Costing Best Practices

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Highlights

Objective

The U.S. Postal Service maintains a product costing system designed to comply with the Postal Accountability Enhancement Act (PAEA), develop product costs, and generate information to support management decisions. The PAEA requires the Postal Service to annually report costs, revenue, volume, and quality of service for products.

Its accounting systems do not generally provide the product-specific cost information required for reporting purposes; therefore, the Postal Service uses six statistical sampling systems and several special studies to generate the required regulatory reports. Supporting information essential to cost development is also obtained through information sources designed for operational purposes. The Postal Regulatory Commission (PRC) uses the information in these reports to determine whether the Postal Service complied with PAEA.

Our objective was to identify industry best practices for increased efficiencies in cost systems and methodologies.

What the OIG Found

The Postal Service should enhance its current costing processes to strengthen its costing data. Although the Postal Service's costing methodologies meet regulatory requirements for reporting costing information, today's mailing industry is increasingly competitive and dynamic and requires the use of more real-time data. Costing methodologies currently in place have historically relied on statistical sampling to assign annual or quarterly top-level costs to products. In 2018, the Postal Service reportedly spent about $26 million for its cost system manual data collection efforts. However, calculating and attaching granular costs at every step in the operational process, using census data, would

> *"The Postal Service should enhance its current costing processes to strengthen its costing data."*

strengthen costing data accuracy and reliability, and reduce costs associated with manual data collection for sampling.

Management stated that not all available census data are complete or accurate; however, they have conducted research over the last few years to identify opportunities to replace sampling data with census data. For example, management filed a petition with the PRC in 2016 to update its transportation cost model to replace some sample data with census data.

There are additional available opportunities to replace sampling data with census data. For example, during this audit we identified opportunities for the Postal Service to replace some outbound international mail sample data with third-party census data. Management agreed with our analysis and indicated they are currently working toward filing a methodological change with the PRC to replace some sample data with census data for outbound international mail.

In the past, we have issued other reports to the Postal Service regarding opportunities to modernize its current costing system. Our FY 2014 Greenfield Study detailed the potential benefits of replacing the current system with a modern, bottom-up costing and revenue analysis system. It also identified the difficulty in estimating the cost of developing a new cost system. Specifically, building a new cost system would require a financial commitment of millions of dollars, including investments in advanced technology to support the new system. During this audit, management agreed with this assessment, adding data accessibility and reliability concerns were another roadblock to updating the costing system.

In addition, in a FY 2018 report, we identified how using census data could capture additional mail processing components and provide more detailed, agile, and enhanced costing data. The existing cost model does not capture the costs of some mail operational activities. The OIG recommended the Postal Service develop a strategic plan to assess how current technology, such as using Intelligent Mail Barcodes and Informed Visibility, could be enhanced to better support costing.

Recent increases in the Postal Service's use of automated data and enhanced technologies are removing barriers to developing a new, more granular costing system. Although the Postal Service has acquired technologies like using Intelligent Mail Barcodes and Informed Visibility to track domestic mail movement through the network, it has not yet fully leveraged these technologies to support the identification of product costs. Using data collection systems to continuously track products, especially parcels, from sender to recipient, would support accuracy in identifying costs, and assigning costs to products, both domestically and internationally.

A robust costing system should be capable of gathering costs for the flow of mail as they are incurred from the point of entry, acceptance, through processing, final delivery, returns, and invoicing. Enhancing its current cost system to include more granular, census data would increase the accuracy of the Postal Service's cost attribution calculations, better support complex product and pricing decisions, and allow management to apply cost analysis to specific customers and/or specific areas. Additionally, the increased use of census data would help identify cost-reduction opportunities in the network. Lastly, changes to census data could reduce or eliminate labor costs associated with the collection of sample data by technicians.

