The Institute of Internal Auditors Australia

Factsheet: Data Analytics and Continuous Control Monitoring

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What are they?

Data analytics (DA) and continuous control monitoring (CCM) are not new concepts. Internal auditors and business units have been using DA for many years to test controls and validate business progress.

The appeal of CCM has been rising in recent years. This is because when organisations invest in significant levels of DA to assist the internal audit function or the business as a whole, the next logical step is to make the process more organisationally holistic, and repeatable over time. This demand for increased analytics has been driven by the big data[1] phenomenon brought about by increased online services. As analytics maturity rises within organisations the 'repeatable over time' continuum moves to a more continuous arrangement.

Once organisations have established a foundation of significant analytics that are repeatable either in the internal audit plan, or within a business function, the natural next step is to implement a more frequent process. Where this occurs within the internal audit function to collect evidence and other indicators, the nature of analytics is called continuous audit. Where repeatable analytics occur as a feedback mechanism as part of management responsibilities, the nature of analytics is called CCM. This factsheet does not discuss continuous audit.

Why do it?

There are many good reasons.

- Interrogate 100% of data
- Continuous real-time feedback
- Detect data anomalies and fraud
- Encourage root cause analysis to drive correction and improvement
- Provide insights to management to aid informed decision-making

Who should own each?

The question of ownership depends on the nature of the organisation, and the maturity within business units to champion DA or CCM. Ownership generally goes with those who benefit the most from the outputs and outcomes. Traditionally DA is owned by either internal audit or management, dependent on the end user of the analysis.

CCM by its very nature is traditionally owned by management. It is more often a feedback mechanism used by management to ensure controls operate as expected and can form an important element of the internal control environment.

Contrasting Benefits

Both DA and CCM provide significant benefit for internal auditors and business unit managers. The need to protect and enhance organisational value by both these groups means new ways of identifying trends and opportunities are increasingly popular. They allow historical, real-time or predictive insight into business and control issues. The different skills sets, outcomes and investment needed of each largely determine the value an organisation will achieve from each.

DA has the benefit of being able to quickly identify and assess a particular business or control issue. This allows for timely reporting to line management, senior management, and those charged with oversight. A problem or business issue can be articulated and the relevant data sources analysed and compared to produce a DA outcome.

DA benefits include:

- Can access and analyse data from many disparate sources.
- Scripted routines allow analysis independent of the systems and people being audited.
- Sampling is redundant with 100% transaction coverage possible with unlimited file sizes.
- Data integrity is maintained through logical control ensuring read-only data access.
- Automated audit trails document steps taken.
- Test logic is captured with scripting and batching techniques.
- Results are achieved in a short period of time.
- Allows for quantification of control weaknesses.

CCM is a more investment heavy process that requires risk assessment, planning, review and cross-business line support. The processes subject to CCM are often the more stable and mature controls within an organisation. Automating analytics processes in the form of CCM brings additional benefits including:

1 Big data refers to data sets so that large traditional analytics approaches need to be re-thought.

- Improved financial and operating controls.
- Rapid decision-making and business improvement.
- Real time response to real-time issues.
- Implementing automated detective controls.

The maturity of an organisation's use of analytics tends to go from simple DA through to CCM, with a number of interim capabilities along the journey.

Simple Data Analytics	Repeatable Data Analytics	Centralised Analysis	Continuous Auditing	Continuous Control Monitoring
Time consuming to define and construct.	Requires more skill to define and construct than simple data analytics. Pre-defined scripts are developed to perform the same test.	Development, storing and running of repeatable analytics is managed centrally. Dedicated hardware may be utilised.	Perform audit related data analytics tasks in a continuous manner for example security event monitoring, compliance control testing	Requires very skilled practitioners to script and implement.
Data typically supplied by information technology workgroup. technology workgroup.	Data typically supplied by information technology workgroup, but imports are usually automated.	Data imports are automated.	Data typically supplied by information technology work group, but imports are usually automated.	All analytics and imports are fully automated.
Not repeatable if not thoroughly documented.	Good documentation allows for repeated use.	Standards are in place for script software quality, including development and testing of scripts, and sample logic.	Continuous.	Continuous.
Outcomes often not predetermined, so more exploratory by nature. documented.	Outcomes over time can also be compared and be subjected to further analysis.	Data input fields are secured along with analytics outputs.	Outcomes over time can also be compared and be subjected to further analysis.	Exceptions automatically sent to pre-determined business unit managers. Often dashboard or web-based interface to track remediation.

