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Purpose and approach

We are pleased to present Ernst & Young LLP’s third industry survey of the regulatory reporting departments (RRDs); the first survey was published in 2012 and the second in 2015. Survey respondents include a wide variety of US bank holding companies (BHCs) and foreign banking organizations (FBOs). The purpose of the survey is to gather industry trends related to the RRDs. The surveys focused on organizational and process functions within the RRDs as well as interactions with other groups involved in supporting the bank financial regulatory reporting process such as risk and quality assurance (QA), more broadly across finance and others.

Since the last survey was published in 2015, the industry has faced a significant amount of regulatory regime change but not a corresponding amount of new legislation. In addition, the industry has experienced an uptick in the frequency of examinations and feedback received from regulators – including several horizontal examinations conducted by the Federal Reserve Bank (FRB) in 2017 and 2018. Recently established intermediate holding companies (IHCs) are also adjusting to heightened expectations from regulators as they are compared against their mature BHC counterparts. In 2018, we are refreshing the survey to track developments and gauge new challenges facing the industry due to a continuously changing regulatory environment and heightened FRB examination expectations. This year our respondent panel is almost double that of 2015 with 47 firms participating; our panel spans a variety of BHCs and FBOs, including Large Institution Supervision Coordinating Committee (LISCC) firms, to capture trends at different types of institutions and firms of varying size.

The survey consisted of 42 questions, of which a selection is included in this report. When possible, interviews were conducted in person. Similar to previous years, these questions are aimed at understanding the regulatory reporting environment and identifying the industry trends and practices with respect to the regulatory reporting operating model.

The individual responses of survey participants are confidential and the aggregated responses have been provided in this publication. We would like to extend our thanks to the participants of the survey.

For additional insights, please visit the EY Regulatory Reporting website where you can find our 2015 and 2012 surveys as well.
People and organizational structure

Respondents continue to struggle with identifying resources with the appropriate skill set. 40% of overall respondents are utilizing nearshore or offshore resource models, while all LISCC firms surveyed are doing the same.

Data and technology

Financial institutions are designing strategic data and technology solutions to support firm-specific regulatory reporting needs and focusing on reducing their reliance on multiple independent data sources. 64% of respondents reported using multiple vendor tools for different reports (e.g., Jack Henry for Call Report and REG-Reporter for FR Y-9C). 71% of firms self-reported having “medium” data quality available for regulatory reporting. 49% of firms are using Axiom as part of their technology solution for regulatory report production.

Process and controls

On a maturity scale of 1 to 5, 49% of survey respondents, mostly larger and more complex firms, categorized their regulatory reporting environment at a “level 3.5,” in between defined and managed, depending on the level of automation for specific reports. 86% of firms reported that manual processes continue to be the major underlying reason for recurring adjustments made for regulatory reporting purposes.
2018 survey highlights

**Governance**

96% of firms reported having a formal attestation process in place.

New requirements around CFO attestation have resulted in significant developments in management oversight and formal attestation processes across RRDs.

The percentage of firms responding that they had a formal management review committee in place increased from 56% in 2015 to 77% in 2018.

Since 2015, firms have enhanced their governance processes significantly to meet heightened FRB expectations. Some examples of enhanced governance include maintaining an accountability policy and materiality policy or thresholds, requiring attestation from multiple roles involved in the regulatory reporting process and establishing an issue management framework.

**Performance management**

98% of firms indicated that internal audit (IA) is involved in monitoring regulatory reporting activities, including:

- Performing transaction testing
- Testing effectiveness of controls
- Monitoring issue closure

28% of firms indicated that the IA team includes resources with regulatory reporting expertise.

Q: Does your firm have an independent QA team in place?

49% of firms indicated that they have had an FRB examination in the past year.
Survey respondent composition

This year’s survey panel consisted of 47 BHCs, IHCs, FBOs and LISCC firms. This is an increase of 22 firms, mostly BHCs and FBOs, from the 2015 survey.

Composition of survey respondents by firm designation (2018)

- BHC: 21%
- IHC: 13%
- FBO: 17%
- LISCC: 49%

Composition of survey respondents by asset size* (2018)

- >US$500b: 13%
- US$250b–$US500b: 57%
- US$150b–US$250b: 13%
- <US$150b: 17%

*Asset size as of Q3 2018
Introduction

The regulatory reform agenda has continued to evolve since the last EY Federal Reserve regulatory reporting survey was published in 2015. While the past 10 years have brought significant change to how financial institutions are supervised and regulated, including Basel 3, Enhanced Prudential Standards (EPS) and Comprehensive Capital Analysis and Review (CCAR), firms are now taking time to assess their current state operating models to identify areas of increased efficiency and ways to improve data quality and accuracy. From the regulators, we are seeing some new reporting requirements and evolving expectations across three key areas: ever-increasing emphasis on internal controls and accountability, QA and data integrity. Accordingly, functions across finance, risk and data continually need to increase their collaboration in addressing FRB requirements. Newly proposed reporting requirements will require firms to make some investments in data and reporting, including the FR 2590 for single counterparty credit limits and FR 2510 for global systemically important banks’ reporting of immediate counterparty data for financial assets and qualified financial contracts. Newer requirements such as CCAR CFO attestation, which first became effective for LISCC firms in 2017 and were effective for IHCs this year, have driven broad changes in materiality thresholds, issues management processes, data lineage and training programs.

Currently, the industry is experiencing an increase in the volume of horizontal examinations on topics ranging from FR Y-14Q/M, IHC regulatory reporting, liquidity reporting, capital calculations and reporting, and other risk stripes. In addition, the establishment of the FRB’s National Statistics Regulatory Review Program has resulted in more standardized regulatory reporting reviews of firms across the country.

The National Statistics Regulatory Review Program continues to emphasize the following as key areas of focus:

- Data quality
- The internal control framework
- Regulatory reporting accountability

As a result, firms are focusing on enhancing their reporting processes in response to regulator feedback; some common themes from recent regulatory reviews include, but are not limited to, the following.

- Establishing formal regulatory reporting training programs
- Improving regulatory reporting requirements alignment through robust policies and procedures for reviewing underlying reporting logic and data
- Increased automation of the reporting process
- The improvement of formal governance over the end-to-end reporting process

The results of the survey show that firms are starting to focus on solutions to increase efficiency and decrease reliance on manual processes. While for more mature and complex firms this may mean starting to explore advanced analytics and robotics process automation (RPA), some smaller, less mature firms are beginning their automation journey for the first time.
Key themes

- **People and organizational structure:** defining regulatory report ownership continues to be a challenge for many firms as non-RRDs can play significant roles in the report production process. Firms may have established decentralized ownership of report schedules that require nonfinancial data. Firms struggling with hiring, developing and maintaining teams with relevant regulatory reporting experience continues to be a trend from 2015 through to 2018.

- **Technology and data:** sustained emphasis on data granularity has resulted in firms investing heavily in their data architecture, technology and data lineage documentation. Firms are continuing to invest in third-party tools to facilitate their production process. Many firms are challenged by having multiple independent data sources, increasing the potential for inconsistent results for reporting.

- **Process and controls:** firms continue to place emphasis on improving their regulatory reporting processes through establishing a robust and controlled reporting environment. Most firms lack a consistent level of maturity across reports – while some reports may be highly automated and controlled, others are highly manual and potentially prone to error and adjustment. As firms continue to move toward processes that allow more time for high-value activities (e.g., analytics and review), many firms are struggling to keep up with the pace of regulatory change, the level of reporting granularity, system and data integrity issues, and the need for continued manual adjustments.

- **Governance:** the introduction of newer requirements (e.g., CFO attestation) as well as the FRB’s emphasis on accountability and traceability have resulted in significant developments in management oversight and formalized attestation processes across all groups involved in regulatory reporting. Despite these developments, however, many firms are struggling to enforce accountability across functional groups in finance and beyond.

- **Performance management:** the second and third lines of defense (LOD) continue to play a significant role in regulatory reporting. The development of independent QA programs has become an industry-leading practice and expectation of regulators; large and complex firms are continuing to build out their QA functions with more robust testing and remediation frameworks while smaller firms are starting to develop these capabilities. The role of IA in regulatory reporting has expanded recently and firms are finding it challenging to find IA resources with regulatory reporting expertise to supplement their existing teams. Firms continue to build out their capabilities around management dashboards to facilitate timely and accurate communication of performance, risks and issues to senior management.
People and organizational structure

Key topics:

- Regulatory report ownership
- Team structure and organization
- Global delivery resource models
- Team development
- Training

Shifts in the financial regulatory environment have required firms to adapt their RRDs. Institutions have redefined ownership over report production; increased utilization of offshore, nearshore, and third-party resources; and enhanced the quality of their training programs. Despite these efforts, it seems that firms continue to struggle in a key area — identifying and retaining employees with the right mix of knowledge of reporting requirements and experience. Firms are looking for resources with not just report preparation experience, but also analytical skills in order to increase efficiency in the reporting process and apply more time to analysis of reports.

