EASTERN UNIVERSITY, SRI LANKA

Examination (Insert official title
of the examination, as it appears
at the head of the question paper } ....

Title of paper   COM 3032 Statistical Software Application in Business

Index Number (Write very clearly)   ....

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<tr><td colspan="2">2. Create a folder with your Index No. (eg:COM xxxx)</td><td>02</td><td></td></tr>
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Eastern University Sri Lanka
Faculty of Commerce and Management
Third Year, Second Semester Examination in Bachelor of Business Administration/ Bachelor of
Business Administration (Specialization in Marketing Management)/ Bachelor of Business
Administration (Specialization in Human Resource Management)/ Bachelor of commerce/ Bachelor of
commerce (Specialization in Accounting and Finance)/ Bachelor of commerce (Specialization in
Enterprise Development) 2012/2013 (July/August 2015)
(Proper)

Com 3032 Statistical Software Applications in Business

Answer All Questions.   **Time: 02 Hours**

01.   In a survey pre-test, data were obtained from 45 respondents on Benetton clothes. Using a questionnaire,
       data were collected on the usage, gender, awareness, attitude, preference, intention and loyalty towards
       Benetton of a sample of Benetton users. Usage was coded as 1, 2, or 3, representing light (1), medium (2)
       or heavy users (3). Gender was coded as 1 for females and 2 for males. Awareness, attitude, preference,
       intention and loyalty were measured on a 7-point Likert type scales (1 = Very unfavourable, 7= Very
       favorable). Data are stored in the data file **Benetton.sav.**

a.   Obtain descriptive statistics on the relevant variables and Complete the following tables.

                                                                                        (06 marks)

	Mean	Standard deviation	Skewness	Kurtosis
Awareness				
Attitude				
Preference				
Intention				
Loyalty				

	Light Users		Medium Users		Heavy Users	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Awareness						
Attitude						
Preference						
Intention						
Loyalty						

	Male		Female	
	Mean	Standard deviation	Mean	Standard deviation
Awareness				
Attitude				
Preference				
Intention				
Loyalty				

Using the results of the above tables, describe the extent of favour for awareness, attitude, preferen intention and loyalty towards Benetton of a sample of Benetton users.

(06 Mar

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b. The manager wants to know whether usage and gender are related. (04 Marks)

i) What is the appropriate chart to examine the association between usage and gender?

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ii) Obtain the chart you suggested in part (i) and comment on the association between "usage" "gender".

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c. Last year the awareness was measured as relatively low (3) among customers and therefore Benett conducted a new TV commercial campaign. Now the manager of Benetton expects that the awaren exceeds 3.

(07 Mar

i) What is the appropriate statistical test to conduct?

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ii) Formulate the null and alternative hypotheses to perform the test that you choose in part (i).

Null hypothesis:

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Alternative hypothesis:

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iii) Conduct the test that you choose in part (i) at 0.05% level of significance. State the statistical decision and your conclusion.

Statistical decision:

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Conclusion:

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d. The manager wants to understand whether or not males and females differ in their loyalty for Benetton.

(07 Marks)

i) What is the appropriate parametric statistical test to conduct?

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ii) Formulate the null and alternative hypotheses to perform the test that you choose in part (i).

Null hypothesis:

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Alternative hypothesis:

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iii) Conduct the test that you choose in part (i) at 0.05% level of significance. State the statistical decision and your conclusion.

Statistical decision:

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Conclusion:

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e. The manager is interested in exploring the effect of usage on preference for Benetton. (10 Mark

   i) What is the appropriate parametric statistical test to conduct?

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   ii) Formulate the null and alternative hypotheses to perform the test that you choose in part (i).

   Null hypothesis:

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   Alternative hypothesis:

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   iii) Conduct the test that you choose in part (i) at 0.05% level of significance. State the statisti decision and your conclusion.

   Statistical decision:

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   Conclusion:

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Save the SPSS output file obtained for question 01 with the name **Benetton** into the folder Q 01.

(Total 40 Ma

02. In a study of the relationship between household behaviour and shopping behaviour, data on the follow lifestyle statements were obtained on a seven-point scale (1=strongly disagree, 7=strongly agree)

   v1 - I would rather spend a quiet evening at home than go out to a party
   v2 - I always check prices, even on small items
   v3 - Magazines are more interesting than movies
   v4 - I would not buy products advertised on billboards
   v5 - I am a homebody
   v6 - I save and cash coupons
   v7 - Companies waste a lot of money for advertising

Conduct a factor analysis (use Principal component method for extraction and Varimax method rotation) for the data stored in the file **Behaviour.sav**. Use the results of the analysis to answer following questions.

