T Level Technical Qualification in Digital Business Services

Occupational specialism assessment (OSA)

Core skills

Data Technician

Mark scheme

NCFE

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Data Technician

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Assignment

Contents

Marking guidelines

General guidelines

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all students, who must receive the same treatment. You must mark the first student in exactly the same way as you mark the last.

The mark scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.

Reward students positively giving credit for what they have shown, rather than what they might have omitted.

Utilise the whole mark range and always award full marks when the response merits them.

Be prepared to award 0 marks if the student's response has no creditworthy material.

Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.

If you are in any doubt about the application of the mark scheme, you must consult with your team leader or the chief examiner.

Guidelines for using extended-response marking grids

Extended-response marking grids have been designed to award a student's response holistically for the relevant task or question and should follow a best-fit approach. The grids are broken down into bands, with each band before determining the mark.

Depending on the amount of evidence that the task produces, the grids will either be a single, holistic grid that covers the range of relevant performance outcomes (POs), and will require you to make a judgement across all the evidence, or they will consist of multiple grids, that will be targeted at specific POs, and will require you to make a judgement across all the evidence in relation to that particular grid in each case, therefore, making multiple judgements for a single task to arrive at a final set of marks. Where there are multiple grids for a particular task, it is important that you consider all the evidence against each of the grids, as although the grids will focus on particular POs, awardable evidence for each grid may come from across the range of evidence the student has produced for the task.

When determining a band, you should look at the overall quality of the response and reward students positively, rather than focussing on small omissions. If the response covers aspects at different bands, you should use a best-fit approach at this stage and use the available marks within the band to credit the response appropriately.

When determining a mark, your decision should be based on the quality of the response in relation to the descriptors. Standardisation materials, marked by the chief examiner, will help you with determining a mark. You will be able to use exemplar student responses to compare to live responses, to decide if it is the same, better or worse.

To support your judgement, the indicative content is structured in such a way that mirrors the order of the different points within the band descriptors. This will allow you to use the 2 in conjunction with each other by providing examples of the types of things to look for in the response, for each descriptor. In other words, the indicative content provides you with a starting point of possible examples and the bands express the range of options available to you in terms of the quality of the response. You should apply the standards that have been set at relevant standardisation events in a consistent manner.

You are reminded that the indicative content provided under the marking grid is there as a guide and, therefore, you must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks.

Task 1

How the evidence produced for this task relates to the performance outcome (PO) mark schemes

The following is a list of the evidence produced for this task, which references the performance outcomes (POs) where this evidence is expected to be relevant for marking:

- selected data sets relevant to the project brief (PO3)

- a single written proposal covering all 3 parts of task 1 – parts A (PO1), B (PO3) and C (PO5) – that includes the information described in the instructions

PO1: Source, organise and format data securely in a relevant way for analysis

Band	Mark	Descriptor
4	13–16	The student provides a response to the task that: • demonstrates excellent identification of relevant wide-ranging data sources, ensuring the information generated fully meets the needs of the business within the scenario • identifies an exceptional variety of data sources that could be used to formulate trends and patterns • includes clearly formatted tables and charts to an appropriate number of significant figures
3	9–12	The student provides a response to the task that: • demonstrates good identification of suitable data sources – information meets the needs of the business within the scenario • identifies a good variety of data sources that could be used to formulate trends and patterns • includes reasonably formatted tables and charts to an appropriate number of significant figures
2	5–8	The student provides a response to the task that: • demonstrates sufficient identification of suitable data sources – information meets some of the needs of the business within the scenario • identifies a reasonable variety of data sources identified and selected • includes adequately formatted tables and charts

Band	Mark	Descriptor
1	1–4	The student provides a response to the task that: • demonstrates minimal identification of suitable data sources – selected data meets few of the needs of the business within the scenario • identifies a limited variety of selected data sources • includes untidy tables and charts
0	0	No creditworthy material.