What the OIG Recommended

We recommended management develop a plan with milestones to implement a modern costing system using enhanced technologies in an effort to incorporate cost attribution.
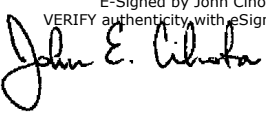
Transmittal Letter

September 17, 2019

MEMORANDUM FOR: STEVE PHELPS
                           ACTING VICE PRESIDENT, PRICING AND COSTING

E-Signed by John Cihota
VERIFY authenticity with eSign Desktop

John E. Cihota

FROM: John E. Cihota
                       Deputy Assistant Inspector General
                        for Finance and Pricing

SUBJECT: Audit Report – Costing Best Practices
                       (Report Number CP-AR-19-004)

This report presents the results of our audit of Costing Best Practices (Project Number 19BG003CP000).

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Sherry Fullwood, Director, Cost and Pricing, or me at 703-248-2100.

Attachment

cc: Corporate Audit Response Management
     Postmaster General

Results

Introduction/Objective

This report presents the results of our self-initiated audit of U.S. Postal Service costing best practices (Project Number 19BG003CP000). Our objective was to identify industry best practices for increased efficiencies in cost systems and methodologies.

Background

The Postal Service maintains a product costing system designed to comply with the Postal Accountability Enhancement Act (PAEA), develop product costs, and generate information to support management decisions. The PAEA requires the Postal Service to annually report costs, revenue, volume, and quality of service for products. Its accounting systems do not generally provide the product-specific cost information required for reporting purposes; therefore, the Postal Service uses six statistical sampling systems and several special studies to generate the Cost and Revenue Analysis (CRA), International Cost and Revenue Analysis (ICRA),[1] and the Annual Compliance Report (ACR).[2] Supporting information essential to cost development is also obtained through information sources designed for operational purposes, such as the Enterprise Data Warehouse.[3] The Postal Regulatory Commission (PRC)[4] uses the information in these reports to determine whether the Postal Service complied with the PAEA.

The Postal Service's costs are classified as either attributable or institutional. Attributable costs are directly or indirectly caused by a product or service. Institutional costs are residual costs that are not specifically attributed to a product. Attributable costs are assigned using data from about 28 postal operational and statistical information sources, such as the Management Operating Data System[5] and the In-Office Cost System (IOCS).[6]

Finding #1: Costing System Enhancements

The Postal Service could enhance its current costing processes to strengthen its costing data. Although its costing methodologies meet regulatory requirements for reporting costing information, today's mailing industry is increasingly competitive and dynamic and requires the use of more real-time census data.[7] The Postal Service's current costing methodologies have historically relied on statistical sampling to assign annual or quarterly top-level costs to products. However, calculating and attaching granular costs at every step in the operational process using census data would strengthen costing data accuracy and reliability.

"Although its costing methodologies meet regulatory requirements for reporting costing information, today's mailing industry is increasingly competitive and dynamic and requires the use of more real-time census data."

Older accounting systems group costs into broad, separate categories. This process does not support the level of detailed analysis necessary to identify the true costs for each product type. Specifically, current and more detailed cost data would:

- Better support complex product and pricing decisions.

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1. The CRA/ICRA were created to aid in determining that statutory requirements under Title 39 U.S. Code are met, that "each class of mail or type of mail service bear the direct and indirect costs attributable to that class or service".
2. This report requires the Postal Service to file a variety of data on "costs, revenues, rates, and quality of service" with the PRC to "demonstrate that all products during such year complied with all applicable requirements."
3. The Postal Service's repository for all retail, financial, and operational performance data.
4. An independent establishment of the U.S. government that has regulatory oversight over many aspects of the Postal Service, including the development and maintenance of regulations for pricing and performance measures.
5. A web-enabled application that provides a systematic approach to gathering, storing, and reporting data.
6. The primary probability sampling system used to attribute the labor costs of clerks, mail handlers, city carriers, and supervisors related to the handling of mail of all classes and rate categories.
7. Census data capture information about everything in the population.

- Allow management to apply cost analysis to specific customers or geographical areas.

- Help identify cost-reduction opportunities.