4

a. Complete the following correlation matrix and interpret the results. (04 Marks)

	v1	v2	v3	v4	v5	v6	v7
v1	1.00						
v2		1.00					
v3			1.00				
v4				1.00			
v5					1.00		
v6						1.00	
v7							1.00

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b. Is the data suitable for the factor analysis? Justify your answer. (04 Marks)

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c. How many factors have been extracted? Justify your answer. (03 Marks)

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d. What percentage of total variance explained by each extracted factor? (02 Marks)

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e. Explain which variables belong to each factor. What would be appropriate labels for the factors extracted? Provide justification for your answer. (06 Mark

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f. Perform the reliability analysis to measure the reliability of scales of the factors extracted. Discuss results obtained. (03 M

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Save the SPSS output file obtained for question 02 with the name **Behaviour** into the folder Q 02

(Total 22

03. The district sales manager for a major auto mobile manufacturer is studying car sales. Specific would like to determine what factors affect the number of cars sold at a dealership. To investig randomly selects 12 dealers. From these dealers he obtains the number of cars sold last mon minutes of radio advertising purchased last month, the number of full time sales people employed dealership, and whether the dealer is located in the city. The information is as follows.

Cars Sold Last Month Y	Advertising X_1	Sales Force X_2	City X_3
127	18	10	Yes
138	15	15	No
159	22	14	Yes
144	23	12	Yes
139	17	12	No
128	16	12	Yes
161	25	14	No
180	26	17	Yes
102	15	7	No
163	24	10	Yes
106	18	10	No
149	25	11	Yes

a. Create a SPSS data file for the above dataset. (04 Marks)

b. Create Numeric codes for the nominal variable, "City", using *Recode into different Variables* option by assigning the following numeric codes. Assign the name for the new recoded variable as X_4. (02 Marks)

City	Yes	No
Numeric Code	1	0

Save the SPSS data file with the name, **carsale.**

c. By performing the appropriate statistical analysis, state which independent variable/ variables have strong correlation with the dependent variable, cars sold. Justify your answer. (02 Marks)

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d. Perform the multiple regression analysis using Y as the dependent variable and X_1 and X_2 as independent variables. Write down the multiple regression equation by using the variables' name mentioned. (02 Marks)

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e. Interpret the coefficient of multiple determination, R^2 for the model obtained. (02 Mar

f. Determine whether there is a significant relationship between the dependent variable Y and the independent variables, X_1 and X_2. Justify your answer. (Use F test from the output table titled ANOVA)

(02 Mar

g. Determine whether each independent variable makes a significant contribution to the regression mo Justify your answer. (Use t test from the output table titled Coefficients) (03 Mar

h. Perform the multiple regression analysis again using y as the dependent variable and X_1, X_2, and X_4 recoded variable of X_3) as independent variables. Write down the multiple regression equation by using variables' name mentioned. (02 Mar

i. How many cars would you expect to be sold by a dealership employing 20 sales people, purchasing minutes of advertising and located in a city? (01 M

j. Write down two separate regression models, based on dealers' location, from the model obtained in part (h). (02 Mar

Model if dealer is located in the city: ....

Model if dealer is not located in the city: ....

8

k. Determine the significant variables that affect the number of cars sold at a dealership. Justify your answer.

(02 Marks)

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Save the SPSS output file obtained for question 03 with the name **carsale** and SPSS data file, carsale into the folder **Q 03.**

(Total 24 Marks)

Q4. A researcher was interested in knowing whether the performance of firms belonging to the automobile sector is independent of the location of the firm. The researcher developed a measure of performance on a nominal scale from 1 to 3: 1 representing loss, 2 break-even and 3 profit. The location of the firm was put in one of the two categories: 1 representing low and middle income countries and 2 representing high income countries. The data on these two variables, collected for a particular year were analyzed and the SPSS outputs are given below.

Case processing summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Location * Performance	45	100%	0	0%	45	100%

Location * Performance Cross Tabulation

			Performance			Total
			1	2	3	
Location	1	Count	6	5	12	23
		Expected Count	5.6	6.6	10.7	23.0
	2	Count	5	8	9	22
		Expected Count	5.4	6.4	10.3	22.0
Total		Count	11	13	21	45
		Expected Count	11.0	13.0	21.0	45.0

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.190^a	2	.552
Likelihood Ratio	1.197	2	.550
Linear-by-Linear Association	104	1	.747
N of Valid Cases	45		

a.   0 cells (0%) have expected count less than 5. The minimum expected count is 5.38.

a.   Name the statistical test from which the above SPSS outputs were obtained.   (02 Mark

....

b.   How many cases considered for the analysis?   (02 Mark

....

c.   State the appropriate null and alternative hypotheses for the above analysis.   (04 Ma

   Null hypothesis:

....

   Alternative hypothesis:

....

d.   What statistical decision can be made at 5% level of significance? State your conclusion.   (04 Ma

   Statistical Decision:

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   Conclusion:

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d.   How do the results from the chi-square test compare to your interpretations based on the Crosstabula
       table?   (02 Ma

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(Total 14 N

*Instruction
       Save folders Q 01, Q 02, Q 03 into the folder named with your index number (MS/COM xxxx)