Indicative content

Marks should be given for the following indicative content; plus, any other suitable responses a student may produce that are relevant to the grading bands against this PO.

Marks should be given where the student's proposal highlights identified business objectives and tasks required to meet the stated objectives – this should include sources of data selected from the internet research requirement appropriate to the task, cited within the proposal with an accompanying explanation as to why they are appropriate, as explained in part A of task 1 – for example, marks can be allocated for how well a student responds to each of the following:

• what apprenticeship qualifications are available in England

• the most popular apprenticeships

• the average age of apprentices

• the geographic locations of the most popular apprenticeship qualifications (this can include cities)

Market research will consist of historical figures or projections from a credible source. Credible sources will reference where data is from, and articles will be dated. Opinions should only be considered if they are written by industry experts. Wikipedia and other pages which can be contributed to by the public should not be referenced, unless the original source is referenced.

Sources for research could include the following, but note that this is not an exhaustive list, and research in its nature may include sources that have not been listed here. When this is the case, and the research is relevant and meaningful, and meets the requirements outlined above, it should be awarded credit as appropriate.

Potential research sources:

• HM Government's Apprenticeship website (www.apprenticeships.gov.uk)

• search for 'Apprenticeship' through Indeed.com (https://uk.indeed.com/jobs?q=apprenticeship)

• apprenticeship data catalogue at gov.uk (explore-education-statistics.service.gov.uk/data-catall've ogue/apprenticeships-and-traineeships/2021-22)

The data should be presented in tables or graphs, and some metrics could be:

• location

• apprenticeship type

• apprenticeship duration

However, as long as their work is relevant to these areas of coverage, marks should be awarded.

PO3: Analyse structured and unstructured data to support business outcomes

Band	Mark	Descriptor
4	7–8	The student provides a response to the task that shows: • the relevant data meets the needs of the business within the scenario and the proposal clearly relates to the business objectives and client goals • thorough understanding of the business scenario problems, which is fully relevant to the business within the scenario • a completely correct identification of all the data sets
3	5–6	The student provides a response to the task that shows: • identification and application of data meets the needs of the business within the scenario and sufficiently relates to the business objectives and client goals • good understanding of the business scenario problems, which is mostly relevant to the business within the scenario • a mostly correct identification of all the data sets
2	3–4	The student provides a response to the task that shows: • information meets some of the needs of the business within the scenario and adequately relates to the business objectives and client goals • some understanding shown of the business scenario problems, which may meet some of the client's needs • a somewhat correct identification of all the data sets
1	1–2	The student provides a response to the task that shows: • information selected meets few of the needs of the business within the scenario and has little relevance to the business objectives • a lack of understanding of the problems and/or objectives of the scenario • identification of one or two correct data sets
0	0	No creditworthy material.

Indicative content

Credit should be given for the following indicative content; plus, any other suitable responses a student may produce that are relevant to the grading bands against this PO. The student should select data from the data sets provided that relate to the business objectives within the scenario. The list below explains which data sets are suitable and should, therefore, be selected. Marks should be awarded for recognising relevant data sets as described in the grade bands, but not allocated individually for each correct identification as described below:

- annual_full-time_gross_pay_by_occupation.xls – this data set is appropriate for the business objectives as it shows occupation pay to track higher paid roles, and identifies where potential opportunities could be to introduce apprenticeship courses that could act as feeders into that sector

- average_weekly_earnings_by_industry.xls – this data set will allow the student to highlight the preferred industry

- growth_in_gross_weekly_full-time_earnings_by_occupation.xls – this data set is appropriate for the business as it will allow for forecasting to happen for industry growth

- median_hourly_earnings_(excluding overtime)_by_age_and_gender.xls – this data set is appropriate for tracking the skills gap

- marks should be allocated for how closely the student classifies the data specific to the business objectives within the scenario – any valid reasoning that can be related to the business objectives should be credited

The student can provide their written proposal in a variety of styles and should be awarded marks where they provide a rationale of their approach to source and identify sources of data, as part of the research required by part A of this task (this is different to PO1 in which the student must show why they selected specific data from their research). For this PO, they should be awarded marks for how they selected the provided data sets in relation to solving the business problem.