- Increase the accuracy of total costs associated with meeting desired marketing and pricing objectives.

The PAEA requires the Postal Service to file annual financial reports, which provide stakeholders and Postal Service management with product costs and revenue data. The Postal Service can provide stakeholders and regulators more specific and detailed cost data if it develops a stronger costing system that allows it to obtain and analyze real-time granular costs.

Sampling

Under the current cost system, sampled data is used heavily to attribute labor and transportation cost data to products. Specifically, 99 percent of the data in the larger costing systems come from sampled data. For example:

- IOCS estimates costs of various activities performed by clerks, mail handlers, city carriers, and supervisors.

- The Carrier Cost System (CCS) estimates mail characteristics on different city routes and at different times of the year to determine the portion of total delivery costs attributable to mail categories and special services.

- The Transportation Cost System (TRACS) attributes purchased transportation costs to mail categories and special services.

Sampling requires technicians to gather, record, and analyze a variety of statistical data on selected operating and financial activities. In fiscal year (FY) 2018, these technicians conducted about 639,655 samples. Sampling data can be labor-intensive and may not provide the level of detail or accuracy that census data would provide.

Management stated that not all available census data are good data because some census data have integrity issues. However, the Postal Service has conducted research over the last few years to identify opportunities to replace sampling data with census data. In 2016, the Postal Service filed a petition with the PRC to update its transportation cost model to replace some sample data with census data.[8] During our current audit, we evaluated opportunities to replace sample data from the System for International Revenue and Volume – Outbound (SIRVO)[9] with census data. SIRVO collects samples of outbound international mail where census data is not available. Our data analysis indicated it may be possible to retrieve data from PC Postage[10] to reduce sampling for SIRVO. Management agreed that they could use some PC Postage census data in place of SIRVO sampled data and, as a result of their own independent work, are developing a request to be filed with the PRC for a methodological change.

Using SIRVO as an example for costs associated with sampling, Table 1 illustrates the increasing number of SIRVO tests, along with labor costs from FY 2016 to FY 2018. For the last three years, 92,853 mail containers or trays were sampled, which cost the Postal Service over $2.4 million.

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8   PRC Docket Number RM2017-10, Order Number 4228, Order On Analytical Principles Used in Periodic Reporting (Proposal Six) issued November 20, 2017.
9   A statistical sampling system the Postal Service uses to develop Revenue Pieces Weights (RPW) estimates for outbound first class and priority mail international, and to conduct terminal dues settlements.
10 Postage solutions for customers who send high volume of mail and/or packages. Customers can print labels and postage from their computer.

Table 1. Number of Mail Containers or Trays Sampled from SIRVO Tests FY s 2016 - 2018

Sample Components	FY 2016	FY 2017	FY 2018
Number of Mail Containers or Trays	26,772	31,393	34,688
Number of Tests	8,486	10,373	11,063
Average Time	1.75	1.75	1.75
Average Rates	45.67	46.36	47.34
Total SIRVO Sample Costs	$678,222.34	$841,561.49	$916,514.24

Source: Statistical systems.

Further, the Postal Service reportedly spent about $26 million for its cost system manual data collection efforts in 2018. Improving census data and using it in place of sample estimates would increase the accuracy of cost attribution calculations and reduce the labor costs associated with the collection of samples.

> *"The Postal Service reportedly spent about $26 million for its cost system manual data collection efforts in 2018."*