2018 highlights

- In line with the results from 2015, respondents continue to report that hiring and retaining resources with relevant regulatory reporting experience is among their biggest challenges.

- Overall, 40% of firms surveyed utilize a nearshore or offshore resource model; 100% of LISCC firms surveyed are leveraging the nearshore and offshore resources to support their regulatory reporting process in areas such as transaction testing, report production and data aggregation.

- Training continues to be an area of focus for most firms as they work to develop and maintain comprehensive, sustainable training programs that meet FRB expectations, including web-based programs.
### Regulatory report ownership

In general, the RRD is responsible for financial reports (e.g., FR Y-9C, Call Report). In addition, at LISCC and large BHCs and FBOs, the RRD also owns FR Y-14M/Q reports. Ownership of the FR Y-14M/Q has consolidated into the RRD since 2015 when responsibility was split between RRD, finance, treasury, capital planning or reporting and controllers.

- Broker-dealer reporting is typically owned by a broker-dealer-specific RRD.
- Structural reports are typically owned by legal or the RRD with input from legal teams.
- Liquidity reports are typically owned by the treasury team.

**Forty-five percent of firms indicated that the RRD owns the production of FR Y-14A actuals compared with only 21% of firms indicating the RRD owns FR Y-14A projections. Ownership of FR Y-14A actuals is primarily split between RRD and designated CCAR teams. FR Y-14A projections are commonly owned by various risk-based teams, including treasury, CCAR and capital reporting and/or management teams.**

<table>
<thead>
<tr>
<th>Report type/examples</th>
<th>Who typically owns the report</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial reports</strong></td>
<td>RRD (98%)</td>
</tr>
<tr>
<td>FR Y-9C, FR Y-11, FR 2314, FFIEC 009, FR Y-15, FFIEC 002, FR Y-7N, FFIEC 019</td>
<td>Other (2%)</td>
</tr>
<tr>
<td><strong>CCAR</strong></td>
<td>RRD (54%)</td>
</tr>
<tr>
<td>FR Y-14A (actuals)</td>
<td>Treasury (16%)</td>
</tr>
<tr>
<td>Capital reporting or capital management or both (15%)</td>
<td></td>
</tr>
<tr>
<td>CCAR Central Office (15%)</td>
<td></td>
</tr>
<tr>
<td><strong>CCAR</strong></td>
<td>Treasury (27%)</td>
</tr>
<tr>
<td>FR Y-14A (projections)</td>
<td>RRD (21%)</td>
</tr>
<tr>
<td>Financial planning and analysis (18%)</td>
<td></td>
</tr>
<tr>
<td>Capital reporting or capital management or both (12%)</td>
<td></td>
</tr>
<tr>
<td>CCAR Central Office (12%)</td>
<td></td>
</tr>
<tr>
<td>Risk (9%)</td>
<td></td>
</tr>
<tr>
<td><strong>CCAR</strong></td>
<td>RRD (73%)</td>
</tr>
<tr>
<td>FR Y-14M, FR Y-14Q</td>
<td>Other (27%)</td>
</tr>
<tr>
<td><strong>Structural reports</strong></td>
<td>RRD (40%)</td>
</tr>
<tr>
<td>FR Y-10 or FR Y-7/FR Y-6</td>
<td>Legal (31%)</td>
</tr>
<tr>
<td>Mixed (RRD and legal) (11%)</td>
<td></td>
</tr>
<tr>
<td>Other (e.g., legal entity controllers) (18%)</td>
<td></td>
</tr>
<tr>
<td><strong>Broker-dealer reports</strong></td>
<td>Broker-dealer-specific reporting team (87%)</td>
</tr>
<tr>
<td></td>
<td>RRD (13%)</td>
</tr>
<tr>
<td><strong>TIC reports</strong></td>
<td>RRD (86%)</td>
</tr>
<tr>
<td></td>
<td>Other (14%)</td>
</tr>
<tr>
<td><strong>Liquidity reports</strong></td>
<td>Treasury (44%)</td>
</tr>
<tr>
<td>FR 2052A/B, liquidity coverage ratio</td>
<td>RRD (44%)</td>
</tr>
<tr>
<td></td>
<td>Liquidity (12%)</td>
</tr>
<tr>
<td><strong>Basel reports</strong></td>
<td>RRD (78%)</td>
</tr>
<tr>
<td>FFIEC 101, FFIEC 102</td>
<td>Risk (15%)</td>
</tr>
<tr>
<td></td>
<td>Capital reporting or capital management or both (7%)</td>
</tr>
</tbody>
</table>
Team structure and organization

Eighty-seven percent of the firms surveyed have RRDs with less than 50 full-time employees FTEs, including contractors and offshore/nearshore resources. LISCCs comprise the largest share of firms with FTEs greater than 50, while FBOs and smaller BHCs commonly have less than 20 FTEs, with 18 being the average number of FTEs.

Seventeen percent of respondents reported that they utilize third-party vendors to outsource the regulatory reporting process (e.g., data sourcing, aggregation, report preparation). In general, firms are using third-party vendors to support the data aggregation and sourcing processes; in other cases, firms reported using these services to support some preliminary schedule production. Notably, half of LISCCs surveyed reported employing third-party vendors or contractors to supplement FTEs in the report production process. This may be due to the increased complexity of reporting required from firms as they pass certain asset thresholds (e.g., CCAR, FR Y-15). Smaller firms, with less complex requirements, seem to be less likely to outsource their report production process to third parties.

Q: What is the headcount in the RRD/group (all FTEs, including employees and contractors and offshore/nearshore)?

<table>
<thead>
<tr>
<th>Group</th>
<th>1-10</th>
<th>10-20</th>
<th>20-50</th>
<th>&gt;50</th>
</tr>
</thead>
<tbody>
<tr>
<td>LISCC</td>
<td>40%</td>
<td>26%</td>
<td>13%</td>
<td>17%</td>
</tr>
<tr>
<td>BHC</td>
<td>60%</td>
<td>43%</td>
<td>75%</td>
<td>67%</td>
</tr>
<tr>
<td>IHC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FBO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q: Does your firm utilize non-technology third-party vendors to support any regulatory reporting or upstream processes?

<table>
<thead>
<tr>
<th>Group</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>LISCC</td>
<td>44%</td>
<td>67%</td>
</tr>
<tr>
<td>BHC</td>
<td>73%</td>
<td>27%</td>
</tr>
<tr>
<td>IHC</td>
<td>75%</td>
<td>13%</td>
</tr>
<tr>
<td>FBO</td>
<td>67%</td>
<td>33%</td>
</tr>
</tbody>
</table>
Alternative resource models

Nearshore: a low-cost location located within the US that is not your normal place of business

Offshore: a low-cost location located outside the US that is not your normal place of business

All LISCCs surveyed reported leveraging an alternative delivery resource model (e.g., nearshore and offshore resourcing) for regulatory reporting. While 60% of survey respondents stated that they currently do not use near or offshore resources, these respondents are primarily limited to firms with less than $150 billion in total assets and, consequently, fewer or less complex reporting obligations. The large financial institutions (total assets >$500 billion) that may require extensive resources to support regulatory reporting, including CCAR, are splitting their teams across offshore locations (primarily India) to achieve cost and operational efficiencies. Many firms have also implemented operating models that incorporate a nearshore component for their teams.

Q: Does your regulatory reporting process leverage a nearshore or offshore model?

<table>
<thead>
<tr>
<th>&lt;US$150b</th>
<th>US$150b-US$500b</th>
<th>&gt;US$500b</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>36%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Yes | No
Fifty-one percent of survey respondents reported that their primary concern is acquiring and retaining well-rounded resources with relevant experience in regulatory-specific topics and future-focused areas such as data analysis. This is consistent with findings from the 2015 survey where 34% of respondents indicated that finding resources with regulatory reporting experience was their key challenge. The over 50% increase from 2015 to 2018 regarding the need for staff with relevant experience is likely due to the shift in the FRB's focus to data quality, process automation and analytics, which has resulted in a change in the profile and desired skills within the RRDs. In addition, with the implementation of the IHC rule, the past several years have seen a significant increase in demand for regulatory reporting resources; there are many more institutions hiring from a relatively constant resource pool.

Many firms responded with other team development concerns, which included the following:

- Training resources (e.g., funding, time) and steep learning curves
- Ability to adapt to the pace of regulatory change
- Firms not based on the East Coast that are struggling to identify and hire talent
- Growth within the RRD – identifying career progression for team members

Q: What are your primary concerns in developing and maintaining your teams?

### 2018

- Turnover: 19%
- Staff with experience: 51%
- Understaffed: 13%
- Other: 17%

### 2015

- Turnover: 27%
- Staff with experience: 34%
- Understaffed: 23%
- Other: 16%
Training

Training developed and delivered to all persons involved in the regulatory reporting supply chain has emerged as a critical focus area for the regulators and the industry in order to embed accountability.