The student should be awarded marks if they have shown that they understand the value of data to the client's business, particularly in relation to the scenario brief and the client's objectives, such as:

- age demographics
- apprenticeship type
- apprenticeship location
- geographical location

PO5: Can apply legal, ethical and professional principles when manipulating data

Band	Mark	Descriptor
4	13–16	The student provides a response to the task that shows: • excellent and extensive identification of suitable data processing regulations and guidelines in line with the data sets, showing excellent awareness of which regulations should be used in the context of the provided datasets • thorough understanding of security controls and data handling both generally and specific to the scenario, with appropriate and detailed recommendations included in the proposal
3	9–12	The student provides a response to the task that shows: • good identification of data processing regulations and guidelines in line with the datasets, showing good awareness of some regulations that should be used in the context of the provided data sets • good understanding of security controls and data handling both generally and specific to the scenario, with appropriate recommendations included in the proposal
2	5–8	The student provides a response to the task that shows: • adequate identification of most suitable regulatory and data handling regulations, showing some awareness of some regulations in the context of the provided datasets • sufficient understanding of security controls and data handling both generally and specific to the scenario, with some recommendations included in the proposal
1	1–4	The student provides a response to the task that shows: • minimal identification of current regulatory and data handling regulations or legal considerations • little understanding of security controls and data handling either generally or specific to the scenario, with few recommendations included in the proposal
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the PO being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement that students must cover all of the indicative content to be awarded full marks for this outcome.

The student's proposal references issues that are likely to include correct definitions for:

- GDPR
- The Data Protection Act 2018

Marks should be awarded for inclusion and explanation of the key principles of data security, such as:

- lawfulness, fairness and transparency
- purpose limitation
- data minimisation
- accuracy
- storage limitation
- integrity and confidentiality

How they will ensure that those regulatory needs are met could include:

- regular checks with removal of inaccurate data and non-relevant data
- encrypting the data

Students may reference security measures, such as firewalls and passwords, which are less relevant to the protection of the data itself but can be awarded some credit. Potential security risk controls could include:

- encryption, hashing or any other relevant control

Marks should also be awarded where student identifies that the 'Current_learners.xls' dataset is highly sensitive.

Task 2

How the evidence produced for this task relates to the performance outcome (PO) mark schemes

The following is a list of the evidence produced for this task, which references the performance outcomes (POs) where this evidence is expected to be relevant for marking:

- single joined data set (PO1, PO2 and PO3)

- decision log of processes and steps taken as described in the instructions for both parts A and B (PO1, PO2 and PO3)

PO1: Source, organise and format data securely in a relevant way for analysis

Band	Mark	Descriptor
4	13–16	The student provides a response to the task that shows: • exceptional use of data cleansing and validation of data (parts A and B), recognising most or all of the errors in the dataset • thorough understanding of the appropriateness of the data for meeting the specified business scenario and objectives (part A) • exceptional use of data manipulation and transformation (parts A and B) with correct formulae used in context
3	9–12	The student provides a response to the task that shows: • effective use of data cleansing and validation of data (parts A and B), recognising many of the errors in the dataset • clear understanding of the appropriateness of the data for meeting the specified business scenario and objectives (part A) • good use of data manipulation and transformation (parts A and B) with mostly correct formulae used
2	5–8	The student provides a response to the task that shows: • acceptable level of data cleansing and validation of data (parts A and B), recognising some of the errors in the dataset • adequate understanding of the appropriateness of the data for meeting the specified business scenario and objectives (part A) • some use of data manipulation and transformation (parts A and B) with some correct formulae used

Band	Mark	Descriptor
1	1–4	The student provides a response to the task that shows: • limited use of data cleansing or validation of data (parts A and B) • basic understanding of the appropriateness of the data, which will be used for the specified business scenario (part A) • limited use of data manipulation and transformation (parts A and B) with few correct formulae used
0	0	No creditworthy material.

