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IMPORTANT NOTICE

THE 2015 BENCHMARKING STUDY WAS CONDUCTED BY THE EDM COUNCIL ON BEHALF OF ITS MEMBERSHIP. THIS REPORT (AND THE ACCOMPANYING DATA FROM WHICH IT WAS DERIVED) IS INTENDED SOLELY FOR THE INTERNAL USE BY THE EDM COUNCIL AND ITS MEMBERS. NO INFORMATION CONTAINED IN THIS REPORT MAY BE RE-USED OR REDISTRIBUTED OUTSIDE OF MEMBER ORGANIZATIONS WITHOUT THE PRIOR CONSENT OF THE EDM COUNCIL.
EXECUTIVE SUMMARY
DATA MANAGEMENT TAKES A BIG STEP FORWARD

Data management as a control function has gained a strong and sustainable foothold in the financial industry. It has been propelled forward by the regulatory requirements associated with linked risk analysis, stress testing and transparency. Beyond regulation, data is also understood as an underlying factor of input into business operations and essential in order to facilitate process automation, support financial engineering and enhance analytical capabilities.

There is no question about it – the foundational levels of governance required to establish data management on a sustainable basis are coming together. Data executives have been hired and given the authority they need to drive these initiatives forward. The financial industry is now standing at the precipice of turning that “data management commitment” into action. Many firms are in the midst of writing internal policies and standards needed to embed data management into the fabric of their organizational operations.

The good news from the benchmarking study is that we are overcoming the organizational barriers required to enable data management as a sustainable activity.

The more challenging news stems from the fact that the scope of the task is significant. Financial institutions are complex organizations who are forced to deal with the intricacies of financial engineering, the need to unwind technical legacy and the pressures of volatile global business environments. We are still working to untie the “Gordian knot” and dedicating resources to unraveling lineage, inventorying content, identifying critical data, adopting standards and mapping systems.

Harmonization of meaning across thousands of repositories and implementing control processes needed to ensure trust in data resources remain as daunting challenges.

This is a watershed moment but there is no getting around the inherent difficulties associated with either altering organizational behavior or managing wholesale transformation of the data content infrastructure. And while the challenges are real, the global financial industry has clearly taken a giant step closer to achieving a data management control environment.

Congratulations on your progress!
The 2015 benchmarking survey has been extracted directly from the Data Management Capability Assessment Model (DCAM) – a set of standard criteria used to measure data management functions and processes.

The survey covered 21 of the most critical concepts related to effective data management including the adoption of data quality processes; the implementation of standards needed to achieve data comparability across the financial system; the establishment of strong governance to ensure successful data integration; and the ability to aggregate data needed by regulators in order to monitor threats to stability across the global financial system.

The benchmarking questionnaire was broadly distributed to representatives from the sell-side (banking), buy-side (asset management) and insurance sectors across the global financial industry. The Council received 234 qualified responses from 128 financial institutions. Participants were grouped by size, function and geography. Responses were evaluated based on data management program scope, program drivers, governance experience, functional area and where data management resided in the organizational structure of the respondent.

Sell Side: broker/dealers, central banks, commercial banking, custodians, government sponsored enterprises, investment banking, retail/consumer banking, universal banking

Buy Side: asset servicing, fund managers, investment/wealth management

Insurance: including insurance line-of-businesses within universal banks and other conglomerates
TOP LINE OBSERVATIONS

Observation 1: Foundational levels of governance are in the process of being established
• Data owners (i.e. chief data officers, or CDOs) have been hired and tasked with addressing the gaps and challenges associated with data management
• The “Office of Data Management” has become an official control function with defined processes and has been provided with both the executive air cover and authority required to integrate data management into the organizational environment
• Seed funding is in place to get data management programs underway

Observation 2: Changing organizational behavior is difficult
• Data policies are in the midst of being created but are undergoing rigorous scrutiny because the adoption of policy mandates compliance (and many firms would not be in compliance with their adopted policies)
• Data stewardship and accountability are defined and in the process of being integrated into the operational processes of the organization
• Business buy-in is still tentative because many firms are benefiting from seed funding to get their data management programs underway

Observation 3: Implementation of the data management content infrastructure remains a priority
• Unraveling lineage, mapping complex data flows, separating data attributes from calculation processes and building data inventories are huge tasks that require time and cross functional collaboration
• Adopting unique identifiers and harmonization of content to precise contractual meaning across hundreds of repositories is in process but remains a daunting challenge
• Critical data attributes have been defined but not fully inventoried or aligned with compounding processes

Observation 4: Data quality control procedures needed to ensure trust in data remain elusive
• Profiling and current-state assessments needed to prioritize remediation are not very advanced
• Data quality control processes including the adoption of business rules and the establishment of authorization points are still in the early conceptual stages of development
• The industry is still relying on tactical “find” and “fix” approaches to data reconciliation
The Data Management Strategy defines the framework for the data management program including the goals, objectives and scope; why it is important; how it will be organized, funded, governed and practically implemented.

**Business Case & Funding Model:** provides the justification for the data management program including the rationale for the investment; the costs, benefits, risks and expected outcomes; the mechanism used to ensure sufficient allocation of resources; and the approach used to measure costs and contributions from implementation of the data management program.

**Data Management Program:** identifies the organizational requirements needed to stand up a sustainable data management program including the operational framework to ensure sustainability and authority as well as the mechanisms to establish and confirm stakeholder engagement related to program implementation.

**Data Governance:** defines the rules of engagement necessary for program implementation including the definition of policies, procedures and standards as the mechanisms for alignment among stakeholders.

**Data Architecture:** focuses on the core concepts of “data as meaning” and how data is defined, described and related; the identification of logical domains of data; identification of the underlying physical repositories; and the governance procedures necessary to ensure the control and appropriate use of data.

**Technology Architecture:** addresses the relationship of data with the physical IT infrastructure needed for operational deployment including how data is acquired, stored, distributed and integrated across the organization.

**Data Quality:** establishes the concept of fit-for-purpose data; defines the processes associated with establishing data control; and addresses the implementation of governance mechanisms for management of the data manufacturing chain of supply.

**Control Environment:** defines the data lifecycle process and how data content management is integrated into the overall organizational “ecosystem.”
## SURVEY METHODOLOGY AND QUESTIONS

To perform the benchmarking study, a team of EDM Council members extracted 21 of the core concepts related to effective data management.

### SURVEY QUESTIONS

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>DCAM CROSS-REFERENCE</th>
<th>CRITERIA</th>
<th>IMPORTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1: Our organization has a defined and endorsed data management strategy</td>
<td>Capabilities 1.1 and 1.2</td>
<td>The data management strategy formally exists and defines how the organization will approach the management of data content in a way that is meaningful to business stakeholders</td>
<td>The data management strategy defines the goals of the data management program, articulates how it will be implemented and is used to ensure alignment and commitment across the organization. This is important because it gives stakeholders confidence in both the program objectives and in the plan for practical implementation.</td>
</tr>
<tr>
<td>Question 2: Stakeholders understand [and buy into] the need for the data management program</td>
<td>Capabilities 3.3 and 3.4</td>
<td>There is an internal understanding and alignment on the goals, objectives, approaches and value of the data management program among all relevant stakeholders</td>
<td>It is essential that stakeholders understand the “what” and “why” of data management as well as fully buy into the critical importance of harmonized data and alignment to business meaning. Without this fundamental capability, it will be an ongoing challenge to get the participation, cooperation and resources needed for sustainable data management.</td>
</tr>
<tr>
<td>Question 3: The goals, objectives and authorities of the data management program are well communicated</td>
<td>Capabilities 1.7 and 3.5</td>
<td>The data management organization is effectively communicating the value proposition, operational implications and the compliance authority associated with the data management program</td>
<td>The concept of managing “data as meaning” is not always well understood nor easily distinguished from the IT function of data processing. Robust communication programs are essential tools to drive awareness, ensure compliance and to appropriately position data management as part of the operating culture of complex and interdependent organizations.</td>
</tr>
<tr>
<td>Question 4: The funding model for the data management program is established and sanctioned</td>
<td>Capabilities 2.1 and 2.2</td>
<td>A sustainable funding model (with buy-in from funding decision stakeholders) is in place and it addresses both current and multi-year considerations</td>
<td>There is no single model for funding data management initiatives – it all depends on the dynamics and operational culture of the firm. Industry experience suggests that initial funding as an enterprise expenditure goes a long way toward eliminating business unit competition and helps avoid the drawbacks of short-term measurement criteria.</td>
</tr>
<tr>
<td>Question 5: The costs of (and benefits associated with) the data management program are being measured</td>
<td>Capability 2.3</td>
<td>Costs and benefits of the data management program are being formally captured and used to evaluate the effectiveness of the program</td>
<td>A standard (and accepted) methodology for capturing both expenses and financial benefits of the data management program is necessary for both benchmarking and organizational buy-in. Criteria beyond standard ROI is likely needed to account for data-related interrelationships and organizational dependencies.</td>
</tr>
<tr>
<td>Question 6: The data management program is established and has the authority to enforce adherence</td>
<td>Capability 3.1</td>
<td>The data management program is established as an organizational function (with support from senior management) and has the authority to enforce adherence to policy</td>
<td>The function of the data management program is to integrate the concepts of data management into the organization. The program should be established as a formal and independent entity. The goal is the creation of an operational framework to ensure sustainability and to establish enforcement authority associated with the principles and practices of sound data management.</td>
</tr>
<tr>
<td>Question 7: The data management program is sufficiently resourced</td>
<td>Capability 3.4</td>
<td>Resources required to deliver a sustainable data program have been approved and acquired</td>
<td>Effective data management requires the participation and commitment from a variety of people and functions. Many of those are outside of the data management program organizational structure. All those identified as aligned with data management program objectives need to be held accountable to project delivery with funds, staff resources and appropriate skill sets.</td>
</tr>
</tbody>
</table>
### Survey Methodology and Questions: Survey Questions