FRB expectations:
- Senior level management should ensure there is a formalized and comprehensive training program.¹
- Training at the business line level is critical.²
- Any person involved in the supply chain needs training.³

Industry-leading practices:
- Proactive and strategic approach to training, starting with assessment of needs and building a program framework
- Content, organized by audience-driven tiers, covering general awareness, report-focus and product-driven
- Sustainable, economical and more effective approach to content development, leveraging accelerators and deployed via a web-based platform

Regulators have consistently placed greater emphasis on formalized and comprehensive end-to-end training programs for all persons involved in the regulatory reporting supply chain. The expectation is that training should outline reporting requirements, processes and procedures; tracking of attendance and re-certification are keys to verifying the success of a firm's training program.³ The industry has responded to this feedback, with 36% of the survey respondents who reported no formal training program in 2018, a decrease from 46% in 2015. The lack of training programs is noted primarily among firms with less than $150 billion in total assets as they have not yet faced the rigorous regulatory scrutiny of the larger financial institutions. Of the respondents that indicated existence of a training program, approximately 40% reported some level of general awareness, report-specific and product-specific training, approximately 20% acknowledged having only general awareness training in place while the remainder reported a mix of general awareness with report or product-specific training (driven by key reports and material product portfolios). In developing robust training programs, respondents continue to struggle with building the appropriate breadth and depth of content, sustaining the program with a process to continuously update content and utilizing effective delivery mechanisms.

Q: Which of the options below best describes the maturity of your regulatory reporting training program?

<table>
<thead>
<tr>
<th></th>
<th>US$500 billion or more</th>
<th>US$250 billion to US$500 billion</th>
<th>US$150 billion to US$250 billion</th>
<th>&lt;US$150 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formalized</td>
<td>67%</td>
<td>33%</td>
<td>63%</td>
<td>15%</td>
</tr>
<tr>
<td>Established</td>
<td>33%</td>
<td>17%</td>
<td>13%</td>
<td>22%</td>
</tr>
<tr>
<td>Comprehensive</td>
<td>17%</td>
<td>50%</td>
<td>25%</td>
<td>19%</td>
</tr>
<tr>
<td>No program</td>
<td>8%</td>
<td>37%</td>
<td>61%</td>
<td>44%</td>
</tr>
</tbody>
</table>

Key topics:

- Technology challenges
- Automation
- Reporting tools

Financial institutions are designing comprehensive technology solutions to support firm-specific regulatory reporting needs. For a majority of firms, the largest issue related to technology is the reliance on multiple independent data sources, which leads to inconsistent data and manual intervention. To bridge this gap, firms are increasingly migrating to customized technological solutions (e.g., leveraging multiple vendor tools or proprietary solutions that are tailored to a firm’s specific needs) to streamline and automate their end-to-end reporting process. Additionally, firms are also exploring newer technologies to adapt to evolving focus areas such as data analytics and increased automation in the reporting process.

2018 highlights

- There is a shift toward greater automation with nearly half of the respondents utilizing or exploring automation technologies such as RPA and machine learning to increase reporting quality.
- The majority of the firms surveyed indicated plans to adopt a global centralized reporting tool within the next five years with Axiom being the primary tool of choice.
- An emerging trend noted among LISCCs and BHCs is the development of in-house proprietary tools tailored for firm-specific reporting needs.
The overall technology challenge for 72% of firms surveyed is multiple independent data sources, which leads to inconsistent information across the organization. For FBOs, however, legacy infrastructure and mappings were reported to be the biggest challenge. Lack of integration between data sources or source systems was cited by half of the respondents as a key concern, especially for LISCCs. Several firms noted long processing times for report production, given the challenges of system constraints and disparate data sources. As FRB expectations continue to evolve, firms are developing comprehensive solutions to align reporting quality and control across legacy and emerging systems. Many firms’ solutions include investment in third-party vendors (e.g., reporting tools) to assist in increasing efficiency and consistency across regulatory reporting.

Firms continue to rely on regulatory reporting tools offered by external vendors to streamline and automate the regulatory reporting process. While strategic reporting tools such as Axiom, OneSumX and Lombard Risk/REG-Reporter maintain a substantial presence in the industry, 24% of the survey respondents reported using proprietary tools for reporting. The majority of institutions investing in the development of proprietary tools are LISCCs and BHCs. The significant increase in the percentage of respondents using Jack Henry can be explained primarily due to the increase in our survey panel. Additionally, 34% of firms noted the use of other vendors such as FIS, Argus and Black Knight (primarily for CCAR reporting) to supplement existing vendors.

Q: What are the top three technology challenges faced by your organization for regulatory reporting?

<table>
<thead>
<tr>
<th>Challenge</th>
<th>LISCC</th>
<th>BHC</th>
<th>IHC</th>
<th>FBO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legacy infrastructure</td>
<td>70%</td>
<td>70%</td>
<td>70%</td>
<td>65%</td>
</tr>
<tr>
<td>System constraints</td>
<td>83%</td>
<td>67%</td>
<td>50%</td>
<td>67%</td>
</tr>
<tr>
<td>Multiple data sources</td>
<td>52%</td>
<td>65%</td>
<td>50%</td>
<td>67%</td>
</tr>
</tbody>
</table>

Annual trends in third-party vendor software

Please specify which third-party vendor software your organization uses to generate regulatory reports

<table>
<thead>
<tr>
<th>Vendor</th>
<th>LISCC</th>
<th>BHC</th>
<th>IHC</th>
<th>FBO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axiom</td>
<td>15%</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>OneSumX</td>
<td>15%</td>
<td>22%</td>
<td>12%</td>
<td>20%</td>
</tr>
<tr>
<td>Lombard Risk/REG-Reporter</td>
<td>10%</td>
<td>30%</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>Jack Henry</td>
<td>15%</td>
<td>28%</td>
<td>28%</td>
<td>24%</td>
</tr>
</tbody>
</table>

Please specify which third-party vendor software your organization uses to generate regulatory reports

<table>
<thead>
<tr>
<th>Vendor</th>
<th>FBO</th>
<th>IHC</th>
<th>BHC</th>
<th>LISCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axiom</td>
<td>22%</td>
<td>50%</td>
<td>38%</td>
<td>60%</td>
</tr>
<tr>
<td>OneSumX</td>
<td>11%</td>
<td>30%</td>
<td>13%</td>
<td>10%</td>
</tr>
<tr>
<td>Lombard Risk/REG-Reporter</td>
<td>67%</td>
<td>21%</td>
<td>21%</td>
<td>30%</td>
</tr>
<tr>
<td>Proprietary tool</td>
<td>67%</td>
<td>10%</td>
<td>29%</td>
<td>30%</td>
</tr>
</tbody>
</table>

1Wolters Kluwer Financial Services (WKFS) includes FRSGlobal and OneSumX vendor solutions.
Fifty-eight percent of firms, primarily LISCCs and IHCs, plan to move to a global centralized reporting tool within two to five years while 15% of the respondents, primarily BHCs, reported plans to implement within one year. Axiom remains the primary tool of choice for all institution types, used by 64% of the firms surveyed. Wolters Kluwer (OneSumX) was the second option, considered by 12% of respondents.

A notable development is that 19% of firms are exploring tailored solutions, including a combination of existing tools (e.g., Axiom with OFSAA, Lombard with Oracle and in-house proprietary tools). The latter is primarily being considered by LISCCs (11%) and the former by BHCs (14%) and IHCs (25%). This is indicative of increased investments in sustainable solutions customized for firm-specific reporting needs.

Nearly half of the survey respondents utilize workflow tools (33%) or RPA (13%) to enhance efficiencies in their regulatory reporting process. Thirty-three percent of firms indicated that they are currently in active discussions to identify and deploy advanced automation technologies such as artificial intelligence and machine learning.

Twenty-one percent of respondents are not exploring any automation technologies at this time. This trend is primarily seen in FBOs (33%) and smaller BHCs and IHCs, i.e., with total assets less than $200 billion (31%). Thirty percent of LISCC firms interviewed are not currently exploring automation technologies.

Q: Which tool is currently being used/considered as a single tool for generating and managing all regulatory reports globally for your organization?

Q: What types of technology/automation does your institution currently use?
In 2018, 43% of firms characterized their reporting process as partially automated, which decreased from 56% in 2015. The number of firms responding that they have a “mostly automated” regulatory reporting process increased from zero to six, indicating steady progress toward greater levels of automation within the industry. While all respondents acknowledged that some level of manual intervention is required in end-to-end report production, only 15% reported a manual process (i.e., 30% or less from automated feeds).

How would you describe the regulatory reporting process?