Indicative content

Students should be awarded marks for recognising the following data cleansing points for each dataset:

Current learners.xls:

- incorrect and missing column names for both location and email address

- email addresses are located out of the table, which means it is not listed within the dataset

- column 'Ageing' should be replaced by 'age'

Annual gross pay by occupation.xls:

- 'Senior police officers' and 'Physical scientists' have multiple values and are not required with this form of duplication

- missing column names for A and B

- column B holds irrelevant data for the dataset and is not required – unstructured and shows no meaning

- total cell is meaningless when the dataset is to show the average per occupation

- the median salary is in USD and not GBP

The final dataset should show the student recognises most or all of the above points to achieve the top band.

All data cleansing should be evidenced by appropriate code or formulas. This list of example formulae is not exhaustive and is provided as a guide. It should be used as a reference across all POs when they are required. The list is not provided with an expectation that a student would use any particular number or range of the formulae, but rather credit should be awarded for appropriate use to meet the requirements of the brief. A student may reach their conclusion without using any of these formulae and can be awarded credit accordingly if their outcome is successful. All equivalents in other software and languages should be equally credited. Some examples of Excel formulae include:

- INDEX(…)

- MATCH(…)

- VLOOKUP(…)

- AVERAGE(…)

- SUM(…)

- COUNT(…)

- UPPER(…)

- LOWER(…)

- UNIQUE(…)

- LEFT(…)

- LEN(…)

- RIGHT(…)

- SUMMARISE(…)

PO2: Blend data from multiple sources

Band	Mark	Descriptor
4	16–20	The student provides a response to the task that shows: • datasets are blended into a clean, unified structure that is verified and free from error • exceptional use of data manipulation, taking into account how the information will be usable for future tasks • thorough understanding of the identification of appropriate data within data sets for blending purposes • exceptional identification of keys
3	11–15	The student provides a response to the task that shows: • datasets are blended into a unified structure with minimal errors or omissions • effective use of data manipulation • good identification of appropriate data within datasets to blend • good identification of keys
2	6–10	The student provides a response to the task that shows: • datasets are blended into a unified structure with some errors and omissions • reasonable use of data manipulation • adequate understanding and ability to identify appropriate data within datasets to blend • sufficient understanding of keys
1	1–5	The student provides a response to the task that shows: • a basic attempt has been made to blend the datasets, but has unsuccessfully achieved a unified structure • limited use or evidence of data manipulation • basic understanding and ability to identify appropriate data within datasets to blend • minimal understanding of keys
0	0	No creditworthy material.

Indicative content

Students should be awarded credit for their blending of data as part of the creation of the single joined dataset in part A, and their identification of keys as part of their response to part B (although they do not need to blend this data as part of part B).

Part A

Students should be awarded marks if they have aggregated the data from the Median_hourly_earning_by_age.xls and Prov – age_by_occupation_soc10 Table 20.12 Gender_pay_gap_2021.xls datasets by those under the age of 30. They should provide in code how they did this. They should calculate aggregate statistics for the gross pay by occupation and sector. Consideration of placement within the higher mark bands if they provide a single dataset for qualification per region under the age of 30.

The final data set should look similar in content and appearance to the single data set, which will be provided for students to work with for task 3.

The single datasets should be at industry sector level and include data from each public dataset. If the student has created custom columns, they should appear in this final data set.

Students should also be awarded marks if they have recognised the correct primary keys in each dataset:

- age, median pay, sector, occupation or region

All data joining should be evidenced by appropriate code or formulas.

This list of example formulae is not exhaustive and is provided as a guide. It should be used as a reference across all POs when they are required. The list is not provided with an expectation that a student would use any particular number or range of the formulae, but rather credit should be awarded for appropriate use to meet the requirements of the brief. A student may reach their conclusion without using any of these formulae and can be awarded credit accordingly if their outcome is successful.