Bottom-Up Costing

The Postal Service currently uses a top-down costing[11] process to assign costs to products; however, bottom-up costing methodologies would provide more real-time, detailed data. Bo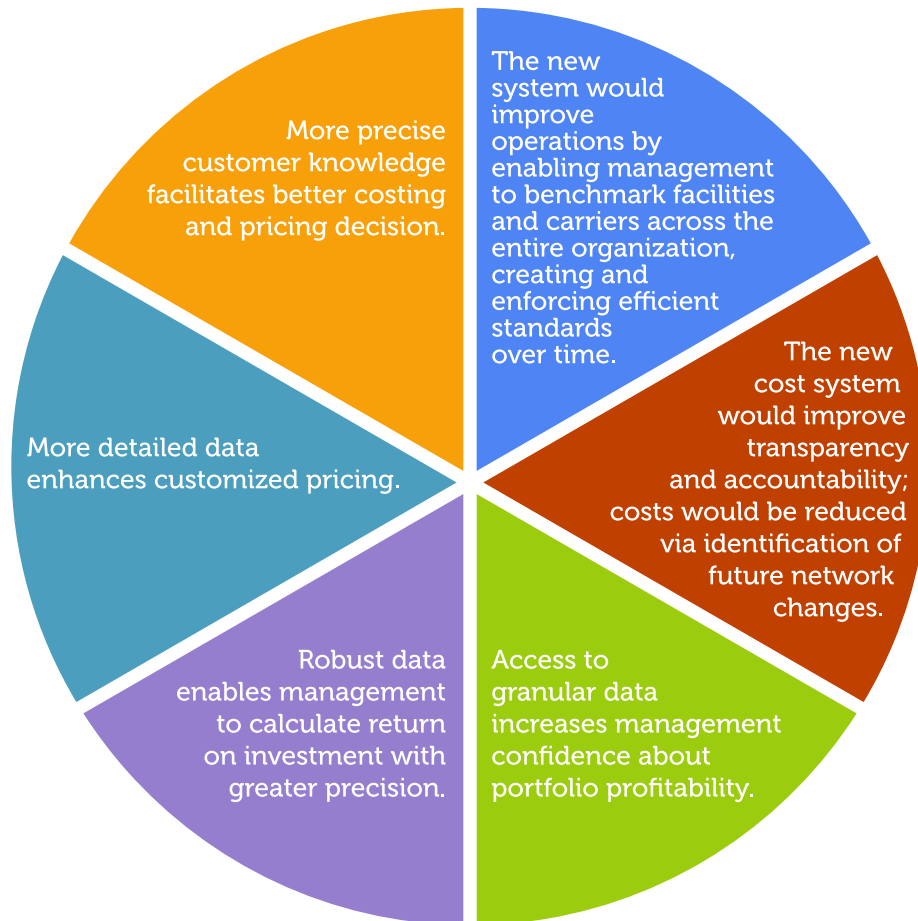ttom-up costing systems attach granular costs at every step in the operational process, allowing for unique data views of the business by region, facility, customer, product, and sub-products. Costing in this way would allow the Postal Service to cost and price products through each activity including delivery, transportation, mail processing, and marketing. Bottom-up costing systems can generate frequent profit and loss statements, other statistics, and reports at any time, using real-time data. This methodology should lead to improved pricing decisions that could increase the Postal Service's ability to compete in an ever-changing fast-paced market.

In 2014, we conducted a study on modernizing the Postal Service's costing system.[12] We used a Greenfield approach, which suggests developing a new costing system from scratch rather than trying to modify an existing system. This Greenfield Study details the potential benefits of a modern, bottom-up costing and revenue analysis system. The benefits of bottom-up costing are shown in Figure 1.

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11   An estimation costing methodology that uses sampling and historical knowledge to distribute overall costs from the general ledger to products.
12   *Greenfield Costing Methodology: An Opportunity to Deliver Transformative Change* (Report Number RARC-WP-14-005, dated January 7, 2014).

Figure 1. Benefits of Bottom-Up Costing Approach

The new system would improve operations by enabling management to benchmark facilities and carriers across the entire organization, creating and enforcing efficient standards over time.

The new cost system would improve transparency and accountability; costs would be reduced via identification of future network changes.

Access to granular data increases management confidence about portfolio profitability.

Robust data enables management to calculate return on investment with greater precision.

More detailed data enhances customized pricing.

More precise customer knowledge facilitates better costing and pricing decision.

Source: *Greenfield Costing Methodology: An Opportunity to Deliver Transformative Change*.