Considerations when thinking about venturing into this area

The journey from simple DA to complex repeatable and CCM is not easy. Despite the clear benefits of a comprehensive repeatable set of analytics, organisations can struggle with implementing effective enterprise-wide initiatives.

Areas for special consideration include:

1. Articulating an organisational risk tolerance level and what internal or external forces cause it to change. These factors are fundamental to a CCM solution.
2. Understanding the organisation's risk profile so appropriate monitoring can be put in place. What should be monitored? Which metrics should be collected? What is normal and what is an exception?
3. What rate of monitoring should be employed given organisational capability to respond? Is continuous realistic?
4. How often to revisit CCM capabilities to deal with changed business circumstances, new business capabilities, and emerging threats?
5. Capacity to scale CCM to cover the entire organisation. Organisations need to be realistic about how much coverage can be achieved with a given budget and stated objectives for organisation risk tolerance.

A successful CCM program will include proper risk assessment to identify the risks needing to be monitored. It will take into account existing controls and evaluate residual risk after existing controls are applied. Analytics will be focused on both specific transactional and process risks, as well as information technology general controls that protect the overall integrity of organisation systems.

Summary

DA and CCM are not new concepts and the appeal of automating analytics to CCM is clear. Once organisations have established a foundation of significant analytics that are repeatable the natural next step is to implement a more frequent process. This can take the form of repeatable DA, continuous audit, or a wider reaching CCM program.

Many organisations have embarked on the DA/CCM journey which over time have faltered or been reprioritised. The IIA-Australia's White Paper 'A Conceptual Framework for Effective Audit Analytics' suggests a series of five 'rights' to consider to ensure analytics programs are successful.

Ownership of CCM is generally assigned to those who benefit the most from the outputs and outcomes. If the owner is internal audit, then the process may simply be limited to continuous audit.

Both DA and CCM provide significant benefit for internal auditors and business unit managers. Simple DA have the benefit of being able to quickly identify and assess a particular business or control issue, while automating analytics processes in the form of CCM brings additional organisation benefits through repeatable and comparable coverage over time.

The journey to CCM is not easy and despite the clear benefits of having a comprehensive repeatable set of analytics, many organisations struggle with implementing effective enterprise-wide initiatives.

A successful CCM program will include proper risk assessment and will take into account existing controls. Analytics will be focused on risks with an objective of protecting the overall integrity of transactions and processes.

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Definitions

Continuous Control Monitoring / Continuous Auditing – When an organisation has established a foundation of data analytics that are repeatable, either in the internal audit plan or within a business function, the natural next step is to implement a more frequent or real-time process. Where this occurs within the internal audit function to collect evidence and other indicators, the nature of analytics is called continuous auditing. Where the repeatable analytics occur as a feedback mechanism as part of management responsibilities, for example in finance, the nature of data analytics is called continuous control monitoring.

Data Analytics – Used to test controls and validate that business risks are managed. This would generally occur at a point-in-time when an assurance activity is scheduled. Rather than test a number of transactions, the entire population of transactions can be reviewed for greater coverage. Data analytics includes automated tools such as generalised audit software, test data generators, computerised audit programs, specialised audit utilities, and computer-assisted audit techniques (CAATs).

Data Mining – An efficient way for analysing large amounts of data through data manipulation techniques for example filtering, sorting, pivot tables and formulas to pinpoint areas requiring additional audit focus and identifying trends and abnormalities for detailed testing.