All equivalents in other software and languages should be equally credited. Some examples of Excel formulae include:

- INDEX(…)
- MATCH(…)
- VLOOKUP(…)
- AVERAGE(…)
- SUM(…)
- COUNT(…)
- UPPER(…)
- LOWER(…)
- UNIQUE(…)
- LEFT(…)
- LEN(…)
- RIGHT(…)
- SUMMARISE(…)

Part B

Students should be awarded marks if they recognise that the dataset is at third normal form (3NF) as it meets the conditions of second normal form (2NF) and there is no transient dependency.

They should correctly identify the keys in the internal data as so. Each key should have a valid explanation.

- annual_gross_pay_by_occupation.xls:
  - occupation.xls (column A) – primary key
  - number (column B) – no key
  - median – no key
- apprenticeship_demographics.xls:
  - time period – no key
  - time identifier – no key
  - geographic level – no key
  - country code and country name – no key
  - Lad code – no key
  - Lad name – primary key
  - ssa_t1_desc – primary key
  - gender – no key
  - ethnicity – no key
  - apps_levels – no key
- current_learners.xls:
  - first name and surname – no key
  - aging (age) – no key
  - address – primary key
  - email address – primary key
- median_hourly_earning_by_age.xls:
  - age – primary key
  - 1975,2015,2020 – primary key

PO3: Analyse structured and unstructured data to support business outcomes

Band	Mark	Descriptor
4	13–16	The student provides a response to the task that shows: • excellent knowledge of general data principles • excellent data manipulation skills with minimal or no errors • excellent application of a data validation template with entry restrictions and correct data formats
3	9–12	The student provides a response to the task that shows: • good knowledge of general data principles • good data manipulation skills with some minor errors • good application of a data validation template with mostly correct data formats
2	5–8	The student provides a response to the task that shows: • adequate knowledge of general data principles • sufficient data manipulation skills but with one or two major errors • adequate application of a data validation template with some correct data formats
1	1–4	The student provides a response to the task that shows: • minimal knowledge of general data principles • few data manipulation skills with major errors • minimal understanding of a data validation template
0	0	No creditworthy material.

Indicative content

The following information should be used to assist in determining the band achieved within the PO being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome.

Part A

In the joined data set, students should be awarded marks if they recognise that ages above 30 years old are not applicable to the business context and that median hourly earnings for 1975 and 2015 can be ignored. These numbers are subjective to the client brief and should be considered with a justified response.

Any calculations should be credited provided they could provide insight to the business and loosely help with the business objectives.

Some example calculation methods could include but are not limited to:

- percentage

- mean

- sum

This list of example formulae is not exhaustive and is provided as a guide. It should be used as a reference across all POs when they are required. The list is not provided with an expectation that a student would use any particular number or range of the formulae, but rather credit should be awarded for appropriate use to meet the requirements of the brief. A student may reach their conclusion without using any of these formulae and can be awarded credit accordingly if their outcome is successful. All equivalents in other software and languages should be equally credited. Some examples of Excel formulae include:

- INDEX(…)

- MATCH(…)

- VLOOKUP(…)

- AVERAGE(…)

- SUM(…)

- COUNT(…)

- UPPER(…)

- LOWER(…)

- UNIQUE(…)

- LEFT(…)

- LEN(…)

- RIGHT(…)

- SUMMARISE(…)

Part B

Students should be awarded marks if they have completed the following:

- data validation template should include correct formats for each variable (numeric, character):

  o primary key should have a unique entry restriction

- current_learners.xls formatted consistently with part A

- outliers are removed from annual_gross_pay_by_occupation.xls as 3 are duplicated entries and occupations that will not relate to the client brief – director roles should be discounted due to the nature of apprenticeship qualifications

- irrelevant data is removed from the apprenticeship_demographics.xls as there are multiple areas that are not required as part of the analysis

Task 3

How the evidence produced for this task relates to the performance outcome (PO) mark schemes