<table>
<thead>
<tr>
<th>Question</th>
<th>DCAM Cross-Reference</th>
<th>Criteria</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 8: Data governance structure and authority is implemented and communicated</td>
<td>Capabilities 4.1, 4.4 and 4.5</td>
<td>The governance structures and operating model components of the data management program (i.e. executive owner, PMO) have been implemented and are operational. Stakeholders are held accountable for their engagement in the program.</td>
<td>Governance is the organizational key to effective data management. Strong governance is needed as the mechanism for stakeholder collaboration in the midst of conflicting operational priorities. Governance is about establishing the policies, controls, procedures and standards needed to truly achieve a “data control environment.” Without formalization, empowerment and clear lines of authority - data management is unlikely to become operational or sustainable.</td>
</tr>
<tr>
<td>Question 9: Governance “owners” and “stewards” are in place with clearly defined roles and responsibilities</td>
<td>Sub-capability 4.1.4</td>
<td>Governance roles have been identified, formally specified and assigned.</td>
<td>Enterprise governance structure refers to the functional mechanism used to implement the data management program. The organizational structure needs to be developed with clearly defined roles, visible assignment of responsibilities and effectively monitored processes to ensure accountability. Individuals must be appointed in business lines and given both responsibility (stewards) and authority (owners/sponsors) for data management objectives.</td>
</tr>
<tr>
<td>Question 10: Data policies and standards are documented, implemented and enforced</td>
<td>Capability 4.3</td>
<td>Policies and standards have been verified by stakeholders, approved by governing bodies and are enforceable by audit (or an equivalent review function) (</td>
<td>Data management is governed by policy and implemented via data standards. They define how the organization will control data including how it is acquired, managed, maintained and delivered across the enterprise. Policy and standards are the most basic (and essential) tools for addressing core issues such as data definitions, lineage, metadata, ownership, quality control, access rights, permitted use and sourcing.</td>
</tr>
<tr>
<td>Question 11: The “end user” community is adhering to the data governance policy and standards</td>
<td>Sub-capabilities 4.5.1 and 4.5.2</td>
<td>End users (across lines of business and including technology and operations) are adhering to the established data policy and standards.</td>
<td>Policy and standards must be enforced in a controlled manner via checkpoints, formal review mechanisms and organizational approval boards. Implementation must be supported by established processes and routines in partnership with audit. Lack of adherence to policy is a significant enough issue that it is normally elevated as a formal audit finding that must be resolved.</td>
</tr>
<tr>
<td>Question 12: The business meaning of data is defined, harmonized across repositories and governed</td>
<td>Capability 5.2</td>
<td>The unambiguous shared definition of data has been defined, verified and captured as operational metadata.</td>
<td>Data that populates the repositories of financial institutions represents real “things” (i.e. terms, conditions, triggers, requirements, obligations, etc.) that have precise contractual meaning. Ensuring that all data is aligned to common meaning is an essential requirement for achieving automation, performing complex analytics and generating trusted reports. This is one of the essential goals of data management and the building block of most financial processes.</td>
</tr>
<tr>
<td>Question 13: Critical data elements are identified and managed</td>
<td>Sub-capability 4.2.2</td>
<td>Critical Data elements (CDEs) have been identified, verified and catalogued.</td>
<td>Critical data elements (CDEs) are the granular data building blocks that are used to support important business applications and functions. These applications must be unraveled to understand what data is used, its precise meaning and how it is assembled. CDEs must be identified, located and catalogued to ensure proper sourcing, unravel lineage, facilitate comparability and evaluate usage.</td>
</tr>
<tr>
<td>Question 14: Logical data domains have been declared, prioritized and sanctioned</td>
<td>Capability 1.3 and Sub-capabilities 4.2.1, 5.1.1 &amp; 5.1.2</td>
<td>Logical data domains (i.e. logical categories of data vs. physical databases) have been defined and catalogued.</td>
<td>Logical domains of data represent the data (rather than the databases) that are needed to satisfy business requirements. Identification of these domains must be driven from the perspective of business requirements. These logical domains need to be linked to their physical repositories and associated with their authorized distribution points. Both the logical domains (designation) and physical locations (inventory) are needed to ensure proper usage.</td>
</tr>
</tbody>
</table>
### SURVEY METHODOLOGY AND QUESTIONS: SURVEY QUESTIONS

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>DCAM CROSS-REFERENCE</th>
<th>CRITERIA</th>
<th>IMPORTANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 15: Technology standards and governance are in place to support data management objectives</td>
<td>Sub-capability 6.1.3</td>
<td>Internal technology governance is aligned with the objectives of the data program. IT governance is coordinating with data governance</td>
<td>Technology architecture in this context refers to the design and implementation of the underlying physical infrastructure to support the data management program. This question focuses on the alignment of the IT platforms and tools with the data that is needed for identified applications, where it needs to be delivered and the SLAs associated with timing requirements. The goal is alignment of IT governance with the data content requirements of the financial institution.</td>
</tr>
<tr>
<td>Question 16: The data management program is aligned with internal technical and operational capabilities</td>
<td>Capability 1.4</td>
<td>The requirements and objectives of the data management program have been reviewed and are in alignment with technology capabilities</td>
<td>The objectives of the data management program must be possible within specified timeframes. It is at this capability area where a wide variety of people representing a broad array of functions come together. We view this as the intersection of data architecture (management of meaning) with IT (data processing) with operations (process capability).</td>
</tr>
<tr>
<td>Question 17: All data under the authority of the data management program is profiled, analyzed and graded</td>
<td>Sub-capability 7.2.2</td>
<td>Data in existing repositories has been profiled and analyzed to determine whether it is fit for its intended purpose</td>
<td>Reference, transactional and derived data (both current and historical) need to be prioritized based on importance to critical business functions. These CDEs are subject to profiling based on all relevant dimensions (i.e. completeness, timeliness, coverage, conformity, integrity, consistency, duplication, redundancy) and analyzed based on business rules, metadata and intended use.</td>
</tr>
<tr>
<td>Question 18: Procedures for managing data quality are defined, implemented and measured</td>
<td>Capability 7.1 and 7.3</td>
<td>Data quality control points, operating procedures, business rules and measurement criteria along the data supply chain have been implemented and are operational</td>
<td>This capability area focuses on the establishment of a data quality strategy, the identification of accountable parties, the assignment of data quality roles and responsibilities, the implementation of “control points,” the performance of root cause analysis and the establishment of an oversight process for verification of the data quality management objectives.</td>
</tr>
<tr>
<td>Question 19: Root cause analysis is performed and corrective measures are being implemented</td>
<td>Sub-capability 7.3.3</td>
<td>The organization is investigating the cause of data quality problems and taking the appropriate corrective actions</td>
<td>Data remediation is not only about correcting data errors and filling gaps. It also includes determination of the root cause of the data problem at the source to avoid ongoing reconciliation. Investigating the root cause of data quality issues reduces the amount of ongoing remediation that must take place as data flows from process-to-process and from firm-to-firm.</td>
</tr>
<tr>
<td>Question 20: End-to-end data lineage has been defined across the entire data lifecycle</td>
<td>Capability 8.2</td>
<td>The lineage and processes for manufacturing critical data has been identified/documentated and is being managed from source through consumption</td>
<td>Data lineage refers to a complete cradle-to-grave understanding of the nature of the data manufacturing process within the financial industry. The goal is to ensure that the end-to-end data flows are identified and mapped. Data lineage is frequently performed by reverse engineering critical measures. This type of data forensics also helps separate calculation and derived formulas (how the data is used) from data attributes (how the data is defined and where it resides).</td>
</tr>
<tr>
<td>Question 21: Data management operates collaboratively with existing enterprise control functions</td>
<td>Capability 8.3</td>
<td>The components of the data management program are coordinated and aligned with other control functions across the enterprise (i.e.: privacy, cross-border, compliance, retention, vendor management)</td>
<td>The emergence of data management as a control function carries with it coordination across the enterprise to ensure collaboration and alignment with established policies, processes and procedures. The purpose is to fully integrate data management into the organization and create cohesion across the operating model.</td>
</tr>
</tbody>
</table>
SURVEY METHODOLOGY AND QUESTIONS:
DCAM SCORING GUIDE

Scoring for DCAM (and the 2015 benchmarking study) are performed according to three core dimensions:

1. **Engagement**: measurement of whether the right people at the right levels of authority with the right organizational influence are participating in the data management process.

2. **Process**: measurement of the degree to which data management processes are established, structured, standardized and repeatable.

3. **Evidence**: evaluation of whether the data management capabilities are supported by (auditable) evidence.

As you evaluate the responses and scores, please note that the criteria for advancing from one capability to another are significant. Most of the industry are between “developmental” (level 3) and “defined” (level 4) – and the leap from these levels of capability are what we are calling “crossing the capability chasm.”

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**Score Category Descriptions**

<table>
<thead>
<tr>
<th>SCORE</th>
<th>CATEGORY</th>
<th>DESCRIPTION</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not Initiated</td>
<td>Not Performed</td>
<td>Ad hoc activities; performed by heroes</td>
</tr>
<tr>
<td>2</td>
<td>Conceptual</td>
<td>Initial Planning</td>
<td>Issues being debated; white board sessions; data practitioners engaged</td>
</tr>
<tr>
<td>3</td>
<td>Developmental</td>
<td>Engagement Underway</td>
<td>Key functional stakeholders identified; work streams defined; meetings underway; participation growing; activity underway; policies, roles, and operating procedures being established; project/annual funding</td>
</tr>
<tr>
<td>4</td>
<td>Defined</td>
<td>Performed and Verified</td>
<td>Business users active; LOB management engaged; requirements verified; responsibilities defined and assigned; policy and standards exist; routines in place; lineage defined and being verified; metadata captured and verified; critical data elements (CDEs) identified and inventoried; adherence tracked; multi-year/sustainable funding</td>
</tr>
<tr>
<td>5</td>
<td>Achieved</td>
<td>Adopted and Enforced</td>
<td>Executive management sanctioned; proactive business engagement; responsibilities coordinated; policy and standards implemented; lineage verified and documented; data harmonized across repositories; metadata implemented; proactive maintenance; adherence audited; strategic/ investment funding</td>
</tr>
<tr>
<td>6</td>
<td>Enhanced</td>
<td>Integrated</td>
<td>Fully embedded into the operational culture with continual improvement</td>
</tr>
</tbody>
</table>

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**Survey Methodology and Questions:**

**DCAM Scoring Guide**

**Defined**

**Performed and verified**

Business users active; line of business (LOB) management engaged; requirements verified; responsibilities defined and assigned; policy and standards exist; routines in place; lineage defined and being verified; metadata captured and verified; critical data elements (CDEs) identified and inventoried; adherence tracked; multi-year/sustainable funding.

**Developmental**

**Engagement underway**

Key functional stakeholders identified; work streams defined; meetings underway; participation growing; activity underway; policies, roles, and operating procedures being established; project/annual funding.
### Data Management Duration

- **Data management as a formal corporate function** is a relatively new phenomenon. Eighty three percent (83%) of respondents to the benchmarking survey report their programs being in existence for less than three years (41% for less than one year) – another clear example of the "BCBS 239" effect.

- The survey results also show that data management programs that have been in existence for longer than ten years can suffer from the challenge of data management fatigue/impatience in the delivery of results.

- The data management function continues to migrate from IT and into corporate functions (i.e. IT/Ops, enterprise data management and risk). The message is clear... managing meaning (i.e. relationships, obligations and dependencies) is fundamentally different from data processing (i.e. the domain of IT). IT and data management are best viewed as "partners" – one side worries about meaning and comparability, the other worries about delivery and integration.

#### DEMOGRAPHICS AND PROFILE OF PARTICIPANTS: EVOLUTION OF DATA MANAGEMENT PROGRAMS

<table>
<thead>
<tr>
<th>Duration</th>
<th>Line of Business</th>
<th>Group or Division</th>
<th>Enterprise-Wide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>Enterprise</td>
<td>Finance</td>
<td>IT</td>
</tr>
<tr>
<td>1-3 years</td>
<td>Enterprise</td>
<td>Finance</td>
<td>IT</td>
</tr>
<tr>
<td>3+ Years</td>
<td>Enterprise</td>
<td>Finance</td>
<td>IT</td>
</tr>
</tbody>
</table>
### DEMOGRAPHICS AND PROFILE OF PARTICIPANTS: OPERATIONAL MATURITY OF DATA MANAGEMENT PROGRAMS

#### Data Management Maturity

- **This chart focuses on the operational maturity of data management programs among respondents.** Thirty seven percent (37%) of the participants indicate that their data management programs are “fully operational.” That means that policies have been defined and adopted, data stewards are in place, governance structures are defined ... funding is secured, etc.