<table>
<thead>
<tr>
<th>2012</th>
<th>2015</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>Partially automated</td>
<td>Highly automated</td>
</tr>
<tr>
<td>20%</td>
<td>16%</td>
<td>15%</td>
</tr>
<tr>
<td>55%</td>
<td>56%</td>
<td>43%</td>
</tr>
<tr>
<td>25%</td>
<td>28%</td>
<td>30%</td>
</tr>
</tbody>
</table>

**Mostly automated** – 80% or more from automated feeds, 20% from manual data inputs

**Highly automated** – 70% from automated feeds, 30% from manual data inputs

**Partially automated** – 50% from automated feeds, 50% from manual data inputs

**Manual** – 30% or less from automated feeds, 70% from manual data inputs
Key topics:

- Data sourcing
- Data quality and granularity
- Critical data elements
- Data dictionaries

Data quality and traceability continue to remain at the top of the agenda for regulators and the industry in an effort to achieve greater standardization, stronger controls, and, subsequently, higher data integrity and reporting accuracy. As a result, firms are increasingly developing and expanding regulatory reporting data dictionaries, establishing data quality rules and enforcing data ownership across functions. Additionally, more firms are looking to implement central data warehouses to consolidate all reporting data.

2018 highlights

- While reliance on multiple data sources remains the primary challenge for financial institutions, in 2018 over three-quarters of survey respondents reported the use of a central data source for reporting.
- An increased focus on data documentation (e.g., capturing CDEs, data elements and transformations) and ownership is observed among respondents in order to enhance transparency and accountability within the end-to-end reporting process.
- Firms have continued to enhance the quality and granularity of reporting data to meet regulatory expectations.
In 2018, 75% of the firms surveyed reported use of a central data source. This is a marked increase from 2015 (56%) and 2012 (45%). This year, 16% of those firms indicated that their regulatory reports are sourced exclusively from a central data source. Sixty percent of firms, however, indicated that their central data source is supplemented by additional data from non-centralized data sources. The FR Y-9C, Call Report and FR Y-14 continue to be primary reports sourced from centralized databases for firms surveyed.

While the majority of the respondents reported using a combination of a centralized data source with supplemental inputs (60%) or multiple subsystems with no central data source (24%), the industry continues to progress toward centralized data sources to enhance source system capabilities and reduce reliance on manual processes for regulatory reporting. Seventy-five percent of firms surveyed plan to convert to, or further consolidate into, a central data warehouse in the future. The firms reporting no plans to shift to centralized source systems in the near future are composed primarily of smaller firms (total assets < $150 billion); this may be due to the fact that they are subject to fewer and less stringent regulatory requirements and, due to asset size, have less data to consolidate for reporting.
Q: How would you describe the sufficiency of the current level of data granularity available for regulatory reporting (e.g., required data attributes and/or transaction-level data is readily available)?

The availability of granular data required to meet regulatory expectations is a key challenge for firms as they strengthen their regulatory reporting capabilities. While a majority of survey respondents (80%) indicated use of ad hoc data sources and manual adjustments to achieve an appropriate level of granularity (in line with 2015 survey results), no surveyed firms self-reported having low data granularity in 2018 (from 20% in 2015). The availability of increased data granularity is reflected in reduced manual adjustments and consolidation of data sources, resulting in greater reporting accuracy and increased process efficiency as less time is spent on sourcing data from disparate sources.

Regulators continue to hold firms to high data quality standards, including appropriate data quality rules and control standards, well-defined data governance structures and ongoing data testing. Twenty percent of the firms surveyed in 2018 described their data quality level as “high” which represents a 12% increase from 2015. While a majority of the survey respondents (71%) identified their data quality level to be “medium” and requiring further improvements, only 9% reported “low” data quality level i.e., having inadequate data quality rules, controls and testing (in 2015, 12% reported “low” data quality). While an improvement in data quality is noted, the industry acknowledges the need for further enhancements in order to fully comply with regulatory expectations.
Firms surveyed also reported establishing data quality ownership across critical functions involved in regulatory reporting. In the past, regulatory report owners were held largely responsible for the quality of reporting data. However, data quality ownership is shifting to being shared among data originators, operations/finance, regulatory report owners and data governance with each group understanding the downstream implications of their data and ensuring it is fit for purpose for regulatory reporting.

Data originators (front office, client onboarding, others) own the quality of the data and understand the downstream implication of the information provided on reporting and attest to this.

Operations/finance own the quality of data and make sure that data is further refined, filtered or classified to meet the different reporting requirements downstream (financial, regulatory, etc.).

Regulatory report owners own and attest to the quality of the data being reported and are responsible for making sure it is fit for purpose and perform detective controls to identify data errors prior to report submission.

Data governance owns and governs the data quality.

Identification of critical data elements (CDEs) will allow firms to prioritize data governance and data documentation initiatives. Seventy-five percent of the survey respondents reported having CDEs defined for prioritized regulatory reports such as FR Y-9C, Call Report and FR Y-14. By identifying CDEs, firms are better positioned to implement data quality standards across key reports.

Q: For which reports have CDEs been identified?

<table>
<thead>
<tr>
<th>Report</th>
<th>&lt;US$150b</th>
<th>US$150b to US$250b</th>
<th>US$250b to US$500b</th>
<th>&gt;US$500b</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR Y-9C</td>
<td>41%</td>
<td>57%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>Call Report</td>
<td>41%</td>
<td>57%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>CCAR (FR Y-14)</td>
<td>41%</td>
<td>71%</td>
<td>83%</td>
<td>80%</td>
</tr>
</tbody>
</table>

Q: Who is responsible for the quality of the data available for regulatory reporting? (Select all that apply)

<table>
<thead>
<tr>
<th></th>
<th>Data originators</th>
<th>Operations/finance</th>
<th>Regulatory report owners</th>
<th>Data governance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported</td>
<td>56%</td>
<td>56%</td>
<td>56%</td>
<td>38%</td>
</tr>
</tbody>
</table>

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<td>41%</td>
<td>57%</td>
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<td>56%</td>
<td>56%</td>
<td>38%</td>
</tr>
</tbody>
</table>
The function of a data dictionary has expanded from a repository of data elements and definitions to a critical tool used to demonstrate regulatory conformance as regulators continue to place additional emphasis on data-related processes for regulatory reporting. Regulator expectations include documentation of granular report and line-level requirements, business interpretations and assumptions, data elements and transformation logic applied to meet the specific reporting requirements. LISCCs and IHCs led the charge, with 80% and 50%, respectively, reporting use of data dictionaries, primarily for the more complex and comprehensive reports (i.e., FR Y-14, FR Y-9C and Call Report).

In addition to data dictionaries, survey respondents reported maintaining data process flows (80%) and data controls documentation (60%). Firms are also developing extensive data lineage documentation to increase transparency into the end-to-end (source to report) reporting process.

Q: What information is being captured and maintained in data dictionaries at your organization?

<table>
<thead>
<tr>
<th>Data Elements</th>
<th>Reporting Requirements</th>
<th>Data Element Definitions</th>
<th>Transformation Logic</th>
<th>Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>LISCC</td>
<td>90%</td>
<td>30%</td>
<td>13%</td>
<td>17%</td>
</tr>
<tr>
<td>BHC</td>
<td>80%</td>
<td>20%</td>
<td>11%</td>
<td>4%</td>
</tr>
<tr>
<td>IHC</td>
<td>50%</td>
<td>17%</td>
<td>25%</td>
<td>13%</td>
</tr>
<tr>
<td>FBO</td>
<td>30%</td>
<td>15%</td>
<td>33%</td>
<td>13%</td>
</tr>
</tbody>
</table>

Q: What type of “end-to-end” data documentation does your organization have?
Process and controls

Key topics:

- Capability Maturity Model
- Change management
- Manual adjustments
- Reconciliation and analytics

Preparing regulatory reports is a cross-functional activity that requires numerous inputs of varying complexity. Survey results indicated that the preparation process continues to require a significant amount of time, resources and manual interventions to meet regulatory requirements. As firms continue to move toward processes that allow more time for high-value activities (e.g., analytics and review), many firms are struggling to keep up with the pace of regulatory change, level of reporting granularity, system and data integrity issues, and the need for continued manual adjustments. The industry has started to shift to show improvement with more automated and seamless processes, but based on survey results, there is still significant opportunity to continue to improve manual processes.

2018 findings

- As the FRB expectations continue to increase with each examination and level of feedback (e.g., FRB reviews, examinations and seminars), firms are expected to have more defined, automated and robust processes while maintaining end-to-end transparency and consistent application or standards around controls.

- Regulators expect a transparent, controlled and consistent reporting process with sufficient levels of governance and oversight.

- Many firms interviewed reported that their regulatory reporting processes are between Defined (Level 3) and Managed (Level 4) with certain reports being more mature than others.
**Capability Maturity Model**

Survey respondents assessed their regulatory reporting program against the Capability Maturity Model (CMM). The model describes a five-level evolutionary path of increasingly organized and systematically mature processes.