The following is a list of the evidence produced for this task, which references the performance outcomes (POs) where this evidence is expected to be relevant for marking:

- a dashboard for your client containing detailed information, including trends and patterns you have identified, which help the client towards their business objectives (PO4, PO6)

- a written log containing decisions about selected data to represent, insights and how it relates to the clients' brief (PO3, PO4, PO6)

- evidence that an appropriate statistical test has been completed (PO3)

In this task students are not required to clean and blend the data but can do so to help with their dashboard creation. Students have already been credited for the data blending in task 2 so no additional credit is awarded in task 3. The datasets provided are all clean. The individual datasets are provided as some students may prefer to make a dashboard using automatic relationships from the base datasets as opposed to a single file. If the students are unable to complete task 2, then they need a single dataset so they can complete task 3, which has been provided.

PO3: Analyse structured and unstructured data to support business outcomes

Band	Mark	Descriptor
4	7–8	The student provides a response to the task that shows: • excellent use of statistical methods, and algorithms, with trends and patterns in data identified, fully relevant to the business objectives • exceptional understanding of an evaluation metric with relevant conclusions drawn from it • exceptional understanding of selected statistical test that clearly shows why it is appropriate for the context
3	5–6	The student provides a response to the task that shows: • good use of statistical methods, and algorithms, with trends and patterns identified within the data • good understanding of an evaluation metric with conclusions drawn from it, which may have some relevance • good understanding of selected statistical test with a basic understanding of the context

Band	Mark	Descriptor
2	3–4	The student provides a response to the task that shows: • adequate use of statistical methods, and algorithms, with trends and patterns identified in data • sufficient understanding of an evaluation metric but not necessarily with any relevant conclusions drawn • sufficient understanding of selected statistical test but not in the context of the brief
1	1–2	The student provides a response to the task that shows: • minimal use of statistical methods, and algorithms, with trends and patterns in data minimally identified • minimal understanding of an evaluation metric, with no conclusion drawn • basic understanding of selected statistical test
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the PO being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement that students must cover all of the indicative content to be awarded full marks for this outcome.

Students will use statistical methods to identify trends or patterns in the data, for example:

• regression:

  o there should be a brief explanation that regression is used to fit a line to the data

• correlation:

  o there should be a brief explanation that a correlation test is used to determine the strength of the correlation

• evaluation metrics may include:

  o regression – mean absolute error (MAE) or relative mean absolute error (RMSE); both should be minimised to infer a stronger correlation – both evaluation metrics are acceptable

• Pearson's r or R2 – Pearson's r should be in the range -1 to 1; the absolute value determines the strength of the correlation; R squared is the coefficient of determination that also shows the strength of correlation, but will be affected more by outliers in the data – it has a range from 0 to 1; both evaluation metrics are acceptable

Conclusions drawn will focus on the evaluation metric and how it relates back to the data. Students are not marked on the evaluation metric being correctly calculated but the explanation and conclusions they draw from it.

PO4: Interpret data and communicate a result appropriate to the audience

Band	Mark	Descriptor
4	16–20	The student provides a response to the task that shows: • dashboard layout and appearance is excellent and very clearly and effectively presented • excellent choice of appropriate visualisation type that accurately reflects sound and relevant interpretation of the relevant data • log comprehensively details information on selected techniques
3	11–15	The student provides a response to the task that shows: • dashboard layout and appearance is good with clear and reasonably effective presentation • good choice of appropriate visualisation type that accurately reflects good and mostly relevant interpretation of the data relevant data • log clearly details information on selected techniques
2	6–10	The student provides a response to the task that shows: • dashboard layout and appearance is adequate with some effective presentation used • satisfactory choice of appropriate visualisation type that somewhat accurately reflects reasonable and somewhat relevant interpretation of the data relevant data • log sufficiently details information on selected techniques
1	1–5	The student provides a response to the task that shows: • dashboard layout and appearance is basic and, at the lower end of the band, is unclear and ineffective • minimal choice of appropriate visualisation type that may not always accurately reflect relevant interpretation of the data relevant data • log details minimal information on selected techniques
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the PO being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome:

Students should be credited on their ability to interpret and tell a story through the data.

