taxGUIDEfisc

# NOTE ON TAXATION DATA ANALYTICS AND INFORMATION SYSTEMS (DAIS)

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"The main changes to the *2019 CPA Competency Map* are the:
- incorporation of data analytics and information systems (DAIS) competencies in each of the six technical competency areas
- revision to the taxation competency area"

**Data Analytics and Information Systems (DAIS)**

Data Analytics and Information Systems (DAIS): "Includes concepts associated with data analytics and information technology and is pervasive throughout the competency map. [...] The complete list of knowledge items in this area has been reproduced below so that users can understand the full spectrum of knowledge required in this area." (CPA Canada. *CPA Competency Map*, 2019, p.137).

| ***Knowledge Topics - Data Analytics and Information Systems (DAIS)*** |
|---|
| 1. Systems concepts |
| 2. Presentation of information for decision making |
| 3. Value of information and information systems to organizations |
| 4. Types of systems organizations need to provide information to meet their objectives |
| 5. Quality of information for decision making |
| 6. Data and information modelling |
| 7. Management of information systems infrastructure and architecture |
| 8. Systems life cycle |
| 9. Risks and Controls |

Source: CPA Canada. *CPA Competency Map* (2019, p.137).

"Note that there is not as separate section for these knowledge items within the competency map itself but rather the competencies, learning outcomes and knowledge items are integrated throughout the existing six technical competency areas." (CPA Canada. *CPA Competency Map*, 2019, p.137).

**Data analytics and information systems (DAIS) - Knowledge and Competency**

Taxation - Reporting Systems and Data Requirements

| *Knowledge Topic* | *Entry* | *Core* | *Elective* | *Competency* |
|---|---|---|---|---|
| **Taxation - Reporting Systems and Data Requirements** | | | | |
| a) Types of systems organizations need to provide information to meet their objectives | C | C | B | 6.1.2 Assesses reporting systems, data requirements, and business processes to support reliable tax compliance |
| b) Dimensions of information quality - relevance, ease of use, integrity, timeliness | C | B | A | |
| c) Types of data and their attributes (nature, sources, format, timing, extent and level of aggregation) | C | B | A | |
| d) Tax compliance technologies | C | C | B | |

Source: CPA Canada. *CPA Competency Map* (2019, p.130).

The June 2018 document *The CPA Competency Map Update Outreach Package* describes the changes on new data analytics and information systems (DAIS) additions in taxation (p.20). Another competency (#1.1.4, p.15) was included in the June 2018 document, but is not included in the *2019 CPA Competency Map* final version.

| ***Taxation Competency*** | *Entry* | *Core* | *Elective* |
|---|---|---|---|
| 6.1.2 Assesses reporting systems, data requirements, and business processes to support reliable tax compliance | C | B | A |
| *Learning outcomes* | Explains the importance of reliable tax data obtained from transaction processing systems | Identifies key tax data inputs and systems controls to ensure compliance with regulatory requirements | Assesses adequacy of data inputs and systems reliability controls to ensure tax compliance |

Source: CPA Canada. *The CPA Competency Map Update Outreach Package* (June 2018, p.20).

**Categories of data**

Data Analytics may be defined as the science of examining raw data with the purpose of drawing conclusions and insights about that information with queries and data aggregation procedures.

Categories of data include:
(CPA Canada. Audit Data Analytics, *Audit Data Analytics Alert*, June 2016, p.5)

- financial, non-financial
- structured, unstructured
- accounting process and control-related
- product/service categories
- demographic
- economic
- geographic
- business sector
- regulatory
- historic
- forward-looking
- time-sensitive
- meta data (e.g. file labels, record formats, access and other authorization codes)
- 'Big Data'

**Categories of analytics**

Categories of analytics include (with various degree of complexity):
(CPA Canada. Audit Data Analytics, *Audit Data Analytics Alert*, June 2016, p.7)

| | Primary emphasis |
|---|---|
| - Predictive analytics | What might happen? |
| - Diagnostic analytics | Why did it happen? |
| - Descriptive analytics | What happened? |

**Dimensions of information quality**

Dimensions of information quality includes relevance, ease of use, integrity, timeliness.

Relevance, reliability, availability have been described in the context of audit data analytics
(CPA Canada. Audit Data Analytics, *Audit Data Analytics Alert*, June 2016, p.5).

| | |
|---|---|
| Reliability | "Data are accurate, complete and reflect the substance of underlying subject matter to an extent consistent with the objective of the ADA." |
| Relevance | "Data have a significant bearing on achieving an objective of the ADA being performed." |
| Availability | "Data needed to perform the ADA can be obtained or accessed in a cost-effective timely manner." |

Also: Ease of use, Integrity, Timeliness

**Types of data and their attributes**

Types of data and their attributes includes nature, sources, format, timing, extent and level of aggregation (CPA Canada. Audit Data Analytics, *Audit Data Analytics Alert*, June 2016, p.5-6).

Nature
- numerical
- text
- other characters (e.g., symbols)

Sources
- internal
- external

Format
- structured
- unstructured

Timing
- past, current, expected future
- point in time
- period of time
- rate of change (e.g., time lags, continuity)

Extent
- volume
- variety of underlying subject matters and sources
  (e.g., demographic, weather, geolocational)

Level of aggregation
- financial data
  - meta data
  - database fields
  - database fields (e.g., GL detail, chart of accounts, trial balance, source listing)
  - classes of transactions
  - financial statement item
- other data including 'Big Data'
  - raw situation data
    (e.g., customer activity from customer relationship management (CRM) system)
  - descriptive information (e.g., quality metrics)
  - summarized data (e.g., research reports)

**Types of systems organizations need to provide information to meet their objectives**

* Types of systems

    Accounting systems

* Objectives

    SR&ED information (T661)

    Product/service categories (GST/HST)

    Information return for registered charities (T3010)

    Transfer pricing

**Technologies and Tools**

Tax compliance technologies
- tax softwares
    - professional softwares (ex: Cantax, TaxPrep, Profile)
    - personal tax softwares (ex: turbotax, Studiotax)
- tax returns transfer (ex: E-File)

Tax planning technologies
- expert systems
- AI Artificial intelligence application

Tax research technologies
- commercial tax services (ex: CPA Canada, WoltersKluwer, Carswell)
    - annotated commentary
    - jurisprudence
- internet based service