Survey respondents were asked to refer to the CMM and select the level that best describes their current regulatory reporting program. Key highlights included the following:

- No institutions identified as Optimized level. (a change from 2012, 4%, and 2015, 5%)
- Seventeen percent of firms reported as Initial (Level 1) or Repeatable. (Level 2)
- Fifty-five percent of firms across institutions reported themselves as Defined. (Level 3)
- Twenty-eight percent of firms indicated they identify as Managed (Level 4) on the CMM.
- Many firms (49%) indicated that the maturity of their production process may vary by report and self-classified as a “Level 3.5” between Defined and Managed.

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**CMM**

- **Level 1 – Initial** (processes typically undocumented and in a state of dynamic change)
- **Level 2 – Repeatable** (some processes repeatable, possibly with inconsistent results)
- **Level 3 – Defined** (standard as-is processes defined, documented and used to establish consistency of process performance across the organization)
- **Level 4 – Managed** (as-is process effectively controlled by management using process metrics; management is also able to identify ways to adjust and adapt the process to particular projects without measurable loss of quality or deviations from specifications)
- **Level 5 – Optimized** (processes that focus on continually improving process performance through both incremental and innovative technological changes/improvement)

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**Q: How would you describe the environment around the regulatory reporting process under the regulatory reporting maturity model?**

<table>
<thead>
<tr>
<th>Level</th>
<th>2012 results</th>
<th>2015 results</th>
<th>2018 results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>No. of firms</td>
<td>%</td>
</tr>
<tr>
<td>1 – Initial</td>
<td>0%</td>
<td>0</td>
<td>4%</td>
</tr>
<tr>
<td>2 – Repeatable</td>
<td>5%</td>
<td>1</td>
<td>8%</td>
</tr>
<tr>
<td>3 – Defined</td>
<td>45%</td>
<td>9</td>
<td>60%</td>
</tr>
<tr>
<td>4 – Managed</td>
<td>45%</td>
<td>9</td>
<td>24%</td>
</tr>
<tr>
<td>5 – Optimized</td>
<td>5%</td>
<td>1</td>
<td>4%</td>
</tr>
</tbody>
</table>

---


*Results are rounded to the nearest percentage.*
Several firms indicated the level of maturity for specific reports tended to vary between Defined and Managed as firms are investing in new technologies and control infrastructure to support new reporting requirements and existing requirements lag behind. This has led to legacy reports (e.g., FR Y-9C and Call Report) trending toward Managed compared with newer reporting requirements (e.g., CCAR and 5G liquidity reporting) closer to the Defined level.

Results from 2018 are fairly consistent with previous surveys. In all three years the majority of respondents indicated that they self-identify as either Defined or Managed with the largest percentage of firms reporting as Defined (Level 3). In 2015, 84% of firms indicated they were Defined (Level 3) or Managed (Level 4). In comparison, in 2018, 83% of firms self-reported as Defined or Managed. In 2015, one firm self-reported as Optimized; in 2018 no firms were reported as Optimized. This shift is likely due to increased FRB feedback and heightened expectations on process automation, control and efficiency. This trend is consistent with a similar shift between 2012 and 2015; firms continuing to re-evaluate their position on the CMM when assessing their processes, understanding FRB feedback and comparing themselves with peer institutions.

Change management

Seventy-six percent of firms have a formal change management process in place.

A change management function or process establishes guidance to those involved in the regulatory reporting process when changes in reporting requirements (e.g., instruction changes, IT changes, FAQ releases) are needed. A change management process documents changes and allows reporting updates to be communicated to the key stakeholders, which allows for effective implementation of the needed change in the production process in a well-controlled manner. Firms without a formal change management program (24% of interviewed respondents) should look to establish one in order to keep communication of updates to the report open and transparent between all key stakeholders involved in the end-to-end production process.

For those firms that indicated having a formal change management process, the majority responded that the RRD owns or is significantly involved in the change management process. For example, the RRD may be responsible for reviewing updated regulatory reporting instructions and may conduct a gap analysis to assess the need for any applicable process or technology changes. When changes potentially affect upstream processes, the data providers need to be informed in order to incorporate the necessary adjustments. Firms listed other key stakeholders in the change management process as report owners, data governance and IT business process teams. Some firms indicated that they have a separate change management team responsible for owning updates and changes to the regulatory reporting process.

RRD's role in the change management process may include the following activities:

1. Own communication of changes and ensure evidence of communication is documented
2. Confirm changes have been made and are evidenced
3. Own the reviews for instructions, technology, products, general ledger accounts and any other changes
Manual adjustments

What is a manual adjustment? A manual intervention of data during the production process to compensate for unavailability of accurate data required for reporting purposes. This can include adjustments made by the RRD and those made by data providers as part of the production process.

Eighty-seven percent of firms self-reported as having a centralized or decentralized formal manual adjustment tracking process.

Of the firms that have a manual adjustment tracking process, 66% of the firms indicated they have a centralized manual adjustment tracking process – in which manual adjustments are made based on firmwide policies and procedures with open communication, across multiple groups, which is centralized and tracked on a consolidated basis by the RRD. An additional 21% of firms indicated having a formalized, but not centralized, manual adjustment process.

FRB expectations for a strong accountability framework include a centralized manual adjustment process for adjustments made by both RRD and data providers, well-documented information on the nature and purpose of adjustments, consistent metrics tracking and identification of recurring versus nonrecurring adjustments. Where possible, recurring adjustments should also be tied to an issues management process. The centralized tracking of adjustments allows for additional transparency and seamless escalation for management tracking and review. This additional transparency could help lead to increased levels of QA and open communication with the CFO.

FRB expectations on manual adjustments: Firms have received feedback from the FRB to establish stronger controls around manual processes to mitigate risks, including documentation of manual adjustments and strong controls for data handoffs

▪ Adequate descriptions for all adjustments
▪ Establish formal governance over the end-to-end reporting process, including a regulatory reporting formal review committee linked to CFO Attestation (i.e., a centralized tracing process)
▪ Develop end-to-end documentation, including policies and procedures to capture reporting requirements and logic via a centralized data dictionary and to capture manual adjustments
▪ Establish a formal issues management program that includes tracking manual adjustments against initiatives to either eliminate or automate certain adjustments

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Eighty-seven percent of firms reported that challenges related to highly manual processes (e.g., disparate data sources) continue to be the major underlying reason for recurring adjustments made for regulatory reporting purposes. Insufficient data quality (78%) was the second most common contributor to manual adjustments. While insufficient data granularity continues to be the second most commonly chosen underlying reason for manual adjustments, this year saw a shift in the number of firms selecting “manual processes” in response to this question.

Q: What are the major underlying reasons for recurring adjustments made for regulatory reporting purposes?
Reconciliations and analytics

“Lack of reconciliation procedures can result in data quality issues that go undetected and [may result] in regulatory reporting errors” — Federal Reserve Bank of New York, 26 April 2015

Regulators continue to focus on the reduction of reliance on manual processes and the increase in time spent on analytics. Regulator expectations include the “80/20 rule” for time spent on analysis versus production. In reaction to this expectation, firms are performing impact and root-cause analysis exercises to identify key issues to remediate and enhance their reporting processes. Across 2012, 2015 and 2018, all firms surveyed (100%) are utilizing variance analysis procedures to meet these expectations. In addition, firms are producing more analytics, reconciliations and formal management reviews to help maintain a well-controlled end-to-end reporting process. Maintaining inter-report and cross-report reviews, peer analysis, data profiles and continued quantitative assessment of the data helps firms to enhance the accuracy of their reporting. FRB expects reconciliations to be in place to help demonstrate effective controls.

The majority of survey respondents cited that reconciliations are performed across the data warehouse to the general ledger, financial reporting (SEC) to regulatory reporting (e.g., Form 10Q/K versus FR Y-9C), which is consistent with the results from the 2015 survey.

The implementation of more thorough reconciliations to verify completeness and accuracy of regulatory reports are increasingly becoming business as usual; for example while the same percentage (89%) of firms reported conducting financial reporting (SEC) to regulatory reporting reconciliations, this year also saw a significant increase in the number of firms who reported conducting data warehouse to general ledger (GL) reconciliations (64%, 2015; 78%, 2018); this may be directly related to the fact that many firms have spent the past few years investing in implementation of data warehouse technology for their reporting needs.

In addition, in the 2018 survey only 2 of the 47 interviewed firms surveyed indicated they did not perform the types of reconciliations in the survey questionnaire.

Q: Which analytical procedures are performed to verify completeness and accuracy of regulatory reports?

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance analysis (e.g., quarter over quarter)</td>
<td>100%</td>
</tr>
<tr>
<td>Trend analysis</td>
<td>100%</td>
</tr>
<tr>
<td>Peer analytics across peer group</td>
<td>100%</td>
</tr>
<tr>
<td>Spot checking of individual balances</td>
<td>100%</td>
</tr>
<tr>
<td>Other – analytical procedures (e.g., detective controls, error/validation checks, reconciliations back to the general ledger)</td>
<td>100%</td>
</tr>
</tbody>
</table>

Q: What major reconciliations are performed as part of the regulatory reporting process?