Selected communication techniques for this outcome relate specifically to the relevant inclusion of suitable visualisations and their aesthetics. The dashboard should include pivot tables and pivot charts (or the equivalent of) that could consist of:

- filters
- sliders
- tables

The following layout should be adhered to:

- titles and axes should be capitalised where appropriate
- variable names should not include acronyms unless very obvious
- there should not be too many visualisations on one screen
- it should not include any technical terms

The log has appropriate content and detail on the visualisation techniques selected, such as:

- pie charts should not be used with too many unique values
- bar charts should only include numeric data
- filters should be used to switch quickly between categorical variables
- sliders should be used only for numeric variables

PO6: Discover, evaluate and apply reliable sources of knowledge

Band	Mark	Descriptor
4	10–12	The student provides a response to the task that shows: • excellent evaluation of the sources, through comprehensive explanation behind the choice of underlying data behind visualisations backed by sound logic and reasoning • comprehensive explanation of how the visualisations are appropriate to the client's objectives • visualisation requirements have been substantially fulfilled
3	7–9	The student provides a response to the task that shows: • good evaluation of the sources, through good explanation behind the choice of underlying data behind visualisations backed by some good logic and reasoning • clear explanation of how the visualisations are appropriate to the client's objectives • visualisation requirements have been fulfilled to a good standard
2	4–6	The student provides a response to the task that shows: • some evaluation of the sources, through adequate explanation behind the choice of underlying data behind visualisations backed by some logic and reasoning, which is not always effective • adequate explanation of how the visualisations are appropriate to the client's objectives • visualisation requirements have been sufficiently fulfilled
1	1–3	The student provides a response to the task that shows: • limited evaluation of the sources, through basic explanation behind the choice of underlying data behind visualisations with poor reasoning • basic explanation of how the visualisations are appropriate to the client's objectives • visualisation requirements have been minimally fulfilled
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the PO being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all the indicative content to be awarded full marks for this outcome.

Students should be credited for their conclusions that must match the trends and insights that the data is showing and reflect an effective evaluation of the data in order to effectively communicate the conclusions.

A decision-making log that accounts for the student's reasoning and rationalisation on the selection of visualisations, such as:

- high-level sales statistics by various customer attributes, for example:

  o age

  o gender

  o location

- appropriate demographics of areas they may wish to target – this may include:

  o industry

  o sector

  o apprenticeship type

  o location

- any other visualisations that are backed by a valid business reason

Students should mention:

- a correct explanation of the insights each visualisation provides

- an appropriate explanation of how the visualisations are appropriate to the client's objectives

Task 4

How the evidence produced for this task relates to the performance outcome (PO) mark schemes

The following is a list of the evidence produced for this task, which references the performance outcomes (POs) where this evidence is expected to be relevant for marking:

- a screen presentation with voice recording to include:

  o visualisations of completed analysis showing observed trends and patterns via the use of graphs and charts (PO4, PO6)

  o recorded accompanying narrative with explanations, insights and purpose of visualisations, all aligned to the client brief (PO4, PO6)

In this task the PO4 mark scheme is focussed on the outward communication of the data 'story' to an audience, whereas the PO6 mark scheme is focussed on the ability of the student to reach a relevant and meaningful conclusion, for example, that what the student is saying is backed up by the data.