The Postal Service commissioned contractors[13] in 2014 to do further analysis based on our Greenfield study. The Postal Service did not implement the costing system updates identified in either Greenfield Study because of the difficulty in

building this type of system. Specifically, the OIG Greenfield study found that building a new cost system would require a financial commitment of millions of dollars, including investments in advanced technology to support the new system. During this audit management agreed with that assessment and added data accessibility and reliability concerns were additional roadblocks to developing this type of costing system. However, the Postal Service has acquired many new technologies since 2014. These recently acquired mail technologies may address many of the previously identified roadblocks, by identifying more granular mail processing and labor costs using detailed data from barcodes, optical readers, scanners, and other tracking capabilities. The following provides some of the new technologies implemented.

Mail Processing

- Informed Visibility-Mail Tracking Report (IV-MTR): a near real-time, single source for all mail and mail aggregate tracking information.

- Expansion of Package Sorters: reduces the need to manually sort packages that have been processed on automation by increasing the number of separations on many of the current sorters.

- Postal Automated Redirection System (PARS): processes undeliverable-as-addressed mail. Before PARS, processing letter mail was a labor-intensive and time-consuming manual process. This process has been entirely automated.

- Small Package Sorting System Machines: provide additional capacity to support increased package volume and creates greater efficiency in the distribution of all package products, particularly for First-Class Small Packages and Rolls.

- Results Server Modernization: designed for the off-line letter encoding system and the Flats Identification Code Sorting System; consolidates and modernizes components of the letter, flat, and package image handling systems into a single system.

- Automated Delivery Unit Sorter Production Program (ADUS): used to sort packages to carrier routes and segments within a route. The ADUS is predominantly a commercial sorter adapted to include barcode reading and optical character reading capabilities for sorting packages.

- Universal Sort System: reduces labor costs by automating current manual operations, improving sort quality, and providing data on package weight and dimensions.

Delivery

- Product Tracking and Reporting (PTR): provides delivery status information for parcels and letter mail with tracking services and barcodes. The PTR consolidates data from numerous sources to provide an end-to-end view of package's progress from acceptance to final delivery.

Transportation

- Surface Visibility (SV) scanner replacement and Central Re-architecture: provides the capacity and flexibility to redesign the SV application, procurement of new devices, expansion of SV, and installation of Wi-Fi to additional sites.

Selling, General, and Administrative Expense

Although regulations do not require the Postal Service to specifically allocate institutional costs to a specific product or service, some recently acquired general technologies may allow management to identify institutional costs that could support enhanced business decisions regarding cost management. Specifically:

- Accounting Service Center Payroll Automaton Reengineering (ASCPA): a suite of 14 applications maintained by the Eagan Integrated Business Systems Solution Center. The applications are integral to accurately calculating and processing hundreds of thousands of payments, payroll-related adjustments, and legally required deductions each year.

- Integrated Human Resources System (IHRS): replaces the old system with a new cloud-based Integrated system. The new IHRS will enable the Postal Service to recruit, build, and manage the workforce of the future.

The Postal Service should evaluate these and other technologies to identify how they could be leveraged to capture granular cost data that would support a bottom-up costing methodology.

Enhanced Costing Opportunities

The Postal Service has acquired technologies like IMb and IV-MTR to track domestic mail movement throughout the network; however, the Postal Service has not fully leveraged these and other technologies discussed in this report to identify and attribute more granular census product cost data. The Postal Service could use these data collection systems to continuously track products from sender to recipient and support accuracy in identifying costs and assigning costs to products, both domestically and internationally. Tracking data, especially for parcels, can be used to trace every package from every customer for every product selected at every step in the value-chain. The tracking process could associate each package with its weight, dimension, and distance. The data could then be aggregated to any level and customer segment.