<table>
<thead>
<tr>
<th>Reconciliation</th>
<th>2012</th>
<th>2015</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data warehouse to GL</td>
<td>55%</td>
<td>64%</td>
<td>74%</td>
</tr>
<tr>
<td>Financial reporting (SEC) to regulatory reporting (e.g., Form 10Q/K vs. FR Y-9C)</td>
<td>70%</td>
<td>84%</td>
<td>85%</td>
</tr>
<tr>
<td>Management reporting to regulatory reporting (was not asked in 2012)</td>
<td>0%</td>
<td>44%</td>
<td>30%</td>
</tr>
<tr>
<td>Other – major reconciliations (e.g., manual submissions, subledger and general ledger, Hyperion Financial Management reporting tool)</td>
<td>16%</td>
<td>17%</td>
<td>16%</td>
</tr>
</tbody>
</table>

---

All firms interviewed perform variance analysis to verify the completeness and accuracy of regulatory reports. Eighty-four percent of firms perform trend analysis, while 42% of firms complete peer analytics, usually on a quarter lag. Thirteen percent of firms have implemented other analytical methods to assist in verifying completeness and accuracy. These other analytical methods include, but are not limited to, additional reconciliations back to the general ledger, analyzing correlations (e.g., loans to Allowance for Loan and Lease Losses/reserves) and implementing data analytics processes. Firms should be implementing both preventative and detective controls in their regulatory reporting process to help ensure the accuracy of their reporting.

Seventy-eight percent of firms perform a detailed review of regulatory reports by senior management. The review usually consists of holding a meeting to review issues, manual adjustments and variances, to verify the completeness and accuracy of regulatory reports. Forty-two percent of firms indicated they use scorecards/KPIs as a performance management procedure.

FRB leading practice: A review process of reports should be performed by senior-level management to detect potential problems with data. As a result of inadequate review and approval process, errors may be overlooked.  

The majority of firms indicated that RRD leverages internal control frameworks such as SOX with supplemental controls specific for regulatory reporting. Where applicable, SOX controls are typically the starting point for regulatory reporting controls. In addition, incremental regulatory controls are designed based on the risk assessment of the regulatory reporting process, for example, higher risk processes (typically those that are manual in nature) require more stringent controls.

In addition, some firms use regulatory reporting-specific internal controls framework. Most LISSC firms indicated the use of both regulatory reporting-specific internal controls and financial reporting controls (SOX).

### TABLE: Regulatory Reporting Controls

<table>
<thead>
<tr>
<th>Control type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventative control</td>
<td>Policies and procedures to prevent errors; normally applied to individual transactions (customer information files, FX, interest rate swaps, etc.)</td>
</tr>
<tr>
<td>Detective control</td>
<td>Policies and procedures designed to detect and correct errors that might preclude the achievement of the relevant process; generally applied more broadly (review and analysis of regulatory reports)</td>
</tr>
</tbody>
</table>

Q: Which performance management procedures are performed to assess completeness and accuracy of regulatory reports?

Q: What internal control framework applies to your institution’s regulatory reporting?

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Governance

Key topics:
• Policies and materiality thresholds
• Attestations and issue management

An expectation of more transparent, controlled and consistent processes, in combination with new regulatory requirements (e.g., CFO Attestation) have resulted in firms investing in improving their governance frameworks for finance and regulatory reporting.

2018 findings
• Since 2015, firms have enhanced their governance processes significantly to meet heightened FRB expectations. Some examples of enhanced governance include maintaining an accountability policy and materiality policy or thresholds, requiring attestation from multiple roles involved in the regulatory reporting process and establishing an issue management framework.
• Seventy-seven percent of firms have a formal management review committee in place that mostly covers issues management, issues of materiality and report review.
• Eighty-one percent of firms surveyed have a formal issues management process in place for regulatory reporting.
Regulator expectations

- Develop end-to-end documentation, including policies and procedures to capture reporting requirements.
- Create an escalation process to identify and resolve issues in a timely manner.
- Establish formal governance over end-to-end reporting process, including regulatory reporting formal review committee linked to CFO Attestation (if required).
- Develop an explicit oversight and accountability policy that is measurable, actionable and enforceable at the business line level (the accountability policy should be dictated by the firm’s culture and overall risk management framework).

Policies and materiality thresholds

Over the past several years, the industry has observed increased emphasis from the FRB on maintaining strong oversight and accountability over regulatory reporting. This includes developing and maintaining a regulatory reporting policy, desktop procedure manuals, end-to-end process flows and narratives, accountability policies, materiality policies or thresholds, or both. Ultimately, RRD documentation should demonstrate that the firm has an enforceable and well-controlled process across all stakeholders and activities.

In 2018, 89% of respondents indicated that they have desktop procedures for regulatory reporting production processes, which may include screen shots, handoffs or step-by-step outlines of the regulatory reporting process.

This is a significant increase from 2015, when half of respondents (52%) did not have RRD operating manuals and desktop procedures that detailed step-by-step activities for performing regulatory reporting activities. Overall, despite changes in the respondent panels between 2012, 2015 and 2018, this indicates that firms have been investing in improving their documentation around the regulatory reporting process. One driver of this change is regulator feedback indicating that firms must maintain strong oversight and a clear accountability framework, as well as end-to-end RRD documentation that outlines the regulatory reporting process.

Regulatory reporting and accountability policies typically cover all reports or critical reports, including the Call Report, FR Y-9C and FR Y-14A/M/Q. Desktop procedures, process flows and narratives typically exist for key reports, but may not be as comprehensive for less critical reports.

The vast majority of firms (87%) have a regulatory reporting materiality policy and/or thresholds in place. Only 13% of firms, generally BHCs <$150 billion, do not have a regulatory reporting materiality policy or thresholds.

Due to their requirement for a materiality policy, LISCC firms typically have robust materiality policies whereas smaller firms maintain less detailed materiality thresholds in order to meet the minimum regulatory expectations. Materiality policies and thresholds most frequently cover variance analysis, restatement, issue management and data provider explanations. Some firms’ materiality policies/thresholds also cover operational risk issues, manual adjustments and key ratio shifts (“Other” category in chart to the right).

Most firms have thresholds for all core reports or high-risk reports. These include the Call Report, FR Y-9C, Y-15, FR Y-14M/Q, FR 2052, FFIEC 101 and FFIEC 009. Materiality policies contain both quantitative thresholds (e.g., a combination of a dollar amount with a percentage trigger) as well as qualitative considerations (e.g., size and frequency of breaks, management judgment). Many interviewed firms have implemented between a +/- 10% to 20% materiality threshold for reports, with room for variation for certain high-risk schedules and line items (e.g., different thresholds for income statement and balance sheet). The combination of the percentage and dollar value thresholds is key, as small percentage variations can be associated with a significant dollar amount depending on the line item. Several firms also indicated that they look to metrics such as impact to risk-weighted assets, net income, leverage ratios or Tier 1 Capital as part of their materiality analysis. For many firms the materiality policy is used to determine when explanations are required from data provider and issue escalation or when restatements are required.
Attestations and issue management

There have been significant developments in management oversight and formal attestation processes across the regulatory reporting function. The percentage of firms with formal management review committees in place increased from 56% in 2015 to 77% in 2018. Those institutions that did not have a formal committee in place tended to be smaller and less complex institutions; these firms generally adopted supplemental measures to compensate and provide oversight of the regulatory reports.

Ninety-six percent of firms reported having a formal attestation process, compared with 88% in 2015. The 4% of firms that do not have an attestation process are FBOs. Attestation coverage, for BHCs in particular, has expanded beyond the FR Y-14 series to the FR Y-9C and Y-15 reports. Other reports for which institutions are requiring formal attestations include, but may not be limited to, the Call Reports, FR 2314, FFIEC 101 and 041, and the FR 2052a.

Since 2012, there has been a significant increase in the number of firms that have established management review committees. The most common topics covered include issues management, issues of materiality and report review. The FRB expectation is that the committee is “cross functional ... includ[ing] regulatory reporting staff, controllers, IA, risk, compliance, finance and operations (data providers) and should be held “quarterly ... to review regulatory reports, discuss issues identified during reconciliation and review of reports, and address changes needed to workflow”.

Firms have also expanded attestation responsibility past data providers and to schedule preparers, report owners and data owners. Data providers, report owners, data owners and schedule preparers oftentimes provide attestations; some firms also reported other roles that are required to provide formal sign-off for certain reports, including executive management, lines of business, and schedule and control owners. Eighty-one percent of firms surveyed have a formal issues management process in place for regulatory reporting. Of those firms, ownership mainly falls under the RRD with either the RRD or a cross-functional team evaluating any issues identified.

