship between each independent variable and the dependent variables, enter multiple linear regression model was used. The following is the output from SPSS which is a result of regressing the dependent variable against the independent variables.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	
					R Square Change	Sig. F Change
1	.760[a]	.578	.532	27.373	.578	.000

a. Predictors: (Constant), Revenue, Membership, feed type, Sex, CRedits, Vacc

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56422.630	6	9403.772	12.551	.000[b]
	Residual	41209.757	55	749.268		
	Total	97632.387	61			

a. Dependent Variable: GROWERS

b. Predictors: (Constant), Revenue, Membership, feed type, Sex, CRedits, Vacc

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-50.067	14.349		-3.489	.001
feed type	1.423	4.364	-.031	-.326	.746
Sex	17.063	8.534	.214	1.999	.051
Membership	-1.516	10.340	-.019	-.147	.884
Vaccination	3.206	11.119	.037	.288	.007
Credits	3.202	9.965	.039	.321	.749
Revenue	.760	.125	.706	6.062	.000

(a) Formulate the appropriate hypothesis for this study. **[3 marks]**
Number of grower pigs is dependant to these independent variable

b) From the above SPSS output, write down the multiple linear regression equation **[6 marks]**

(c) From the tables above explain factors that affect pig production. **[10 marks]**

(d) Give appropriate recommendations to the policy makers on how they could Improve the pig production based on these results. **[6 marks]**

2. (a) Explain the purpose of R Studio in econometrics. What are the advantages of using R Studio for data analysis? **[10 marks]**

(b) Discuss the process of installing and loading packages in R Studio for econometric analysis. **[15 marks]**

3. (a) Describe how you would use SPSS to test for normality. **[5 marks]**

(b) Describe the consequences of including an irrelevant variable into the "true" regression model. **[20 marks]**

4. (a) Explain the process of creating and labelling variables in SPSS **[15 marks]**

(b) Distinguish between enter and back ward methods in regression analysis **[10 marks]**

5. (a) Explain how to create a scatter plot in SPSS to visualize the relationship between two continuous variables. **[13 mark**

(b) Explain how to generate a histogram in SPSS to examine the distribution of a numerical variable. **[12 marks]**

6. (a) Giving an example what is a reference or base variable **[5 marks]**

(b) Using SPSS give a detailed example explain how you can include a dummy variable in a true regression model **[20 marks]**

End of Paper