Our recent *Use of Intelligent Mail Barcode (IMb)*[14] *for First-Class Mail Letters' Processing Costs* report[15] identified some non-standard or unexpected mail flows that resulted in alternative or additional processing steps. The First-Class Mail (FCM) letters cost model did not precisely capture or explicitly model the costs of these mail flows because these non-standard operational activities should not have been occurring. Leveraging census data from IV-MTR could have enhanced the accuracy and reliability of mail processing cost estimates by identifying these non-standard activities and suggested ways to reduce costs by promoting standardization. Management stated that IMb and IV-MTR are operational technologies not currently designed to capture data for costing. However, the September 2014 IV-MTR business case document included the statement that this system would be used to enhance cost analysis to capture more granular,

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14 A 65-bar barcode used to sort and track letters and flats. It allows mailers to use a single barcode to participate in multiple Postal Service programs simultaneously, expands mailers' ability to track individual mailpieces, and provides greater mail stream visibility.

15 *Use of IMb for First-Class Mail Letters' Processing Costs (Report Number* CP-AR-18-007, dated September 25, 2018).

census data to support activity-based costing and reduce the need for manual data collection.

In this earlier report, we recommended the Postal Service evaluate the impact of unexpected or non-standard mail flows for FCM product costs. We also recommended the Postal Service develop a strategic plan to assess how it can enhance IMb and IV-MTR technology to better support costing and provide its Cost Attribution team access to detailed IMb data reports or dashboards created within Informed Visibility. Costing personnel received access to IV-MTR and dashboards have been provided to the Cost Attribution team.[16] Management agreed with these recommendations and identified non-standard mail flows that were not captured in their FCM letters cost model but believe the cost impact to be low. They are continuing to finalize their analysis and plan to have it completed by September 30, 2019.

A robust costing system should be capable of gathering costs as they are incurred from the point of entry through final delivery, returns, and invoicing. Enhancing its current cost system to include more real-time, granular census data would increase the accuracy of the Postal Service's cost attribution calculations, better support complex product and pricing decisions, and allow management to apply cost analysis to specific customers and/or specific areas. Additionally, the increased use of census data would help identify cost reduction opportunities in the operational network.

Finally, moving from sampling data to census data would reduce or eliminate the labor costs associated with the collection of sample data by technicians.

> ### Recommendation #1
> We recommend the **Acting Vice President, Pricing and Costing,** develop a plan with milestones to implement a modern costing system using enhanced technologies in an effort to incorporate real-time, granular data for product cost attribution.

Management's Comments

The Postal Service disagreed with the recommendation. Management disagreed for the following three reasons: 1) the Postal Service currently has a modern cost system; 2) developing milestones to incorporate real-time, granular data for product cost attribution is unfeasible because it is unknown when such data will be available, reliable, and suitable for costing purposes; and 3) a bottom-up cost system, which is implicit in the recommendation, is inappropriate for theoretical, regulatory, and practical reasons for a multiproduct firm such as the Postal Service that experiences material economies of scale and scope.

Management stated that their current product costing system is modern and the report did not contain details on any specific aspect of their costing system that disproves this. Management also noted that they update the vast majority of its data inputs annually, supporting the fact that the system is modern. They noted the vast majority of its data inputs are updated annually and thus, supports the fact that the system is modern. Additionally, management stated the report combines a modern costing system with a bottom-up costing system but believes they are not comparable and should not be considered equivalent. Further, management believes a bottom-up costing approach is not, by definition, any more modern than a top-down method.

The Postal Service's costing methods and any methodological changes must be approved by the PRC. Management stated that developing milestones that incorporate real-time, granular data – that meet the PRC's standards – is impractical and unachievable because it is uncertain when this data will be available, reliable, and suitable for costing purposes. Management also stated the report was not clear on the term "real-time". They believe that "real-time" data, that could be updated instantaneously as soon as the cost-causing activity occurs, is not possible.

Although the recommendation does not explicitly reference "bottom-up" costs, management believed it was implied based on the narrative of the report. Management does not agree that the use of a "bottom-up" cost system is

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16   We closed this recommendation in July 2019.

appropriate for their business and operational needs. They stated the current system correctly and accurately assigns costs to products.