- **The majority of respondents (43%) are in the “formed and becoming operational” stage.** This indicates that data management has been defined and authorized, but is not yet fully operational.

- **Only 14% of respondents (overall) indicate that their data management programs are “in the process of being formed” and just over 6% have no formal data management organization – most of these participants are from tier 3 financial institutions.**

#### Table: Data Management Maturity by Tier

<table>
<thead>
<tr>
<th>Tier</th>
<th>Fully Operational</th>
<th>Formed and in the Process of Becoming Operational</th>
<th>In the Process of Being Formed</th>
<th>No Formal Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>43.8%</td>
<td>41.7%</td>
<td>10.4%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Tier 2</td>
<td>20.6%</td>
<td>44.1%</td>
<td>23.5%</td>
<td>11.8%</td>
</tr>
<tr>
<td>Tier 3</td>
<td>20.0%</td>
<td>20.0%</td>
<td>20.0%</td>
<td>40.0%</td>
</tr>
</tbody>
</table>
1. Business Drivers Across Industry

- **Operational Efficiency**: 12%
- **Business Value**: 4%
- **Other Regulatory (non-BCBS 239)**: 11%
- **BCBS 239**: 73%

2. Business Drivers Across Tiers

<table>
<thead>
<tr>
<th>Tier</th>
<th>Business Value</th>
<th>Operational Efficiency</th>
<th>Other</th>
<th>Reg Requirements</th>
<th>BCBS 239</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
<td>3%</td>
<td>8%</td>
<td>1%</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>Tier 2</td>
<td>0%</td>
<td>4%</td>
<td>20%</td>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>Tier 3</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>50%</td>
</tr>
</tbody>
</table>

**Data Management Drivers**

- There is no question about it, BCBS 239 (the Principles of Risk Data Aggregation and Reporting) are driving data management. Seventy three percent (73%) of respondents cite BCBS 239 as the primary driver of their programs. And when you add other regulatory objectives (CCAR, Basel III, Solvency II) – the percentage jumps to 84%.

- The regulatory objectives associated with linked-risk analysis and other transparency requirements have been the most important development associated with overcoming the organizational inertia.

- But once accomplished, financial institutions are quickly seizing on the business value of data management. When you examine both the “primary and secondary drivers” of data management – operational efficiency is cited by 68% of respondents and business value/analytics by 46%.
RESULTS AND OBSERVATIONS: SETTING UP THE DATA MANAGEMENT PROGRAM

Three questions focus on efforts related to establishing the data management program as a control function within the financial industry. We are making good progress in the development of data management strategy. Many programs have the authority they need to implement the data management program. Communication about the importance (and operational implications of) data management lags behind implementation.

› Question 1: Our organization has a defined and endorsed data management strategy
› Question 3: The goals, objectives and authorities of the data management program are well communicated
› Question 6: The data management program is established and has the authority to enforce adherence
RESULTS AND OBSERVATIONS: SETTING UP THE DATA MANAGEMENT PROGRAM

Q1: Defined and Endorsed Data Management Strategy

The data management strategy formally exists and defines how the organization will approach the management of data content in a way that is meaningful to business stakeholders.

Importance
The data management strategy defines the goals of the data management program, articulates how it will be implemented and is used to ensure alignment and commitment across the organization. This is important because it gives stakeholders confidence in both the program objectives and the plan for practical implementation.

Key Observation
73% of financial institutions where data management programs have been in place for over three years are in the advanced stage of data management strategy capability.

EDM Council/DCAM Analysis
The global financial industry is making good progress in the design and implementation of their strategies for data management. At this industry average stage of capability, we would expect to see data management strategy documents formally drafted with a clear articulation of the target-state outcome.

We would expect to see the strategy aligned with business requirements and structured to address defined “pain points” of core stakeholders. An advanced stage data management strategy should be aligned with both IT and operational capabilities to ensure that the organization is in a position to achieve the goals of the data management program. Discussions with audit (or related functions) should be underway to ensure that the data management program is able to be formally evaluated. By this stage of capability, we would expect approval of the data management framework, alignment with risk data aggregation obligations and sufficient resources allocated to ensure the data management program is structured to be effective.

DCAM CROSS-REFERENCE: STRATEGY, CAPABILITIES 1.1 AND 1.2

16% Achieved Capability

Making Good Progress on Strategy
- 56% of Tier 1 firms are in advanced stages
- Strategy stabilizes as programs mature
- Auditability of strategy is on the horizon

DCAM score (3.50): alignment of strategy with objectives and capabilities (and verified)

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Average DCAM Scores
RESULTS AND OBSERVATIONS: SETTING UP THE DATA MANAGEMENT PROGRAM

Q3: The goals, objectives and authorities of the data management program are well communicated

There is an internal understanding and alignment on the goals, objectives, approaches and value of the data management program among all relevant stakeholders

The concept of managing “data as meaning” is not always well understood or easily distinguished from the IT function of data processing. Robust communication programs are essential tools to drive awareness, ensure compliance and appropriately position data management as part of the operating culture of complex and interdependent organizations.

Key Observation
71% of firms that indicate they have fully operational governance programs are in the advanced stage of communication activity. Duration and enhanced governance capability matter in getting the data management message across to stakeholders.

EDM Council/DCAM Analysis
It is very difficult to integrate data management principles into dynamic organizations if you are your own best kept secret. And since there are a host of people involved in the management program, the communication program is not a “one and done” type of activity. Communication needs to be di-directional and sustainable if we are to reinforce the value to be derived from the disruption that is inevitable from data management. Survey results show that communication lags (slightly) behind the implementation of the data management program. In essence, communication directly follows governance maturity.

At this industry average stage of capability, we would expect to see the importance of communication clearly articulated as part of data management strategy and various approaches being created to “spread the data management gospel.” We would also expect to see a proactive strategy for communication with regulatory bodies (in collaboration with compliance departments) in the process of being established.

DCAM CROSS-REFERENCE: STRATEGY. CAPABILITIES 1.7 AND 3.5

DCAM scores (3.29): importance of communication articulated; variety of approaches in the process of being implemented
RESULTS AND OBSERVATIONS:
SETTING UP THE DATA MANAGEMENT PROGRAM

Q6: The data management program is established and has the authority to enforce adherence

The data management program is established as an organizational function (with support from senior management) and has the authority to enforce adherence to policy.

The function of the data management program is to integrate the concepts of data management into the organization. The program should be established as a formal and independent entity. The goal is the creation of an operational framework to ensure sustainability and to establish enforcement authority associated with the principles and practices of sound data management.

Key Observation
The authority to enforce adherence to policy and align with industry best practice is synonymous with having a fully operational data management program.

EDM Council/DCAM Analysis
The definition of a fully operational data management governance program means having the authority to enforce adherence to policy. 83% of firms reporting to have fully operational data governance rate themselves as in the advanced activity stage. Those that don’t have established governance don’t have the authority to mandate policy. Duration and location matter significantly for this capability. Programs that have been in operation for more than three years as well as those where the data management program resides as an enterprise control function are way ahead of their peers in having the authority to enforce adherence.

At this industry average stage of capability, we would expect to see significant progress in the development of policies and procedures for data management. We would expect to see the establishment of a formal Office of Data Management (ODM) with strong support from executive management to address the inevitability of operational disruption. Even with the importance of adherence to the Principles of Risk Data Aggregation looming among G-SIBs, we would not expect firms [at this level of capability] to have granted the ODM the authority they need to ensure adherence to BCBS 239.

DCAM CROSS-REFERENCE: THE DATA MANAGEMENT PROGRAM.CAPABILITY 3.1

22% Achieved Capability

Authority Exists for G-SIBs
- Enforcement is synonymous with fully operational programs
- Office of Data Management has executive support
- Authority only matters if program can deliver

DCAM score [3.41]: formal ODM established; progress on development of policies and procedures

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Average DCAM Scores
RESULTS AND OBSERVATIONS: OBTAINING COMMITMENT FROM STAKEHOLDERS

Five questions focused on ensuring that line-of-business and functional stakeholders are actively supporting the data management program. We are standing at the inflection point of turning stakeholder commitment into action. Many firms are providing seed funding to get the programs up and operational. Basic resources needed for first stage integration are in place. Metrics are missing for both the measurement of program development and evaluation of business outcomes.

› Question 2: Stakeholders understand (and buy into) the need for the data management program
› Question 4: The funding model for the data management program is established and sanctioned
› Question 5: The costs of (and benefits associated with) the data management program are being measured
› Question 7: The data management program is sufficiently resourced
› Question 21: Data management operates collaboratively with existing enterprise control functions
RESULTS AND OBSERVATIONS: OBTAINING COMMITMENT FROM STAKEHOLDERS

Q2: Stakeholders understand the need for the data management program

*There is an internal understanding and alignment on the goals, objectives, approaches and value of the data management program among all relevant stakeholders*

It is essential that stakeholders understand the “what” and “why” of data management as well as fully buy into the critical importance of harmonized data and alignment to business meaning. Without this fundamental capability, it will be an ongoing challenge to get the participation, cooperation and resources needed for sustainable data management.

**Key Observation**

Stakeholder buy-in is more advanced when the data management program exists as an enterprise function and drops precipitously when the data management program resides in technology.

**EDM Council/DCAM Analysis**

The financial industry is in the process of moving from the “transitional” to the “advanced” stage of activity in terms of buy-in to the data management program. This is critical because complex organizations require collaboration and engagement if they are to embed the concepts of data management into their operational framework. Stakeholder buy-in establishes data management as a sustainable activity and reinforces the importance of managing the meaning of data across the organization.

At this industry average stage of capability, we would expect to see data management program roadmaps defined, verified with program stakeholders, harmonized with strategy and in the final stages of being translated into actionable project plans. We would expect to see resource plans defined and funding allocated to support the objectives of the data management program. This level of capability demonstrates commitment and accountability from stakeholders for data management deliverables.

**DCAM CROSS-REFERENCE: STRATEGY. CAPABILITIES 3.3 AND 3.4**

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**19%**

Achieved Capability

**Stakeholder Commitment is Moving Forward**

- Data management roadmaps should be defined and verified
- At precipice of translating commitment into action
- Stakeholder buy-in increases significantly when data management exists as an enterprise function

DCAM score (3.53): program roadmaps defined [and verified]; resources and funding allocated

| Average DCAM Scores |
|---------------------|------------------|----------------|--------|--------|--------|
| Industry            | 3.53             | Tier 1         | 3.63   | Control| 3.83   | Buy Side| 3.29   | Sell Side| 3.67   |

IN PARTNERSHIP WITH: Sapient® Global Markets
RESULTS AND OBSERVATIONS: OBTAINING COMMITMENT FROM STAKEHOLDERS

Q4: The funding model for the data management program is established and sanctioned

A sustainable funding model (with buy-in from stakeholders) is in place and it addresses both current and multi-year considerations.

