**ASSIGNMENT 3**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** **Student No.: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Important Instructions to Students:

(1) Due date: *28 Apr 2021, Wednesday*

(2) Please provide your answers **directly** in this file and turn in this file (**Word file**) to lecturer via **Microsoft Teams**.

(3) A manual for preparing and submitting the exercise/assignment via Microsoft Teams has been uploaded as "**Submission Manual. pdf**" both in Learn@PolyU and Microsoft Teams of this subject. Please take a look of the file before doing and turning in your exercise/assignment.

1. A worsted yarn manufacturer wants to determine a price of new yarn according to the prevailing prices of congeneric products in the market. Table 1 shows the prices of eight worsted yarns in the market, together with three parameters of yarn count (Nm), wool portion (%) and color. As a marketing analyst, you are required to establish the relationship between yarn price and these parameters.

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| **Table 1.** Yarn count, wool portion, color and worsted yarn price. | | | |
| Yarn count  (Nm) | Wool portion (%) | Color | Yarn price (HK$) |
| 32 | 30 | 2 | 50 |
| 48 | 30 | 2 | 51 |
| 28 | 50 | 1 | 60 |
| 32 | 50 | 3 | 62 |
| 48 | 50 | 2 | 64 |
| 56 | 50 | 1 | 70 |
| 32 | 70 | 3 | 73 |
| 48 | 70 | 3 | 76 |

Use Stepwise to implement linear regression for the above data and answer the following questions (***Note: Appropriate supporting outputs of SPSS should be included in your answers***):

1. Which variables are included in the final model?
2. Establish a multiple regression equation for the final model.
3. Explain whether the final model has a significant linear relationship.
4. Explain how well of the final regression model.
5. Explain which variable does not have a significant linear relationship with yarn price.
6. If the manufacturer wants to determine a price for his new yarn of 40 Nm, 60% wool and dyed in color 2, what reference price would you like to suggest according to the price of congeneric products in the market?

**Answers:**

Use Bivariate to implement correlation analysis for the above data and answer the following questions (***Note: Appropriate supporting outputs of SPSS should be included in your answers***):

1. What is your conclusion on the relationship between Yarn Price and Yarn Count?
2. Explain which pairs of variable are significantly correlated?

**Answers:**

*NewHorizon*, a marketing research centre, provides unbiased research, analysis and advice to help companies in making strategic decisions. *NewHorizon*’s current project is to submit a report on the recent situation of textile industry in area *X*. As an analyst in *NewHorizon*, you are required to draft the spinning mill section of the report. The statistical data of all the spinning factories in area *X* during 2005 ~2006 have been collected by your team partners. Some of the data are shown in Table 2. The whole version of data is available on Teams/Blackboard:“**Spinning Mills.sav**” under the “SPSS Data” folder.***Note: Appropriate supporting outputs of SPSS should be included in your answers.***

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| Table 2. Part of the statistical data of the spinning factories in area *X* during 2005~2006. | | | | | | | |
| Factory | Spindle Number  (x1000) | Staff Number | Business Area  (km2) | Product  (m$/year) | Export  (m$/year) | Gross Profit  (%) | Net Profit  (%) | |
| 1 | 47.46 | 122 | 9.87 | 36.31 | 12.27 | 6.62 | 2.59 | |
| 2 | 37.06 | 150 | 9.87 | 37.01 | 8.86 | 11.27 | 3.86 | |
| 3 | 34.39 | 151 | 9.67 | 32.23 | 10.86 | 6.46 | 2.09 | |
| 4 | 93.45 | 279 | 10.65 | 49.10 | 21.96 | 13.50 | 6.13 | |
| 5 | 43.90 | 160 | 9.98 | 40.23 | 11.84 | 5.72 | 1.82 | |
| 6 | 53.60 | 214 | 8.82 | 43.35 | 11.04 | 6.72 | 2.27 | |
| 7 | 70.10 | 264 | 9.39 | 53.53 | 40.01 | 13.67 | 4.80 | |
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1. Group the spinning mills into 4 clusters according to their Spindle Numbers and Gross Profits by using “TwoStep Cluster Analysis” function of SPSS. Generate proper tables and figures to support your answers on the following questions.
2. Interpret the findings of the spinning mills clustering.
3. Give a brief evaluation on the clustering results.

**Answers:**

1. In order to reduce the complexity/size of your statistical data, you need to conduct the Factor Analysis (using “Varimax” rotation method) to uncover fewer latent/underlying factors for all seven variables. Use proper tables and figures to support your answers on the following questions.
2. Explain suitability of the Factor Analysis for your case.
3. How many underlying factors are extracted for your data? Give a brief evaluation on the factor extraction result.
4. Interpret the findings of factor loadings with respect to the original seven variables and name the extracted factors by your own words.

**Answers:**

In order to study the consumers’ attitude and behavior in purchasing brand sports products towards to the celebrity endorsement, a FYP project was conducted in ITC. Parts of the questionnaire and survey data are extracted for your following SPSS analysis. The data file is named as “**Survey Data.sav**” and questionnaire file is named as “**Questionnaire.pdf**”. Both files are available at Teams/Blackboard under the “SPSS Data” folder. ***Note: Appropriate supporting outputs of SPSS should be included in your answers.***

1. Report the findings of reliability analysis for the 5-items questionnaire (i.e. items 2.1, 2.2, 2.3, 2.4 and 2.5), as listed in section 2 (Consumer buying intention) of the “Questionnaire.pdf”.

**Answers:**

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