CAA GLOBAL

EXAMINATION

19 May 2021 (am)

Module 5: Models and Audit Trail

Time allowed: Three hours and fifteen minutes

INSTRUCTIONS TO THE CANDIDATE

1. You are given this question paper and an Excel file.

2. Mark allocations are shown in brackets.

3. Attempt all questions. Questions are to be answered as per 'exam requirements'.

If you encounter any issues during the examination please contact the Examinations team at
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Background

The management of InvestX, an investment company, are reviewing how trainee investment analysts are rewarded for passing investment exams.

In order to qualify as an investment analyst, trainees are required to first pass five technical exams followed by two specialist exams and finally one final exam. Trainees must take the exams in order.

Each year the Investment Analyst Institute publishes data on the salaries of trainee investment analysts from a number of different firms. The management of InvestX are concerned that salary data from last year suggests that their recently qualified investment analyst salaries have fallen behind the equivalent salaries for their competitors.

To address this they are considering different approaches to increasing the pay bands so that the salaries of recently qualified investment analysts at the firm, i.e. those who have passed all eight exams, are in line with the mean salary from the equivalent industry wide data.

New trainees at all firms start on a basic salary of $20,000 per annum and receive a pay rise for each exam pass. The level of these pay rises is determined separately by each investment firm.

At InvestX, students receive a raise of $1,000 for passing each technical exam, $2,000 for each specialist exam and $4,000 for passing the final exam. While the basic salary for new trainees is reviewed regularly, the pay rises for passing each exam have not been reviewed for a number of years.

In order to align the recently qualified investment analysts salaries at InvestX with the market survey data, two alternative approaches are being considered:

- Increasing the pay rise for each exam by a fixed monetary amount.
- Replacing the current fixed monetary pay rises with rises that are expressed as a percentage of current salary, with an $x\%$ increase in salary for passing each technical exam, $2x\%$ for each specialist exam and $4x\%$ for the final exam.

Your boss has asked you to build a model to illustrate the difference between the survey data, the current and two proposed trainee pay scales. To support your analysis, management have provided you with salary data for 300 trainee investment analysts at different stages through their exams from the Investment Analyst Institute.

Part 1

(i)   Construct a spreadsheet model to include separate worksheets for the 'Data', 'Data Analysis', 'Parameters', 'Base', 'Fixed Increase', 'Percentage Increase', 'Results' and any other worksheets as required.   [2]

(ii)   Perform a range of checks on the data provided to check the validity of the data, and comment on whether the data appears to be reasonable. For example, check that there are no extreme salaries. You are not required to make any alterations to the data.   [5]

(iii)   Calculate the mean salary for trainee investment analysts who have passed only one exam in the 'Data Analysis' worksheet.   [3]

(iv)   Construct a summary table of the mean salary for trainees at each stage through their exam progression from zero to eight exam passes, by repeating the calculations in (iii).   [3]

(v)   Summarise the results from part (iv) to show the proportion of the total salary increase awarded for passing all eight exams between the technical, specialist and final exams.
                                                                         [3]

(vi)   Calculate the trainee investment analyst salary after each exam pass from zero to eight based on the current pay rise information provided by management, in the 'Base' worksheet.   [3]

(vii)   Summarise the results from part (vi) to show the proportion of the total salary increase awarded for passing all eight exams between the technical, specialist and final exams.
                                                                         [2]

(viii) Determine the fixed additional monetary amount to be added to each of the current pay rises so that the salary after passing the final exam is equal to the mean salary for trainees who have passed all eight exams in the industry survey data. Record your work on the 'Fixed Increase' worksheet.   [4]

(ix)   Summarise the results from part (viii) to show the proportion of the total salary increase awarded for passing all eight exams between the technical, specialist and final exams.   [1]

(x)   Determine the percentage addition to salary required for each exam pass, as described in the Background document, so that the salary after passing the final exam is equal to the mean salary for trainees who have passed all eight exams in the industry survey data. Record your work on the 'Percentage Increase' worksheet.   [5]

(xi)   Summarise the results from part (x) to show the proportion of the total salary increase awarded for passing all eight exams between the technical, specialist and final exams.
                                                                         [1]

(xii)   Construct a chart in the 'Results' worksheet to show the future expected salaries under the current and two alternative scenarios considered relative to the mean salary for each exam pass in the industry data.   [3]

(xiii) Construct a chart in the 'Results' worksheet to compare the proportion of the total salary increase awarded for passing all eight exams between the technical, specialist and final exams for each of the current salary increases, the two alternative pay increase scenarios and for those observed in the mean industry data. [3]

Marks available for:

- Model accuracy, completeness and good modelling techniques [38]
- Reasonableness and automated checks, other than in part (ii) [4]

[Sub-total 42]

Part 2

You need to document all your work in an audit trail so that a fellow analyst student (with similar experience to yourself) could:

- peer review and check your model
- continue to work on your model
- run your model on different assumptions, or extend your model to allow for extra data fields or scenarios.

Your audit trail should include the following aspects:

- the purpose of the model
- any assumptions you have made
- any limitations of your assumptions or of the model
- your methodology, i.e. a description of what you have done, and how and where in the model you have done it
- an explanation of all the checks you have performed
- a description of the charts you have produced.

The audit trail should be in a separate Word document.

Marks available for audit trail:

Audit approach

- Fellow analyst student can review, check and modify the model   [8]
- Written in clear English   [4]
- Written in a logical order.   [3]

Audit content

- All model steps accurately covered   [21]
- All checks clearly recorded   [8]
- All steps clearly explained   [8]
- Clear signposting and labelling.   [6]

[Sub-total 58]
[Total 100]

END OF PAPER