There is no single model for funding data management initiatives – it all depends on the dynamics and operational culture of the firm. Industry experience suggests that initial funding as an enterprise expenditure goes a long way toward eliminating business unit competition and helps avoid the drawbacks of short-term measurement criteria.

Key Observation
Organizations can expect to see the funding model evolve along with the maturity of their data management program. 73% of firms with data management programs in place for over three years rate their funding models as advanced.

EDM Council/DCAM Analysis
Funding models are maturing – but the industry should be somewhat cautious because many are benefiting from the luxury of having their initial seed funding allocated as an enterprise or corporate expenditure.

At this industry average stage of capability, we would expect to see active discussions on how to best align funding models with business unit priorities and sequence plans. We would expect to see evidence of validated funding models (and associated enforcement criteria) that reflect both current year and long-term sustainable data management requirements.

DCAM CROSS-REFERENCE: BUSINESS CASE AND FUNDING MODEL. CAPABILITIES 2.1 AND 2.2

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DCAM score (3.44): alignment of funding with sequential priorities; evidence of funding being allocated

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Funding Models are Maturing
• Many are benefiting from seed funding
• Long-term funding is still viewed as tenuous
• Funding alignment with business priorities next hurdle

28% Achieved Capability

Trend
RESULT AND OBSERVATIONS: Obtaining Commitment from Stakeholders

Q5: The costs of (and benefits associated with) the data management program are being measured

Costs and benefits of the data management program are being formally captured and used to evaluate the effectiveness of the program.

A standard (and accepted) methodology for capturing both expenses and financial benefits of the data management program is necessary for both benchmarking and organizational buy-in. Criteria beyond standard ROI is likely needed to account for data-related interrelationships and organizational dependencies.

Key Observation
The majority of respondents are either making “little progress” or are in the “emerging” stages of activity in measuring both total expense and value delivered. Measurement is lagging behind all other aspects of the data management program.

EDM Council/DCAM Analysis
Data management program metrics are difficult to capture and even harder to apply against organizational budgets. The ability to capture metrics does improve for programs that have been in existence over three years and where governance mechanisms are fully operational. Measurement is even more advanced when data management resides in the lines of business. We advocate caution here due to the fact that business lines sometimes have a tendency to make evaluation decisions based on a “silo” or “P&L” view of data management and don’t always take into account the broader impact of data management across linked processes.

That aside, at this industry average stage we would expect to see the initiation of discussions among stakeholders on how to best measure the costs/benefits of the data management program as well as the emergence of methodologies for capturing total expense/business value. We would expect to see the definition of standard categories (as well as tools like heat maps) for measuring both program effectiveness and outcome-based metrics – all designed to help better position data management and the data management program within the organization.

DCAM CROSS-REFERENCE: BUSINESS CASE AND FUNDING MODEL. CAPABILITY 2.3

Metrics are Still Emerging
- 75% of respondents are in early stages
- Standard ROI criteria doesn’t always apply
- Measuring the value proposition is missing and needed

DCAM score (2.80): initial discussions on how to measure cost/value; definition of standard categories; tools like heat maps

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Average DCAM Scores
RESULTS AND OBSERVATIONS: OBTAINING COMMITMENT FROM STAKEHOLDERS

Q7: The data management program is sufficiently resourced

Resources required to deliver a sustainable data program have been approved and acquired.

Effective data management requires the participation and commitment from a variety of people and functions. Many of those are outside of the data management program organizational structure. All those identified as aligned with data management program objectives need to be held accountable to project delivery with funds, staff resources and appropriate skill sets.

Key Observation

59% of all respondents indicate they are at the developmental (emerging) stage in terms of resources. Resource satisfaction is highest (i.e. in the advanced activity stage) when data management resides as an enterprise function (53%), and risk (47%) and lowest when it resides in IT and in the LOB (both 32%).

EDM Council/DCAM Analysis

At this industry average stage of capability, we would expect resource plans needed to implement the deliverables associated with the data management program to be in the process of being defined and aligned with the delivery plans from the Office of Data Management. This would most likely be in context of “rough timeframes” for implementation.

Our expectation for this level of capability is that resources are in place to support the data management program – however respondents are indicating low levels of satisfaction. This could be because we have historically observed a tendency to “haircut” data management program resources for other operational activities. So even when funding is approved, data management programs can struggle with achieving sufficient resources to meet their objectives.

DCAM CROSS-REFERENCE: THE DATA MANAGEMENT PROGRAM. CAPABILITY 3.4

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DCAM score (3.26): resource plans defined and aligned with goals of ODM; rough timeframes established for implementation
RESULTS AND OBSERVATIONS: OBTAINING COMMITMENT FROM STAKEHOLDERS

Q21: Data management operates collaboratively with existing enterprise control functions

The components of the data management program are coordinated and aligned with other control functions across the enterprise (i.e.: privacy, cross-border, compliance, retention, vendor management).

The emergence of data management as a control function carries with it coordination across the enterprise to ensure collaboration and alignment with established policies, processes and procedures. The purpose is to fully integrate data management into the organization and create cohesion across the operating model.

Key Observation
The trend in cross-control collaboration is slowly advancing. We see growth as governance matures and robust numbers in transition. Data is a newer player in the organizational mix and is learning how to collaborate with their cross-functional peers.

EDM Council/DCAM Analysis
At this industry average level, we expect to see alignment of data management control procedures for all data entering the organizational ecosystem. We would also expect to see evidence of regular meetings with cross-organizational function owners including documentation and cross-referencing of data dependencies to security, privacy and compliance.

DCAM CROSS-REFERENCE: DATA CONTROL ENVIRONMENT. CAPABILITY 8.3

Cross-Control Collaboration Still Emerging
- Data is a newer player in the organizational mix and is learning how to collaborate with their cross-functional peers

DCAM score (3.01): data management control procedures for all data entering the organizational ecosystem in process of being defined

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11% Achieved Capability

Trend
RESULTS AND OBSERVATIONS: IMPLEMENTING OPERATIONAL GOVERNANCE

Four questions focused on issues related to governance implementation. Operational governance means that accountability has been assigned and this lags behind the establishment of the data management program. Data policy is going through rigorous evaluation and adherence will follow its adoption. We are standing at the point of appointing data stewards for foundational data.

» Question 8: Data governance structure and authority is implemented and communicated
» Question 9: Governance “owners” and “stewards” are in place with clearly defined roles and responsibilities
» Question 10: Data policies and standards are documented, implemented and enforced
» Question 11: The “end user” community is adhering to the data governance policy and standards
RESULTS AND OBSERVATIONS: IMPLEMENTING OPERATIONAL GOVERNANCE

Q8: Data governance structure and authority is implemented and communicated

The governance structures and operating model components of the data management program (i.e. executive owner, PMO) have been implemented and are operational. Stakeholders are held accountable for their engagement in the program.

Governance is the organizational key to effective data management. Strong governance is needed as the mechanism for stakeholder collaboration and the management of conflicting operational priorities. Governance is about establishing the policies, controls, procedures and standards needed to achieve a “data control environment.” Without formalization, empowerment and clear lines of authority, data management is unlikely to become operational or sustainable.

Key Observation
Regulatory pressure is pushing governance forward (57% of tier 1 firms indicate they are in the advanced stages of activity) – but not to the degree expected with the approaching deadlines associated with BCBS 239

EDM Council/DCAM Analysis
The scores for tier 1 firms indicate that “foundational governance” is in place and that firms are standing at the precipice of becoming fully operational. The difference between having governance structures “in place” versus “operational” is about ensuring accountability across the enterprise. For many G-SIBs, we would expect that escalation procedures for conflict resolution are being defined and that the Office of Data Management is working with audit to ensure the adoption of processes and routines needed for compliance to data management policy and standards.

For the rest of the industry, with this industry average level of capability we would expect to see the governance function chartered with a program management office in the midst of being implemented. We would expect to see evidence that the structure of the governance program is being discussed with both business stakeholders and control functions. People are likely being informed of their roles and responsibilities for data objectives – and we would anticipate that projects are just now being subjected to formal review and oversight processes. We would expect to see definition and initial prioritization of data requirements with business stakeholders. We would be looking for early stage involvement with audit in the creation of escalation procedures as well as initial discussions about the mechanisms for enforcing data management policy.

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<th>DCAM CROSS-REFERENCE: GOVERNANCE. CAPABILITIES 4.1, 4.4 AND 4.5</th>
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**Foundational Governance is in Place**
- Data programs have owners (i.e. CDOs) and governance infrastructure
- Operational governance means accountability is established (and lags)

DCAM score (3.39): governance chartered; structure being discussed; stakeholders informed of roles/responsibilities

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Average DCAM Scores
RESULTS AND OBSERVATIONS: IMPLEMENTING OPERATIONAL GOVERNANCE

Q9: Governance “owners” and “stewards” are in place with clearly defined roles and responsibilities

_Governance roles have been identified, formally specified and assigned_

Enterprise governance structure refers to the functional mechanism used to implement the data management program. The organizational structure needs to be developed with clearly defined roles, visible assignment of responsibilities and effectively monitored processes to ensure accountability. Individuals must be appointed in business lines and given both responsibility (stewards) and authority (owners) for data management objectives.

**Key Observation**
There is a direct correlation between program duration and governance maturity. And since many of the data governance programs have been in place for under three years – it is not surprising that most firms are in the (early stage) of transitional development.

**EDM Council/DCAM Analysis**
Data management responsibility grows as data management programs mature and many firms are still working to put their operational governance infrastructures in place. Duration and location of the data management program clearly matter. 65% of those with programs in existence over three years report to be in the advanced stages of activity. Full operational governance is highest (51% in the advanced activity stage) when the data management program exists as an enterprise function and is the lowest (28% in the advanced activity stage) when the program resides in technology.

At this industry average stage of capability, we would expect to see the governance structure in the midst of development with active working committees that have been approved by governance oversight bodies. We would expect to see evidence of engaged participation by business lines and control functions in the design of the data stewardship program. This would include the initial appointment of data stewards (and their equivalent) and the establishment of both data quality and data access management to support the establishment of a control environment.

**DCAM CROSS-REFERENCE: GOVERNANCE, SUB-CAPABILITY 4.1.4**

**DCAM score (3.22):** engaged participation by business and control functions in design of stewardship program; initial appointment of stewards

**Operational Governance is Rising**
- Data management responsibilities are being established
- There is a direct correlation between program duration and stewardship implementation
- Full operational governance is lowest when data resides in IT

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Average DCAM Scores
Q10: Data policies and standards are documented, implemented and enforced

*Policies and standards have been verified by stakeholders, approved by governing bodies and are enforceable by audit (or an equivalent review function)*

Data management is governed by policy and implemented via data standards. They define how the organization will control data including how it is acquired, managed, maintained and delivered across the enterprise. Policy and standards are the most basic (and essential) tools for addressing core issues such as data definitions, lineage, metadata, ownership, quality control, access rights, permitted use and sourcing.