PO4: Interpret data and communicate a result appropriate to the audience

Band	Mark	Descriptor
4	16–20	The student provides a response to the task that shows: • excellent presentation techniques to communicate results clearly and effectively • exceptional use of communication formats targeted specifically for the client • a comprehensive ability to interpret data in a way that fully aligns to a specific business context
3	11–15	The student provides a response to the task that shows: • good presentation techniques to communicate results with some effectiveness • good use of communication formats targeted specifically for the client • a good ability to interpret data in a way that substantially supports a specific business context
2	6–10	The student provides a response to the task that shows: • satisfactory presentation techniques to communicate results, but may not always be effective • adequate use of communication formats targeted specifically for the client • a satisfactory ability to interpret data that mostly supports a specific business context

Band	Mark	Descriptor
1	1–5	The student provides a response to the task that shows: • basic presentation techniques to communicate results, which may not communicate the message • poor use of communication formats targeted specifically for the client • a limited ability to interpret data that may or may not support a specific business context
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the PO being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement that students must cover all of the indicative content to be awarded full marks for this outcome.

The presentation follows the different steps through which the raw data becomes meaningful, represented in graphics and presented visually for the business scenario, telling the story using data points.

The presentation should be presented clearly and professionally demonstrating the ability to:

- inform

- reflect

- question

- develop a narrative

- draw a conclusion

- provide recommendations

- convey technical insights in an accessible way

The students should communicate their interpretations with confidence. They should use their dashboard to convey key insights to the audience.

For this PO they are being marked on their ability to deliver insights and conclusions using data and visualisations. The students are not being marked on the commercial viability of the conclusions themselves, but marks must be awarded on the ability to interpret and tell a story through the data and convey a conclusion.

PO6: Discover, evaluate and apply reliable sources of knowledge

Band	Mark	Descriptor
4	10–12	The student provides a response to the task that shows: • excellent use of critical thinking that is applicable for a digital business context with recommendations that address all the business objectives and more • highly sophisticated use of evaluation techniques that support the digital business context • thorough understanding of the appropriateness of the selected information and its legitimate use
3	7–9	The student provides a response to the task that shows: • good use of critical thinking that is applicable for a digital business context with recommendations that address most of the business objectives • good use of evaluation techniques to support the digital business context • good understanding of the appropriateness of the selected information and its legitimate use
2	4–6	The student provides a response to the task that shows: • some evidence of critical thinking that is applicable for a digital business context with recommendations that address one of the business objectives • reasonable use of evaluation techniques to support the digital business context • adequate understanding of the appropriateness of the selected information and its legitimate use
1	1–3	The student provides a response to the task that shows: • minimal evidence of critical thinking that is applicable for a digital business context and will have little relevance to the business objectives • limited use of evaluation techniques to support the digital business context • limited understanding of the appropriateness of the selected information and its legitimate use
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the PO being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement that students must cover all of the indicative content to be awarded full marks for this outcome.

The presentation will match specific business needs and requirements. The explanations should relate back to the business objectives.

The students should state if they agree or disagree with what the client said about their business evidenced by data and visualisations.

For this PO, the students are being marked on the quality of their conclusions that must match the trends and insights that the data is showing. Students are not being marked on the quality of their dashboard. There are many valid conclusions that the students can provide. For example, a student may decide that the client should promote and sell the certain types of electric vehicles based on the availability of chargers, the charging time and costs of the different products.

Marks should be awarded for:

- including the top 10 geographical locations for hubs in England or multiple hubs in one location focusing on different sectors, such as engineering and how digital reasoning has been shown

- the apprenticeship type that should be chosen for the respected hubs and the industries to focus on

- stating whether or not there is a clear difference in salaries between the West Midlands and the North East of England

- what industries to avoid due to a large gender pay gap

Any additional valid recommendation should be credited.

Performance outcome (PO) grid

Task	PO1	PO2	PO3	PO4	PO5	PO6	Total
1	16		8		16		40
2	16	20	16				52
3			8	20		12	40
4				20		12	32
Total marks	32	20	32	40	16	24	164
% weighting	19.5%	12%	19.5%	24%	10%	15%	100%

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Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Additional sample material		01 February 2023
v1.1	Minor amendments to improve clarity of task 1		01 September 2023
v1.2	Sample added as a watermark	November 2023	24 November 2023