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Performance management

Key topics:
• IA and compliance
• FRB examinations
• Quality assurance

The past three years have seen increased regulatory expectations for independent QA programs in firms of all sizes. In addition to establishing independent QA programs, firms have been building out their IA functions. Many firms have also expanded their IA programs to cover regulatory reporting more broadly than in previous years. These functions are critical components of the three LOD:
• First line: RRD establishes effective processes and implements strong controls.
• Second line: QA function and other independent functions verify and validate transaction capture through external and internal reporting.
• Third line: IA provides independent monitoring of the first and second LOD.

QA functions are continuously evolving. Transaction testing programs are now the industry-leading practice; in addition, artifacts from a firm’s transaction testing program are frequently reviewed by the FRB during exams.

2018 findings
• Ninety-eight percent of firms reported that IA reviews the regulatory reporting process and 83% of firms noted that compliance has a role in monitoring regulatory compliance.
• In 2012, only 31% of surveyed institutions had independent QA teams; today, that percentage has increased to 62% (on par with results from 2015).
**IA and compliance**

**IA continues to monitor and oversee adherence to FRB requirements.** In 2015, 96% of firms reported that IA plays a role in the regulatory reporting process. In 2018, all but one firm noted that IA is involved in monitoring regulatory reports with activities, including testing the effectiveness of controls, monitoring issue closure and performing transaction testing. Some firms noted that IA is involved with closing issues resulting from testing, performing regulatory reporting audits and providing documentation recommendations. At the majority of firms, the same team, generally IA, performs regulatory reporting and SOX controls testing.

Twenty-eight percent of RRDs indicated that their firm’s IA team includes resources with regulatory reporting expertise. Thirty-six percent of firms, however, indicated that their IA groups are in the process of “developing” their regulatory reporting expertise.

Eighty-three percent of firms noted that Compliance has some participation in the regulatory reporting process. Over half of the firms surveyed reported that Compliance is involved in Regulation W and FR Y-8 reporting. Thirty-six percent of firms noted that Compliance is involved in monitoring Regulation D and FR 2900 reporting. Twenty-one percent of firms indicated that Compliance helps with tracking and monitoring the submission of regulatory reports. Seventeen percent of firms noted that Compliance is involved with the process to report merchant banking investment on FR Y-12a.

Q: Does Internal Audit play a role in the regulatory reporting process? If yes, what activities do they perform?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IA does not monitor regulatory reports</td>
<td>2%</td>
</tr>
<tr>
<td>Test effectiveness of controls</td>
<td>89%</td>
</tr>
<tr>
<td>Perform transaction testing</td>
<td>77%</td>
</tr>
<tr>
<td>Monitor closure of issues</td>
<td>83%</td>
</tr>
<tr>
<td>Review end-to-end production processes</td>
<td>64%</td>
</tr>
<tr>
<td>Other (e.g., provide documentation recommendations, test issue closure)</td>
<td>9%</td>
</tr>
</tbody>
</table>

Q: What is Compliance’s involvement throughout the regulatory reporting production process?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory W and/or FR Y-8 reporting</td>
<td>53%</td>
</tr>
<tr>
<td>Regulation D compliance and reporting on FR 2900</td>
<td>36%</td>
</tr>
<tr>
<td>Tracking/monitoring the submission of regulatory reports</td>
<td>21%</td>
</tr>
<tr>
<td>Other (e.g., tracking MRAs or MRIs, regulatory change management, Regulation K and FR 2052a reporting)</td>
<td>19%</td>
</tr>
<tr>
<td>Merchant banking investment reporting on FR Y-12a</td>
<td>17%</td>
</tr>
<tr>
<td>Compliance is not involved in the production process</td>
<td>17%</td>
</tr>
</tbody>
</table>

**Regulation D:** imposes reserve requirements on certain deposits and other liabilities of depository institutions solely for the purpose of implementing monetary policy. It specifies how depository institutions must classify different types of deposit accounts for reserve requirements purposes.

**Regulation W:** the primary statute governing transactions between a bank and its affiliates. Section 23A (1) designates the types of companies that are affiliates of a bank; (2) specifies the types of transactions covered by the statute; (3) sets the quantitative limitations on a bank’s covered transactions with any single affiliate, and with all affiliates combined; and (4) sets forth collateral requirements for certain bank transactions with affiliates.

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18\(^\text{"Regulation D: Reserve Requirements of Depository Institutions," Federal Reserve.}^\)

19\(^\text{"Regulation W: Reserve Requirements," Federal Reserve.}^\)
FRB examinations
While the establishment of the National Statistics Regulatory Review Program has resulted in more standardized examinations, the underlying process and areas of focus for examiners have not changed significantly. Feedback from recent examinations continues to focus on driving a culture of accountability, data quality and continuous improvement. Some areas that continue to be emphasized in examinations include:
- Clearly defined accountability, including regulatory reporting training across the end-to-end reporting process
- Full documentation of reporting requirements, data sources and transformation logic
- Transaction testing, with an emphasis on controls and data quality
- Issue and change management processes and their relation to materiality

Focus areas for recent examinations have included:
- Board and management oversight
- Data infrastructure and controls
- IA program review
- Review of reporting process
- Transaction testing

A majority of survey respondents have been reviewed by the FRB within the past 12 to 24 months (i.e., in 2016-18), with 49% of firms having been examined during 2017 or 2018. Seventy-three percent of survey respondents have been reviewed by the FRB within the past two years and 21% over two years ago. Only 6% of firms indicated that they have never been reviewed by the FRB. The firms that have not been examined include regional BHCs and FBOs.

Industry-leading practices include:
- Formal regulatory reporting training program covering the firm’s full scope of required reports
- Formal issue management processes, including remediation tracking and monitoring, and escalation to senior management
- Robust policies and procedures for reviewing underlying reporting logic and data
- Explicit oversight and accountability framework verifying board and senior management oversight over regulatory reporting is sufficiently detailed in appropriate charters and policies
- Sustainable risk prioritized QA program, including transaction testing
- Formal governance over end-to-end reporting process, including regulatory reporting formal review committee linked to CFO Attestation (if required)
- Data quality and controls at source of origin and subsequent transformation and centralized requirements interpretation process
- Automation of the reporting process and stronger controls around manual processes to mitigate risks, including documentation of manual adjustments, and strong controls for data handoffs
- End-to-end documentation, including policies and procedures to capture reporting requirements and logic via a centralized data dictionary and to capture manual adjustments

Q: When was your firm last reviewed by the Federal Reserve?

- 2017/2018: 49%
- 2016: 21%
- 2015 or prior: 24%
- Never: 6%
Quality assurance

The FRB has communicated clear expectations of independent validation groups, including QA. Regulatory reporting expectations for QA leading practices include:20

- Independent of regulatory reporting management
- Technically competent and knowledgeable staff
- Standardized and tailored review procedures
- Reporting mechanisms to enforce issue management

A well-designed independent validation regulatory program should maintain a risk assessment to determine the scope of data quality evaluations (data attributes, fields, reports, line items). Key components include:21

- End-to-end internal controls (e.g., general ledger reconciliations, source system controls)
- Level of manual intervention and associated risk and controls
- Integrity of reporting and source systems (e.g., data warehouses, aggregators)
- Transaction testing (based on risk assessment, evaluate static and dynamic data fields)

QA is the regulatory reporting testing function responsible for independently validating the accuracy of regulatory reports.

The percentage of firms with independent QA teams has doubled since the survey was first conducted in 2012. In 2012, only 31% of surveyed institutions had independent QA teams; today, that percentage has increased to 62%. The majority of firms with established QA functions are well-established BHCs, IHCs and LISCC firms; many FBOs are in the process of developing QA teams as well.

Primary QA capabilities:

- Transaction testing: substantive-based data quality-based testing of reporting line items against source documentation; generally sample-based, product and risk-weighted, and report-driven
- Controls testing: evaluate design and operating effectiveness of controls
- Conformance testing: analysis of regulatory filings for nonconformance with regulator instructions, generally seen through misinterpretation of instructions or data granularity constraints
- Process review assessment: review of the end-to-end regulatory reporting process from data sourcing through report filing and management review

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Of the primary QA capabilities to the right, transaction testing has become a leading industry practice over the last three years with 97% of firms with established QA functions performing transaction testing compared with 47% in 2015 and 30% in 2012. This significant increase can be partially attributed to the increase in panel size, both regulator feedback and increased emphasis on data quality in the industry have pushed firms to establish, or enhance existing QA functions. Seventy-six percent of QA functions perform periodic review assessments and 69% perform controls testing. Some firms also noted that their QA function scope extends beyond testing to include responding to FRB examinations, participating in issue management processes and conducting regulatory reporting training.

Q: If your firm has a separate QA team, does it perform transaction testing?

<table>
<thead>
<tr>
<th>Year</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>2015</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>2018</td>
<td>97%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Q: What responsibilities does the QA team have?