**Key Observation**

Only 16% of respondents have achieved the capability of verified and approved policy and standards. Most of these (90%) are the tier 1 firms that are expediting their data management governance infrastructure to meet the principles of BCBS 239 and the goals of Solvency II.

**EDM Council/DCAM Analysis**

Data policy really matters within financial institutions. And while the overall benchmarking scores are still in the transitional development stage, we believe this represents significant progress. In many firms, data management policy is an outcome of having firmly established data management programs. The reality is that most of these programs are just now gaining the type of foothold that would migrate them from an “area of activity” and qualify them for “policy status.” The adoption of policy is a serious and critical step for financial institutions and we expect data policy to be subject to a rigorous evaluation process before being finalized.

At this industry average stage of capability we would expect to see evidence of policies and standards being drafted. This needs to be performed in partnership with stakeholders to ensure buy-in, compliance capability and alignment to existing control functions. We would expect to see evidence of meetings to discuss the implications of policy and the establishment of a feedback process to ensure the development of final policy directives are in line with operational reality.

**DCAM CROSS-REFERENCE: GOVERNANCE. CAPABILITY 4.3**

**DCAM score (3.29): policy and standards being drafted in collaboration with stakeholders**

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**Data Policy in Transition**

- Distinction between “meaning” and “processing” not clear
- Reinforcing value vs. disruption is not “one and done” activity
- Enhanced governance means better internal messaging
RESULTS AND OBSERVATIONS: IMPLEMENTING OPERATIONAL GOVERNANCE

Q11: The “end user” community is adhering to the data governance policy and Standards

*End users (across lines of business and including technology and operations) are adhering to the established data policy and standards.*

Policy and standards must be enforced in a controlled manner via checkpoints, formal review mechanisms and organizational approval boards. Implementation must be supported by established processes and routines in partnership with audit. Lack of adherence to policy is a significant enough issue that it is normally elevated as a formal audit finding that must be resolved.

**Key Observation**

Getting end users to adhere to policy and standards is the final stage of governance. Low scores were anticipated because adherence requires behavior modification and always lags behind implementation.

**EDM Council/DCAM Analysis**

Adherence to policy and standards is a result of fully operational governance being implemented. We anticipated that there would be pushback on adherence and we understand the challenges associated with the type of behavior modification that comes with the implementation of a new control functions.

At this industry average level of capability we would expect to see planning meetings underway about the enforcement of policy and standards. We would expect to see initial review mechanisms being defined and collaboration between the Office of Data Management and audit to define the type of procedures and routines that would be needed to ensure compliance.

**DCAM CROSS-REFERENCE: GOVERNANCE. SUB-CAPABILITIES 4.5.1 AND 4.5.2**

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**5%**

Achieved Capability

**Adherence to Policy is a Later Stage Criteria**

- Adherence to policy is the final stage of governance
- Data policy implementation requires behavior modification

**DCAM score (3.50): alignment of strategy with objectives and capabilities (and verified)**

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Average DCAM Scores
RESULTS AND OBSERVATIONS:
IMPLEMENTING CONTENT INFRASTRUCTURE

Four questions related to the core data objectives needed to harmonize data across the enterprise. Unraveling the Gordian knot of lineage and aligning the content of data repositories to common meaning is still a daunting challenge. The industry is making progress in the identification of critical data attributes and the establishment of authorized data domains.

› Question 12: The business meaning of data is defined, harmonized across repositories and governed
› Question 13: Critical data elements are identified and managed
› Question 14: Logical data domains have been declared, prioritized and sanctioned
› Question 20: End-to-end data lineage has been defined across the entire data lifecycle
RESULTS AND OBSERVATIONS: IMPLEMENTING CONTENT INFRASTRUCTURE

Q12: The business meaning of data is defined, harmonized across repositories and governed

The unambiguous (shared) definition of data has been defined, verified and captured as operational metadata.

Data that populates the repositories of financial institutions represents real "things" (i.e. terms, conditions, triggers, requirements, obligations, etc.) that have precise contractual meaning. Ensuring that all data is aligned to common meaning is an essential requirement for achieving automation, performing complex analytics and generating trusted reports. This is one of the essential goals of data management and the building block of most financial processes.

Key Observation
Harmonization of data across processes throughout the enterprise is a core component of BCBS 239. Without achieving this capability, the industry will struggle to unravel interconnections, manage complexity and understand the true nature of linked risk across the financial system.

EDM Council/DCAM Analysis
This capability is about modeling the reality of how the financial system works, expressing it using common meaning, storing it as metadata across hundreds of repositories and integrating it into thousands of applications. The scope of the challenge is daunting.

At this industry average level of capability we would expect to see firms in the process of defining their conceptual models and working with business users to ensure that the model correctly captures reality. We would expect to see evidence of agreement on contractual definitions as well as a common understanding of business relationships for "foundational data" being verified and inventoried as metadata. We would expect to see progress in the development of data taxonomies as well as processes implemented for collaborative review among business users, operations and IT.

DCAM CROSS-REFERENCE: DATA ARCHITECTURE. CAPABILITY 5.2

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7% Achieved Capability

Data Definitions and Taxonomies Lag
- Harmonization of data to common meaning is still elusive
- The scope of the challenge is daunting with hundreds of repositories and thousands of applications to align

Industry Tier 1 Control BuySide Sell Side
1 Not Initiated 10% 9% 4% 14% 10%
2 Conceptual 20% 21% 19% 29% 15%
3 Developmental 46% 44% 48% 33% 50%
4 Defined 18% 19% 20% 19% 18%
5 Achieved 7% 7% 9% 5% 7%
Q13: Critical data elements are identified and managed

Critical data elements (of prioritized functions) have been identified, verified and catalogued.

Critical data elements (CDEs) are the granular data building blocks that are used to support important business applications and functions. These applications must be unraveled to understand what data is used, its precise meaning and how it is assembled. CDEs must be identified, located and catalogued to ensure proper sourcing, unravel lineage, facilitate comparability and evaluate usage.

Key Observation
Financial institutions (particularly tier 1) understand the importance of CDEs. Many have them identified and defined – but not yet fully aligned with the data compounding process. Building the inventory of CDEs takes time and requires significant (coordinated) effort.

EDM Council/DCAM Analysis
There is bifurcation within the financial industry on the identification and management of critical data elements. 70% of tier 1 firms with fully operational governance report to be in the advanced stage of activity. Firms without operational governance are significantly behind. Evidence of progress is even more pronounced for firms where data management is aligned with risk.

For the advanced firms we would expect to see CDEs and their business definitions in the process of being verified by users as well as initial documentation of the lineage/compounding process for the manufacture of important measures. For the industry average we would expect to see the CDEs process just getting underway. This would include final stage debates about which data attributes are critical for various applications as well as their designation under initial review by stakeholders.

DCAM CROSS-REFERENCE: DATA ARCHITECTURE, SUB-CAPABILITY 4.2.2

Progress Made in Identifying CDEs
- 70% of Tier 1 firms with fully operational governance are in the advanced stages of activity
- Building the inventory of CDEs takes time and requires significant coordinated effort

DCAM score (3.20): internal debates about which attributes are critical for various applications in final stages

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Average DCAM Scores
Logical data domains (i.e. categories of data vs. physical databases) have been defined and catalogued.

Logical domains of data represent the data (rather than the databases) that are needed to satisfy business requirements. Identification of these domains must be driven from the perspective of business requirements. These logical domains need to be linked to their physical repositories and associated with their authorized distribution points. Both the logical domains (designation) and physical locations (inventory) are needed to ensure proper usage.

Key Observation
The concept of logical data domains is somewhat further along the capability curve as compared with the rest of the core “data issues.” Risk is the laggard because of the difficulty in identifying logical domains for the manufacture of risk concepts. Finance is ahead because of the importance of logical domains to the general ledger and book of record.

EDM Council/DCAM Analysis:
The management of logical domains is similar to the CDE issue (question 13) in that the concept is understood, but creating the inventory of domains is difficult.

At this industry average stage of development we would expect to see the concept of data domain management (and enforcement) being accepted as part of the data management strategy development process. We would expect to see business users identified and engaged in the process of domain designation. We would also expect to see the inventory of physical repositories identified and in the early stages of being linked to the logical domains.

DCAM CROSS-REFERENCE: DATA ARCHITECTURE. CAPABILITY 1.3 AND SUB-CAPABILITIES 4.2.1, 5.1.1 AND 5.1.2

Q14: Logical data domains have been declared, prioritized and sanctioned

DCAM score (3.29): business engagement in domain designation; inventory of physical repositories in the early stages of being linked to logical domains

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14% Achieved Capability

Logical Domains Hard to Inventory
- Concept of logical domains understood - but hard to implement
- Risk concepts are complex and hard to align into logical domains

Average DCAM Scores
RESULTS AND OBSERVATIONS: IMPLEMENTING CONTENT INFRASTRUCTURE

Q20: End-to-end data lineage has been defined across the entire data lifecycle

The lineage and processes for manufacturing critical data has been identified/document and is being managed from source through consumption.

Data lineage refers to a complete cradle-to-grave understanding of the nature of the data manufacturing process within the financial industry. The goal is to ensure that the end-to-end data flows are identified and mapped. Data lineage is frequently performed by reverse engineering critical measures. This type of data forensics also helps separate calculation and derived formulas (how the data is used) from data attributes (how the data is defined and where it resides).

Key Observation

Data lineage is a core goal of every tier 1 financial institution. But with tens of thousands of applications, myriads of repositories and hundreds of data models, the challenge is more than daunting. Complexity exists in the financial industry – both in terms of financial engineering and in light of existing technical environments.

EDM Council/DCAM Analysis

82% of the industry reports to be at the early stages (or below) in understanding data lineage. Tier 1 investment banks are gaining a foothold. 50% of the sell side with programs over three years report to be in the advanced activity stage. Those that are aligned with risk are far ahead of their peers with other organizational structures.

At this industry average stage of capability we would expect that the policies and procedures needed to support the full lifecycle of data are in the process of being developed. We would expect to see control procedures including the identification of CDEs and how data flows across linked processes (and through business calculations) being defined and mapped.

DCAM CROSS-REFERENCE: DATA CONTROL ENVIRONMENT. CAPABILITY 8.2

DCAM score (2.73): control procedures including CDEs and how data flows across linked processed being defined and mapped

Lineage is an Elusive Goal

• Complexity exists in the financial industry and the challenge of unraveling the data compounding process is more than daunting
• Documenting end-to-end data flows are uniformly recognized as an important goal and a priority activity

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Average DCAM Scores
RESULTS AND OBSERVATIONS:
CONTROL PROCESSES FOR DATA QUALITY

Three questions focused on progress related to the implementation of data quality control processes. Data quality management programs are still in their early stages of development. These questions were designed to address the establishment of “control processes.” They were not addressing the measurement of the quality of the data.

