

**School of Marketing  
Faculty of Business, RMIT**

**PR220: Property Data Analysis II**

**ASSIGNMENT TWO (Group Assignment)**

**Due Date: Wednesday 20th October, 1999.**

This assignment will contribute  
**15%** to the final mark.

<b>Note:</b> Assignments will be accepted up to 29th October 1999 without penalty. Assignments will not be accepted after this date.
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**Part A (6 marks)**

**Multivariate Analysis**

**This part should not exceed 4 pages in total.**

The task of your group is to investigate the following areas of multivariate statistics:

**Factor Analysis and Principal Components Analysis**

Your report should include:

- (i) An explanation of each technique.
- (ii) A discussion on when it is appropriate to use each technique.
- (iii) A review of some **general** areas of application for these techniques and provided some examples of how they may be employed in a **property** environment. In the latter case, these examples may be taken from the literature you have examined or they may be developed by your group.

The report may be technical or non-technical in nature and should be typed, double spaced with a one inch margin on all sides. It should contain an annotated bibliography of all references used. The bibliography should be in alphabetical order and fully specify each reference (an example of referencing may be found in most textbooks).

The following text has been placed in the Central Library on Counter Reserve to provide an introduction to the area.

Hair, Jr., J.F., R.E., Anderson, R.L., Tatham, & W., Black, 1998, Multivariate Data Analysis, Fifth Edition, Prentice Hall.

Students are expected to locate appropriate references for this assignment.

**This part of the assignment should not exceed 5 pages in total.**

**Forecasting Apartments rented in the city of Melbourne**

This data is included in your textbook pp. 478.

Data for the number of apartments rented each year by a property manager are as follows:

1984	1	654	1992	9	701
1985	2	658	1993	10	703
1986	3	665	1994	11	702
1987	4	672	1995	12	710
1988	5	673	1996	13	712
1989	6	671	1997	14	711
1990	7	693	1998	15	728
1991	8	694			

- (i) Chart the data and recommend the most appropriate forecasting model. Provide a forecast for 1999 and 2000.

To forecast this data choose the best two models from among the following:

Naive  
Moving Average  
Weighted Moving Average (WMA)  
Single Exponential Smoothing Model  
Double Exponential Smoothing (Holts) model.  
Decomposition Model (DECOMP)

Plot the *best* two models with the actual data on the same chart

To assist in the determination of the best forecasting model(s) use the error statistics presented in the model validation section of your text (pp. 455-458).

Use the **Solver** Add-in in Excel to obtain the optimal weights for the WMA model and the smoothing parameters for the exponential smoothing models.

All of these models, together with spreadsheet examples, are available in your textbook. The data and spreadsheets from the text are available at the web site:

**<http://www.bf.rmit.edu.au/quant>**

- (ii) Assuming the data represents apartments rented in the inner city and city-fringe areas of Melbourne, discuss the environment for "apartments rented" over the next two years. What do you believe to be the major factors impacting on this industry and how will these factors affect it in the future?
- (iii) Use a regression trend equation and combine this model with the best model from (ii). Are the results from this model satisfactory?

You are reminded that the due date for this assignment is:

**Wednesday 20th October, 1999**