- Periodic transaction testing (source documents to report) - 97%
- Periodic process review assessments - 76%
- Controls testing - 69%
- Other (e.g., monitor issue log, advise on new process design and associated controls) - 17%
Sixty-two percent of firms with QA functions indicated that they rely on a risk-based prioritization framework. The framework is typically based on high, medium and low rankings and is used to determine frequency of testing of reports and schedules, transaction testing sample size and severity of issues identified. The risk-based prioritization is generally achieved through a criticality assessment, based on quantitative (e.g., number of data elements and reporting line items) and qualitative (e.g., area of focus for FRB exams and known data quality concerns) considerations. Reports that are often deemed high risk, such as the Call Report, FR Y-9C, FFIEC 009 and FR Y-14M/Q are the main reports covered for testing, but QA programs can have broad coverage, including global regulatory reports and internal management reports as part of their scope.

Industry challenges
Listed below are common challenges associated with high/medium/low-risk ranking frameworks:

- Risk rankings are not effective at each level.
- Low-priority risks may not be addressed in a timely fashion.
- Emphasis on high-risk reports may result in a skewed testing sample and results.
- Risk rankings may be inconsistently applied across different reports.

Firms with QA functions indicated that data quality is the number one root cause of errors identified by transaction testing. Transaction testing sample sizes range from approximately 10 to approximately 100 line items; however, there is no one-size-fits-all approach since sampling is dependent on the materiality and complexity of the report or schedule, as well as the frequency that testing is being performed, which varies by institution. After data quality (e.g., upstream input or coding errors), misinterpretation of reporting requirements, data granularity and account mapping errors make up the top root causes of errors identified. Source document availability and missing or ineffective controls were the next most common root causes of errors identified.

At this time, financial institutions are primarily utilizing manual processes to facilitate testing and capture QA results. Thirty-two percent of firms indicated that they are exploring new and emerging technologies (e.g., optical character recognition, RPA or artificial intelligence) in order to increase productivity and efficiency within QA functions. The vast majority of the 32% exploring the use of technology for transaction testing are BHC and LISCC firms.

Q: Which reports are covered by the QA function?

![Diagram showing coverage of various reports by QA function.]

Q: What were the primary root causes of errors identified by transaction testing? (In order from most frequent to least frequent below)

1. Data quality
2. Other (e.g., data availability and sourcing, lack of knowledge)
3. Misinterpretation of reporting requirements
4. Data granularity (tie)
5. Account mapping errors (tie)
6. Source document availability
7. Missing or ineffective controls
Broker-dealers have continued to face rising regulatory expectations from multiple parties with changing rule interpretations around compliance with customer protection regulatory computations and monthly reporting to SEC and Financial Industry Regulatory Authority on the Financial and Operational Combined Uniform Single (FOCUS) report. Regulatory reporting responsibilities increased in 2014 with SEC Rule 17a-5 bringing a SOX-like management controls attestation and audit to these customer protection areas such as net capital computation, customer reserve computation, customer statements, quarterly security count and possession or control of customer-owned securities. The customer protection rules require cross-functional coordination with data providers. These increased responsibilities and scrutiny have put pressure on specialized broker-dealer regulatory resources required to perform and monitor these processes often with underinvested homegrown and/or manual processes. Though currently the majority of broker-dealer parties responsible for the compliance and accuracy and completeness of regulatory filings are highly manual, these firms are increasingly looking to invest in automation to more efficiently evidence compliance with the rules on a sustainable basis by leveraging leading practices for process, data and control documentation.

As a part of our broader Federal Reserve regulatory reporting survey, and for the first time, we also conducted a regulatory reporting survey of 18 clearing broker-dealers. These 18 broker-dealer respondents represented 10 with net capital requirements greater than $100m, 3 with requirements between $10m-$50m and the remaining 5 had requirements of around or below $1m. Broker-dealer regulatory reporting appears to be increasingly seeking more comprehensive automation solutions and investment with less reliance on manual input as firms look to increase process efficiency and accuracy. Interviewed firms are focused on improving, controlling and certifying source data for their FOCUS reporting and 17a-5 related control compliance. One particular difficulty for interviewed broker-dealer firms is a lack of a target industry leading practice for comprehensive automation across all broker-dealers given unique regulatory reporting requirements as well as diverse practices in governance and accountability for FOCUS reporting and SEC rule 17a-5 compliance.

Of the 18 firms interviewed, only 16% of firms either reported as “highly” or “fully” automated with 44% of firms reporting as manual yet controlled (less than 25% automated). For those firms that reported using a technology solution for their broker-dealer reporting, the larger firms had homegrown solutions with a combination of vendor tactical tools.
Most firms interviewed are highly reliant on manual spreadsheets for computational support and aggregation for FOCUS reporting purposes: almost 61% of respondents indicated that they use over 10 separate spreadsheets (let alone tabs) to compile data for their regulatory reporting purposes (with 33% using over 25). In fact the largest full-service broker-dealers used more spreadsheets on the net capital computation side than the more automated 15c3-3 computations. In response to this highly manual environment, a significant number of firms indicated that they are in the process of either implementing technology or exploring solutions to support broker-dealer computation and reporting needs. In particular, firms are investing in technology or data architecture to remediate regulator, auditor or self-identified issues. Firms made mention of strategic initiatives to improve regulatory reporting systems in both small- and large-scale projects with a few firms beginning to investigate the application of robotics to broker-dealer regulatory reporting requirements.

### High data quality: there are established data quality rules and control standards that are reviewed periodically, a well-defined data governance structure and ongoing testing to continuously validate quality.

### Medium data quality: there are data quality rules and control standards in place for some regulatory reports, along with data management roles and responsibilities and periodic testing to validate quality.

### Low data quality: there are limited data quality rules and controls, governance or testing in place specifically for regulatory reporting.

Of the firms interviewed, one-third of respondents self-reported as having high data quality available for broker-dealer regulatory reporting. A majority (53%) indicated that the data quality available for regulatory reporting is “medium” and 13% responded “low.” However, despite the fact that 66% of firms responded either “medium or low” only 26% of firms are currently conducting data remediation efforts. Data remediation efforts for broker-dealer reporting was either built into a broader data program for FRB regulatory reporting or broken up into several small efforts specific to the broker-dealer.

There is also a significant amount of variability in the broker-dealer teams across the industry ranging from 1 to 2 FTE resources to 10 to 20 FTE. In over 83% of cases, broker-dealer teams sit within the finance function. For all but two firms, the broker-dealer regulatory reporting teams are responsible for both production of reports and identifying changes to reporting requirements; the other two firms both had change management committees to fulfill this role. The majority of firms indicated that their broker-dealer regulatory reporting teams spend a significant amount of time on preparation of reports versus analysis (e.g., 80% preparation, 20% analysis). Only one firm interviewed spent more time on analysis than preparation.

Q: Does your firm have broker-dealer-specific training?

In general, broker-dealer reporting teams expressed challenges with:

- Subjective and judgmental areas and decisions
- Manual adjustments and data availability
- Possession or control information
- Control and data certification
- Customer and non-customer account designation
- Hiring and maintaining teams of qualified professionals to handle the nature, volume and frequency of reporting

Seventy-two percent of firms indicated that they do not currently have formalized broker-dealer regulatory reporting training programs in place and, additionally, reported having issues with missing data or data quality from upstream providers based on lack of understanding of the rules; this emphasizes the importance of having training or other guidance in place on the application of the regulatory reporting requirements. Firms with more developed training programs and guidance described more timely escalation of issues to subject-matter resources.

In general, broker-dealers should expect continued regulatory and auditor scrutiny to broker-dealer reporting. As firms continue to invest in new technologies, they should focus on establishing a stabilized holistic controlled process that can be maximized via automation, managing accuracy and completeness of data at the source, increasing training for upstream data providers, as well as maintaining transparent documentation and interpretative guidance.
Conclusion

Since 2008, the industry has faced significant change in regulatory reporting requirements and regulator expectations. Over the past decade, the introduction of CCAR and EPS, the evolution of Basel capital requirements and related reporting, and the introduction of reporting requirements for liquidity and risk, have placed significant demands on financial institutions. This time has represented a huge investment in data, technology and people in order to comply with regulatory requirements. Most recently with the establishment of the National Statistics Regulatory Review Program, financial institutions are experiencing more standardized reviews and a higher frequency of reviews overall. This represents a change in how financial institutions are being reviewed since in the past the reviews were performed by Federal Reserve Banks that had their own standards and sometimes resulted in differences in how banks were being reviewed, depending on which reserve bank they were overseen by. An emphasis on data, controls and governance continues to be part of the regulator agenda during these regulatory reporting reviews and has resulted in firms investing in the establishment of QA functions training programs, continued automation efforts and increased focus on data quality and granularity. We expect that continued automation and innovation will be a chief area of focus for many firms in upcoming years, helping the industry keep pace with upcoming changes as the broader regulatory environment continues to evolve in 2019 and beyond.

For additional insights, please visit the EY Regulatory Reporting website.
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