› Question 17: All data under the authority of the data management program is profiled, analyzed and graded
› Question 18: Procedures for managing data quality are defined, implemented and measured
› Question 19: Root cause analysis is performed and corrective measures are being implemented
Q17: All data under the authority of the Data Management Program is profiled, analyzed and graded

Data in existing repositories has been profiled and analyzed to determine whether it is fit for its intended purpose.

Reference, transactional and derived data (both current and historical) need to be prioritized based on importance to critical business functions. These CDEs are subject to profiling based on all relevant dimensions (i.e. completeness, timeliness, coverage, conformity, integrity, consistency, duplication, redundancy) and analyzed based on business rules, metadata and intended use.

Key Observation
This is the lowest rated question in the entire benchmarking study. 71% of the industry is in the “little progress” or “early” (conceptual) stage of capability.

EDM Council/DCAM Analysis
Creating a current-state profile of critical data establishes a baseline to determine remediation priorities. Duration of the data management program and governance maturity really matter here. 45% of respondents with data management programs in place for over three years and 43% of those that report to have fully operational governance are in the more advanced stages of activity. This emphasizes the point that without effective and fully operational governance, data profiling doesn’t happen.

At this industry average stage, we would simply expect to see internal debates on the scope of data subject to the data quality process, discussions about the most critical dimensions to examine and practitioner-based whiteboard planning sessions on the approach to profiling for CDEs.

DCAM CROSS-REFERENCE: DATA QUALITY. SUB-CAPABILITY 7.2.2

Current State Profiling Lacking
- Program duration and governance maturity really matter – without effective and operational governance, profiling doesn’t happen

DCAM score (2.66): whiteboard planning sessions on the approach to profiling CDEs and the scope of the DQ program

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Average DCAM Scores
RESULTS AND OBSERVATIONS:
CONTROL PROCESSES FOR DATA QUALITY

Q18: Procedures for managing data quality are defined, implemented and measured

Data quality control points, operating procedures, business rules and measurement criteria along the data supply chain have been implemented and are operational.

This capability area focuses on the establishment of a data quality strategy, the identification of accountable parties, the assignment of data quality roles and responsibilities, the implementation of “control points,” the performance of root cause analysis and the establishment of an oversight process for verification of the data quality management objectives.

Key Observation
Data quality programs are in their early stages of initiation. At best, we appear to be managing data quality in silos and on a tactical (i.e. reconciliation and repair) basis. Manually scrubbing data is not in line with the goal of being able to perform quick analysis in times of stress.

EDM Council/DCAM Analysis:
Only 10% of respondents claim to have achieved the establishment of a data quality program. There appears to be some recognition of the importance of a data quality strategy, but few are reported to be operational. Adopting a data quality mindset requires cultural change and we see a direct correlation between the implementation of operational governance and the establishment of a data quality program. In many ways, the industry is still in the midst of “find and fix” rather than aligned on the management of data across the full “chain of supply.”

At this industry average stage we would expect to see a definition of the data quality approach to be used within the organization as well as the initiation of education campaigns about the importance of adopting a data quality culture across the organization. We would expect to see working discussions on the concept of control (i.e. business rules, workflows, tolerance ranges, exception management procedures) being defined. We would expect to see self-assessments of data quality processes being performed by data stewards and accountable parties in the process of being identified.

**DCAM CROSS-REFERENCE: DATA QUALITY, CAPABILITY 7.1 AND 7.3**

![DCAM Chart]

**DQ Programs at Early Stage**
- 9% of respondents claim to have achieved the establishment of a data quality strategy
- We appear to still be managing data in silos and on a tactical (reconciliation and repair) basis

DCAM score (3.00): business rules, tolerance ranges and exception management programs in the process of being defined

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Average DCAM Scores
RESULTS AND OBSERVATIONS:CONTROL PROCESSES FOR DATA QUALITY

Q19: Root cause analysis is performed and corrective measures are being implemented

The organization is investigating the cause of data quality problems and taking the appropriate corrective actions.

Data remediation is not only about correcting data errors and filling gaps. It also includes determination of the root cause of the data problem at the source to avoid ongoing reconciliation. Investigating the root cause of data quality issues reduces the amount of ongoing remediation that must take place as data flows from process to process and from firm to firm.

Key Observation
Root cause analysis is an area where the buy side outshines the rest of the industry by a significant margin. The nature of their business necessitates full error reconciliation and their focus is on assets under management (AUM) rather than on the full spectrum of “everything that is possible to trade.”

EDM Council/DCAM Analysis
Outside of the buy side, tier 1 sell-side firms are ahead of the rest of the industry because they have made root cause analysis a focused component of their data management initiatives. 73% of respondents with programs over 3 years report to be in advanced stages of activity - and for those with fully operational governance, the number reporting to be in the advanced activity stage jumps to almost 50%. Data management programs that are managed on a line-of-business level are further along than those that manage data on an enterprise basis – perhaps because their narrower focus makes it easier for them to investigate the reason for data problems.

At this industry average stage, we would expect the strategies and approaches for determining root cause to be in the developmental stage with work streams identified and meetings underway.

DCAM CROSS-REFERENCE: DATA QUALITY. SUB-CAPABILITY 7.3.3

The Buy-Side Shines
• 42% of respondents from the buy-side report being in the advanced stage of activity on root cause investigation (11% high than the rest of the industry)
• Duration matters. 73% of respondents with programs in place for longer than three years are in the advanced stages

DCAM score (3.02): strategies and approaches for determining root cause in discussion

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**12%** Achieved Capability

Trend
RESULTS AND OBSERVATIONS: COLLABORATION WITH TECHNOLOGY

The final two questions were designed to evaluate the status of the evolving partnership between data management and IT implementation. Progress is being made, however the IT/data management partnership is still in the process of evolving.

› Question 15: Technology standards and governance are in place to support data management objectives
› Question 16: The data management program is aligned with internal technical and operational capabilities
RESULTS AND OBSERVATIONS: COLLABORATION WITH TECHNOLOGY

Q15: The business meaning of data is defined, harmonized across repositories and governed

*Internal technology governance is aligned with the objectives of the data program. IT governance is coordinating with data governance.*

Technology architecture in this context refers to the design and implementation of the underlying physical infrastructure to support the data management program. This question focuses on the alignment of the IT platforms and tools with the data that is needed for identified applications, where it needs to be delivered and the service level agreements (SLAs) associated with timing requirements. The goal is alignment of IT governance with the data content requirements of the financial institution.

**Key Observation**
The alignment between IT and data management objectives is at the lower side of transitional development. Looking at the functional areas of the responders, IT feels as if they are aligned with the objectives of the data management program, but the opposite is true when you look at the responders from operations, data or risk.

**EDM Council/DCAM Analysis**
Data management is less an information technology challenge as it is a data definition and harmonization challenge. IT standards and governance are established – but not in terms of the goals of the data management program. The industry still needs to work on the alignment between IT and the other core stakeholders to ensure a consistent understanding of the scope of the data management problems as well as the pathways to solution.

At this industry average stage of capability, we would expect to see the policies and procedures (governance issues) associated with data management platforms, tool selection and storage approaches still being defined in the context of the data management strategy. We believe this is an important capability area for the overall success of the data management program. It is in the interaction between IT and data management where the criteria for remediation are established. The industry would benefit from a stronger link at the governance and organizational policy level.

**DCAM CROSS-REFERENCE: TECHNOLOGY ARCHITECTURE. SUB-CAPABILITY 6.1.3**

**IT Not Yet Aligned with Data Management**
- IT standards and governance are established – but not in terms of the goals of the data management program
- Survey respondents from IT think the alignment is high
- It is in the interaction of IT and data where the criteria for remediation are established

DCAM score (3.06): definition of governance processes for platforms, tools and storage

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Average DCAM Scores

IN PARTNERSHIP WITH: Sapient Global Markets
RESULTS AND OBSERVATIONS:
COLLABORATION WITH TECHNOLOGY

Q16: The data management program is aligned with internal technical and operational capabilities

The requirements and objectives of the data management program have been reviewed and are in alignment with technology capabilities.

The objectives of the data management program must be reached within specified timeframes. It is at this capability area where a wide variety of people representing a broad array of functions come together. We view this as the intersection of data architecture (management of meaning) with IT (data processing) with operations (process capability).

Key Observation
There is a lower level of alignment than expected between IT, data management and operations. The industry is still seeking to mitigate the dichotomy between IT (the movement of data) and the data management program (the management of data meaning). These goals are still not as aligned as desired.

EDM Council/DCAM Analysis
In this capability, we are looking for alignment from the perspectives of data architecture (meaning, identifiers, taxonomies and metadata), technology (physical infrastructure and tools) and operations (BCP, retention and archive). There is a correlation between the lack of alignment and the aggregate scores on the core data objectives (i.e. CDEs, business definitions and policy implementation). The reverse is also true. Firms that demonstrated better alignment among data, IT and operations also had significantly higher scores on data management capability.

DCAM CROSS-REFERENCE: TECHNOLOGY ARCHITECTURE, CAPABILITY 1.4

| DCAM score (3.06): working meetings on the intersection of data architecture, IT and operations |

<table>
<thead>
<tr>
<th>Industry</th>
<th>Tier 1</th>
<th>Control</th>
<th>Buy Side</th>
<th>Sell Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.06</td>
<td>3.10</td>
<td>3.26</td>
<td>3.02</td>
<td>3.09</td>
</tr>
</tbody>
</table>

Average DCAM Scores

IT/Data Management Partnership Still Evolving

- Respondents indicate that the financial industry is still managing the dichotomy between IT (the movement of data) and ODM (the management of data meaning)
- Firms that scored high on "core data" objectives also scored well on this alignment/capability question
### Composite Views and Summaries: Operational Groups of Benchmarking Questions

A rating of 3.4 and below means a lot of work to do, while 3.7 and above means the firms are well on the way to achieving the capability.

<table>
<thead>
<tr>
<th>Area</th>
<th>Industry Average</th>
<th>Control Average</th>
<th>Questions</th>
<th>Industry</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting up the data management program</td>
<td>3.40</td>
<td>3.68</td>
<td>• Question 1: Strategy&lt;br&gt;• Question 3: Communication&lt;br&gt;• Question 6: Authority</td>
<td>3.50</td>
<td>3.80</td>
</tr>
<tr>
<td>Obtaining Commitment from Stakeholders</td>
<td>3.21</td>
<td>3.49</td>
<td>• Question 2: Alignment&lt;br&gt;• Question 4: Funding&lt;br&gt;• Question 5: Metrics&lt;br&gt;• Question 7: Resources&lt;br&gt;• Question 21: Ecosystem</td>
<td>3.53</td>
<td>3.83</td>
</tr>
<tr>
<td>Implementing Operational Governance</td>
<td>3.16</td>
<td>3.48</td>
<td>• Question 8: Organizational Structure&lt;br&gt;• Question 9: Data Stewards&lt;br&gt;• Question 10: Policy and Standards&lt;br&gt;• Question 11: End-User Adherence</td>
<td>3.39</td>
<td>3.76</td>
</tr>
<tr>
<td>Implementing the Content Infrastructure</td>
<td>3.04</td>
<td>3.17</td>
<td>• Question 12: Alignment to Meaning&lt;br&gt;• Question 13: Critical Data Elements&lt;br&gt;• Question 14: Logical Domains&lt;br&gt;• Question 20: Data Lineage</td>
<td>2.93</td>
<td>3.13</td>
</tr>
<tr>
<td>Control Processes for Data Quality</td>
<td>2.83</td>
<td>3.08</td>
<td>• Question 17: Data Profiling&lt;br&gt;• Question 18: Establish Control Points&lt;br&gt;• Question 19: Root Cause Analysis</td>
<td>2.66</td>
<td>2.78</td>
</tr>
<tr>
<td>Collaborate with Technology</td>
<td>3.06</td>
<td>3.23</td>
<td>• Question 15: Alignment on Goals&lt;br&gt;• Question 16: Capabilities Exist</td>
<td>3.06</td>
<td>3.19</td>
</tr>
</tbody>
</table>

**Key Areas of Data Management**

1. Setting up the Data Management Program<br>   strategy, communication, authority
2. Commitment from Stakeholders<br>   alignment, funding, metrics, resources, ecosystem
3. Implementing Governance<br>   organizational structure, stewards, policy, adherence
4. Getting the Content Structure in Place<br>   meaning, CDEs, logical domains, lineage
5. Managing Data Quality<br>   profiling, control points, root cause
6. Working with IT<br>   alignment on goals, capabilities exist

**Note:**

A rating of 3.4 and below means a lot of work to do, while 3.7 and above means the firms are well on the way to achieving the capability.
Side by Side Comparisons

› These charts provide a comparison of the overall industry against the tier 1 financial institutions (both buy and sell sides) as well as against the “control group” established by the EDM Council.

› The control group includes EDM Council members whose firms have been active in data management. They were hand-selected by the Council to offer a comparison against the industry. The control group includes many of the G-SIBs and a good representation from both large asset managers and global custodians.
### COMPOSITE VIEWS AND SUMMARIES:
CONSOLIDATED CAPABILITY BENCHMARK RESULTS

Participants were asked what their perceived level of importance was for each question. The chart below shows in aggregate, which areas are perceived to be of the highest importance.

<table>
<thead>
<tr>
<th>Category</th>
<th>Question</th>
<th>Industry</th>
<th>Tier 1</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>Average</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish the Data Management Program</td>
<td>1: Strategy</td>
<td>3.50</td>
<td>3.57</td>
<td>3.80</td>
<td>3.24</td>
<td>3.60</td>
<td>3.00</td>
<td>3.22</td>
<td>3.46</td>
<td>3.26</td>
<td>3.20</td>
</tr>
<tr>
<td></td>
<td>3: Communication</td>
<td>3.29</td>
<td>3.60</td>
<td>3.54</td>
<td>3.50</td>
<td>3.10</td>
<td>2.25</td>
<td>2.89</td>
<td>3.23</td>
<td>2.14</td>
<td>2.60</td>
</tr>
<tr>
<td></td>
<td>6: Authority</td>
<td>3.41</td>
<td>3.40</td>
<td>3.72</td>
<td>3.24</td>
<td>3.50</td>
<td>2.18</td>
<td>3.20</td>
<td>3.34</td>
<td>3.20</td>
<td>2.40</td>
</tr>
<tr>
<td></td>
<td>2: Alignment</td>
<td>3.53</td>
<td>3.60</td>
<td>3.83</td>
<td>3.38</td>
<td>3.60</td>
<td>2.18</td>
<td>3.29</td>
<td>3.48</td>
<td>3.15</td>
<td>2.20</td>
</tr>
<tr>
<td></td>
<td>4: Funding</td>
<td>3.44</td>
<td>2.95</td>
<td>3.72</td>
<td>3.36</td>
<td>3.30</td>
<td>2.00</td>
<td>3.08</td>
<td>3.40</td>
<td>3.16</td>
<td>2.60</td>
</tr>
<tr>
<td>Get Commitment from Stakeholders</td>
<td>5: Metrics</td>
<td>2.81</td>
<td>3.45</td>
<td>3.04</td>
<td>2.88</td>
<td>2.10</td>
<td>2.00</td>
<td>2.67</td>
<td>2.86</td>
<td>2.66</td>
<td>2.60</td>
</tr>
<tr>
<td></td>
<td>7: Resources</td>
<td>3.26</td>
<td>3.33</td>
<td>3.52</td>
<td>3.17</td>
<td>2.80</td>
<td>2.25</td>
<td>2.91</td>
<td>3.34</td>
<td>2.39</td>
<td>2.20</td>
</tr>
<tr>
<td></td>
<td>21: Ecosystem</td>
<td>3.01</td>
<td>3.48</td>
<td>3.35</td>
<td>2.84</td>
<td>3.00</td>
<td>2.50</td>
<td>2.81</td>
<td>2.83</td>
<td>2.77</td>
<td>2.80</td>
</tr>
<tr>
<td>Implement Operational Governance</td>
<td>8: Org. Structure</td>
<td>3.39</td>
<td>3.28</td>
<td>3.76</td>
<td>3.38</td>
<td>2.70</td>
<td>2.38</td>
<td>3.03</td>
<td>3.25</td>
<td>2.97</td>
<td>2.60</td>
</tr>
<tr>
<td></td>
<td>9: Data Stewards</td>
<td>3.21</td>
<td>3.37</td>
<td>3.59</td>
<td>3.09</td>
<td>3.00</td>
<td>2.63</td>
<td>3.18</td>
<td>3.30</td>
<td>3.09</td>
<td>2.20</td>
</tr>
<tr>
<td></td>
<td>10: Policy &amp; Standards</td>
<td>3.28</td>
<td>2.80</td>
<td>3.59</td>
<td>2.96</td>
<td>2.60</td>
<td>2.25</td>
<td>2.70</td>
<td>3.17</td>
<td>2.09</td>
<td>2.30</td>
</tr>
<tr>
<td></td>
<td>11: End-User Adherence</td>
<td>2.72</td>
<td>2.97</td>
<td>2.96</td>
<td>2.50</td>
<td>2.40</td>
<td>2.25</td>
<td>2.43</td>
<td>3.32</td>
<td>2.96</td>
<td>2.40</td>
</tr>
<tr>
<td>Get the Content Infrastructure in Place</td>
<td>13: Critical Data Elements</td>
<td>3.20</td>
<td>3.32</td>
<td>3.41</td>
<td>3.09</td>
<td>3.00</td>
<td>2.68</td>
<td>3.03</td>
<td>3.38</td>
<td>3.17</td>
<td>2.60</td>
</tr>
<tr>
<td></td>
<td>14: Logical Domains</td>
<td>3.28</td>
<td>3.20</td>
<td>3.35</td>
<td>3.46</td>
<td>3.70</td>
<td>3.00</td>
<td>3.43</td>
<td>3.06</td>
<td>2.77</td>
<td>2.40</td>
</tr>
<tr>
<td>Manage Data Quality</td>
<td>20: Data Lineage</td>
<td>2.73</td>
<td>3.15</td>
<td>2.78</td>
<td>2.50</td>
<td>2.60</td>
<td>2.00</td>
<td>2.43</td>
<td>3.26</td>
<td>2.68</td>
<td>2.80</td>
</tr>
<tr>
<td></td>
<td>17: Data Profiling</td>
<td>2.66</td>
<td>2.77</td>
<td>2.78</td>
<td>2.46</td>
<td>2.60</td>
<td>2.38</td>
<td>2.43</td>
<td>2.92</td>
<td>2.86</td>
<td>2.60</td>
</tr>
<tr>
<td></td>
<td>18: Control Points</td>
<td>3.00</td>
<td>3.11</td>
<td>3.15</td>
<td>2.84</td>
<td>2.90</td>
<td>2.38</td>
<td>2.77</td>
<td>3.15</td>
<td>2.30</td>
<td>2.60</td>
</tr>
<tr>
<td></td>
<td>19: Root Cause</td>
<td>3.03</td>
<td>3.10</td>
<td>3.30</td>
<td>3.50</td>
<td>2.90</td>
<td>2.25</td>
<td>3.12</td>
<td>3.08</td>
<td>2.91</td>
<td>3.00</td>
</tr>
<tr>
<td>Collaborate with Information Technology</td>
<td>15: Alignment on Goals</td>
<td>3.06</td>
<td>2.80</td>
<td>3.19</td>
<td>2.96</td>
<td>2.80</td>
<td>2.68</td>
<td>2.91</td>
<td>3.30</td>
<td>2.80</td>
<td>2.00</td>
</tr>
<tr>
<td></td>
<td>16: Capabilities Exist</td>
<td>3.05</td>
<td>3.12</td>
<td>3.26</td>
<td>2.88</td>
<td>3.30</td>
<td>3.00</td>
<td>3.03</td>
<td>3.16</td>
<td>2.89</td>
<td>2.60</td>
</tr>
</tbody>
</table>
### COMPOSITE VIEWS AND SUMMARIES:
**BENCHMARKING QUESTIONS ALIGNED WITH BCBS 239**

<table>
<thead>
<tr>
<th>Area</th>
<th>Question</th>
<th>DCAM Capabilities</th>
<th>Justification</th>
<th>Average Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td>Q1; Strategy</td>
<td>1, 1.2</td>
<td>Definition of how the organization is approaching and implementing the data management program (defined, shared, aligned with requirements/objectives and enforceable)</td>
<td>3.50 3.80</td>
</tr>
<tr>
<td>Q4; Funding</td>
<td>2.1, 2.2</td>
<td>BCBS is a core business case objective and the funding must be defined, authorized and enforced</td>
<td>3.44 3.72</td>
<td></td>
</tr>
<tr>
<td>Q6; Authority</td>
<td>3.1</td>
<td>The DMP must be established, empowered and given authority to enforce adherence</td>
<td>3.41 3.72</td>
<td></td>
</tr>
<tr>
<td>Q7; Resources</td>
<td>3.4</td>
<td>Stakeholders need to be held accountable with pragmatic resource plans and appropriate funding</td>
<td>3.26 3.52</td>
<td></td>
</tr>
<tr>
<td>Q8; Structure</td>
<td>4.1, 4.4, 4.5</td>
<td>The governance structure is needed to implement the DMP and hold stakeholders accountable to their data management responsibilities. Governance needs to be operational and controls need to be in place to track adherence, progress and outcomes</td>
<td>3.39 3.76</td>
<td></td>
</tr>
<tr>
<td>Q10; Policies</td>
<td>4.3</td>
<td>Financial services organizations are run by policy. This is the essence of the concept of “control environment” and represents the highest level of adherence to the BCBS 239 principles</td>
<td>3.29 3.59</td>
<td></td>
</tr>
<tr>
<td>Q11; Adherence</td>
<td>4.5.1, 4.5.2</td>
<td>Stakeholders need to be held accountable to implementation of data management policy</td>
<td>2.72 2.96</td>
<td></td>
</tr>
<tr>
<td>Data Infrastructure</td>
<td>Q12; Meaning</td>
<td>5.2</td>
<td>Critical data must be precisely defined, harmonized across the enterprise and shared</td>
<td>2.93 3.13</td>
</tr>
<tr>
<td>Q13; CDEs</td>
<td>4.2.2</td>
<td>Data that supports critical business functions must be known, inventoried and managed</td>
<td>3.20 3.41</td>
<td></td>
</tr>
<tr>
<td>Q14; Domains</td>
<td>1.3, 4.2.1</td>
<td>Authorized data domains need to be identified to ensure their use in critical applications</td>
<td>3.29 3.35</td>
<td></td>
</tr>
<tr>
<td>Q20; Lineage</td>
<td>8.2</td>
<td>The organization must understand end-to-end data flows as well as the processes by which risk views are “manufactured”</td>
<td>2.73 2.78</td>
<td></td>
</tr>
<tr>
<td>Data Quality</td>
<td>Q17; Profiling</td>
<td>7.2.2</td>
<td>Data needs to be evaluated against all the critical dimensions of quality to ensure remediation and engender trust</td>
<td>2.66 2.78</td>
</tr>
<tr>
<td>Q18; DQ Control</td>
<td>7.1, 7.3</td>
<td>The data quality program needs to be established with accountability. Control processes need to be implemented across the full data supply chain</td>
<td>3.00 3.15</td>
<td></td>
</tr>
</tbody>
</table>

The EDM Council has mapped DCAM (at the sub-capability level) to BCBS 239 (paragraph-by-paragraph). This chart provides a mapping of the questions in the benchmarking survey to the objectives of BCBS 239 to the sub-capabilities in DCAM.

For a copy of the complete DCAM to BCBS 239 map please use: http://www.edmcouncil.org/dcam
BENCHMARK ADVISORY TEAM

MICHAEL ATKIN, CEO, EDM COUNCIL

Mike is a professional facilitator and has been a financial information industry advocate for over 25 years. He is an active participant in industry initiatives, provides consultation to global market authorities on the data implications of financial regulatory reform and is a subject matter expert on reference data strategy, governance, data quality and standards.

JOHN BOTTEGA, SENIOR ADVISOR, CHIEF DATA OFFICER FORUM, EDM COUNCIL

John is a senior strategy and data management executive with more than 30 years of experience in the industry. Over his career, John has held various positions in supporting a firm’s data management functions. Since 2006, John has held the title of Chief Data Office in both the private and public sectors, serving as CDO for Citi and Bank of America, and holding the post of CDO for the Federal Reserve Bank of New York. Today, John is the Principal and Managing Member of his own consulting firm, Data Management Advisory Services, LLC, and is supporting the Enterprise Data Management Council as Senior Advisor and Consultant, responsible for the Council’s CDO Forum and Data Management Practices.

GAIVN KAIMOWITZ, DATA MANAGEMENT PRACTICE LEAD, SAPIENT GLOBAL MARKETS

Gavin leads Sapient Global Markets’ Data Management Practice across the capital and commodity sectors, comprising of more than 500 active consultants. Gavin is responsible for delivery quality and oversight, collation and generation of best practices, thought leadership and strategy for data management-related initiatives. He has a proven track record in the financial services data domain of solution design, delivery, business case definition, strategic roadmap design and in building data management-related products. Prior to joining Sapient, Gavin held the title of Global Head of Product Management for Enterprise Data Management at Thomson Reuters.

PREDRAG DIZDAREVIC, MANAGING PARTNER, PELLUSTRO

Predrag is an established entrepreneur with extensive experience in managing and developing services and software organizations within financial services and information technology industries. Predrag advises financial services companies on data management and technology strategies, and private equity firms on investment selection and the creation of new businesses within the financial technology and data space. He was one of the stakeholders in the design and positioning of the Pellustro platform.
SAPIENT GLOBAL MARKETS

Sapient Global Markets partners with financial services, natural resources and energy clients to facilitate business transformation in today’s complex markets. We blend strategy, technology, visualization capabilities and industry-oriented solutions and expertise to drive innovation, optimization and growth.

**Business Consulting and Strategy Services**
We develop and deliver executable strategies for enabling change.

- **Fusion Workshops**
  Achieve the alignment and consensus you need to move the project and the company forward.

- **Operating Models**
  Create Target Operating Models (TOM), Target Information Models (TIM) and Target Architecture Models (TAM) to realize transformational goals.

- **Business Process Design and Operations Modeling**
  Streamline operations for greater cost savings, faster time to market and increased productivity and efficiency.

- **User-driven Strategy**
  Utilize data visualization and multiple channel capabilities to empower employees and meet increasing and more sophisticated customer demands.

- **Industry-level Utility Development**
  Leverage industry-level utilities where it makes sense—for greater efficiencies and improved operations.

- **Program Management Office**
  Ensure your most critical and complex projects are successfully completed on time and on budget.

**Data Management**
We provide the services from strategy to help our clients with all of their data management related needs.

- **Data Governance and Data Strategy**
  Ensure all departments, teams and technologies operate efficiently and consistently when it comes to defining and executing a data management strategy.

- **Master Data Management**
  Link all of your critical data to a single master file and provide a common point of reference across the board.

- **Data Quality**
  Establish and assign ownership of processes for data profiling, assessment, cleansing and integration to mitigate business risk.

- **Technology Architecture and Implementation**
  Incorporate industry-wide messaging standardization, data utilities and more into your technology environment to optimize how data is collected, stored, arranged, integrated and put to use.

- **Analytics, Visualization and Reporting**
  Employ the latest technologies, such as dashboards, real-time & predictive analytics and operational intelligence reporting, to quickly gain insights into large data sets.

- **Data Model Management**
  Understand exactly how data is related and used in order to minimize the risk associated with inaccurate information.

- **Regulations and Data**
  Make data the key building block to understanding clients, restoring confidence and reassuring regulators.

**Trade and Transaction Reporting**
We pave a new and more effective path to regulatory reporting and transparency.

- **Intelligent Regulatory Response**
  Gain the insight you need to confidently anticipate and adapt to the changing regulatory landscape.

- **Regulatory Efficiency**
  Explore different approaches for meeting reporting requirements that will ultimately strengthen your customer experience and drive top- and bottom-line growth.

- **Regulatory Change**
  As new requirements emerge, learn what process and technology modifications you will need to make in order to comply.

www.SapientGlobalMarkets.com
The EDM Council has partnered with Element22 to use Pellustro for online availability of the Data Management Capability Assessment Model (DCAM™). The Pellustro for DCAM™ platform allows you to manage the complete assessment process including facilitating stakeholder participation, capturing responses with standardized scoring & evidence, and visualizing & analyzing results in real time.

This ensures that DCAM™ assessments remain:

- **Aligned to Industry Standards**
  - All firms using the platform have access to the same model, measurement criteria and detailed content built in collaboration with the EDM Council
  - Using the same platform, model, and measurement criteria ensures comparable metrics that help to build industry benchmarks

- **Always Up-to-date**
  - All future versions and upgrades to DCAM™ will be available on Pellustro immediately for use and access
  - The content includes not only the structure but also all related documentation
  - The standard scoring rubric is kept up to date with all changes and industry recommendations

- **Benchmark-able**
  - Pellustro allows the EDM Council to build periodic Industry Benchmarks based on anonymized contributed assessments
  - These benchmarks would be available in the platform for peer comparisons to self-assessments

- **Backward Compatibility**
  - Element22 and the EDM Council will work towards ensuring each version is backward compatible
  - Pellustro will build automated processes to migrate assessments done on older versions to the latest version

- **Flexible to Support Both Self & Facilitated Assessments**
  - Pellustro supports self assessments by firms and assessments facilitated by Consulting Organizations

www.Pellustro.com
EDM COUNCIL OVERVIEW

Founded in 2005 by the financial industry to elevate the practice of data management; 501(c)(6) non-profit trade association

Promote best practices to ensure that all consumers have trust and confidence that the data they rely on for decision making and business processing is precisely what they expect it to be (fit-for-purpose) without the need to manual reconciliation

Four Core Program Areas

1. Data Content Standards: establish the standards-based infrastructure needed for operational management (identification, semantic language of the contract, classification)
2. Data Management Best Practices: document the science and discipline of data management from a practical perspective (data management maturity, data quality, benchmarking)
3. Data Implications of Regulation: translate the legislative objectives of transparency, financial stability, compressed clearing and cross-asset market surveillance into regulatory objectives and practical reporting requirements
4. Business Network: global meeting ground, CDO Forum and mechanism for sustainable business relationships

EDM Council Affiliations

- Financial Research Advisory Council (OFR)
- Chair Data & Technology Subcommittee (OFR)
- Private Sector Advisory Group (FSB)
- Hierarchies and Ownership Working Group (FSB)
- LEI Steering Committee
- Data Transparency Coalition (Board)
- Technical Advisory Committee (CFTC)
- Technical Standards Committee (Object Management Group)
- OMG Financial Domain Task Force (co-chair)
- ISO TC68/SC4 and ANSI X9D
- Open Financial Data Forum

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2015 BENCHMARKING STUDY RESOURCES

2015 Benchmarking Study (this document):

Benchmarking Template:
http://www.edmcouncil.org/downloads/20150528_Benchmarking_v1.2_-_content.pdf

DCAM Overview (PPT):

Data Management Capability Assessment Model (DCAM) Version 1.1:
http://www.edmcouncil.org/downloads/EDMC_DCAM_-_VERSION_1.1_-_Component_Structure.xlsx

DCAM Scoring Guidance:
http://www.edmcouncil.org/downloads/DCAM_Scoring_v1.1.1.xlsx

BCBS 239 to DCAM Map (BCBS paragraph alignment to DCAM sub-capabilities):
http://www.edmcouncil.org/downloads/20150630_BCBS_239_Alignment_with_DCAM_V1.1.pdf

DCAM to BCBS 239 Map (DCAM sub-capabilities count/Indicator of Importance):
http://www.edmcouncil.org/downloads/20150624_DCAM_to_BCBS_with_paragraph_count_v3.xlsx

DCAM Component Spreadsheet:
http://www.edmcouncil.org/downloads/EDMC_DCAM_-_VERSION_1.1_-_Component_Structure.xlsx

Pellustro DCAM Platform:

Sapient Global Markets:
http://www.sapient.com/global-markets
ADOPT DCAM FOR YOUR ORGANIZATION

For more information on benchmarking or to initiate discussions about putting DCAM to work for your organization, please send an inquiry to:

info@edmcouncil.org

DCAM Assessments

• Many of our consulting members are participants in the DCAM Authorized Partner (DAP) Program (http://www.edmcouncil.org/dap) and have been accredited in the use of DCAM for client assessments, operational review, strategy development and other onward consulting.

• The EDM Council is available to perform facilitated training for members. This intensive training program results in consensus of the current state of data management based on DCAM scoring.

• The EDM Council is a partner with Element22 for the use of Pellustro (http://www.element-22.com/pellustro/) – a cloud based platform for DCAM assessments.

DCAM Training

• The EDM Council provides formal training on the capability assessment methodology. DCAM Foundations provides a core understanding of the capabilities and dependencies.

• DCAM Advanced training focuses on adoption validation and how to perform formal audits based on DCAM.