Finally, management stated, although they disagree with the recommendation as stated, they do agree to continue the current practice of vigorously reviewing and evaluating available statistical systems and operational data sources for costing purposes. Management included an appendix in their comments that outlines recent petitions filed with the PRC to support this effort.

See Appendix B for management's comments in their entirety.

Evaluation of Management's Comments

The OIG considers management's comments unresponsive to the recommendation in the report. Regarding the disagreement with the statement that the current costing system could be modernized, the OIG found current industry best practices use granular, real-time data in their costing systems. The Postal Service's current costing methodologies use multiple studies that are more than a decade old, and do not generally incorporate real-time, granular data. Updating the "vast majority of its data inputs" annually, in today's digital world, does not seem consistent with a modern system. The report also provided examples of new Postal Service technologies that have been implemented that could be used to modernize its current costing system. Therefore, the OIG does not agree that the current costing system reflects modern practices. Further, the OIG did not state that a "top-down" costing system was not capable of being modern. The OIG discussed a "bottom-up" costing methodology as an industry best practice.

Regarding the disagreement to develop milestones that incorporate real-time, granular data, the OIG believes milestones are necessary to ensure continued advancements of data usage in the Postal Service's costing system. The OIG acknowledged in the report ongoing efforts to improve aspects of the current costing system, which is also illustrated in the management's comments. However, these efforts have not been systematic or guided by a documented

plan to ensure a consistent, full-scope, proactive evaluation of available data for costing purposes.

Although management does not believe a plan with milestones is achievable, the OIG asserts that a plan should focus on evaluating statistical systems and operational data sources to identify when and where real-time, granular data can be incorporated. The milestones should include a timeline to evaluate statistical systems, operational data sources, and capital investments, for example, for potential uses of granular data. Therefore, the OIG does not agree that the development of milestones is impractical and unachievable.

Further, the OIG disagrees with management's belief that the incorporation of "real-time" data is not possible. Industry best practice is to use this type of data collection in costing systems. The current practice of using data inputs updated annually does not support nimble decision-making that is needed in this current climate of rapid change in the competitive space. The OIG believes management should include in their plan an evaluation of "real-time" or near real-time data that is recorded in their operational data systems.

Regarding management's assertion that the OIG implied a requirement to incorporate a "bottom-up" costing approach, the recommendation stands on its own and does not require a "bottom-up" costing approach. The discussion around "bottom-up" costing in the report was used to demonstrate current methodologies generally employed by the industry, as described in the audit objective. Although the report discusses "bottom-up" costing as an industry best practice, the OIG did not state it would necessarily be the best or most appropriate system for the Postal Service.

The recommendation requires OIG concurrence before closure. The OIG requests written confirmation when corrective actions are completed. The recommendation should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendation can be closed. We view the disagreement of the recommendation as unresolved and plan to pursue it through the formal audit resolution process.

Appendices

Click on the appendix title below to navigate to the section content.

Appendix A: Additional Information

Scope and Methodology

The scope of this project includes the review of processes and methodologies impacting the cost of products, from FYs 2014 through 2018. To achieve our objective, we:

- Reviewed Postal Service regulations, policies, and procedures related to competitive product systems.

- Reviewed the PRC website to identify filings submitted associated with the Postal Service products.

- Analyzed SIRVO and PC Postage data elements.

- Reviewed Postal Service Decision Analysis Reports[17] to identify technologies that could facilitate costing.

- Contracted with Decision Analysis Partners to identify industry costing best practices.

We conducted this performance audit from March through September 2019, in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary under the circumstances. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. We discussed our observations and conclusions with management on August 21, 2019, and included their comments where appropriate.

We assessed the reliability of volume and revenue data from the FY 2017 and FY 2018 RPW reports by reviewing source documents and verifying the accuracy of the data by testing the completeness, reasonableness, and validity of the data. We determined that the data were sufficiently reliable for the purposes of this report.

Prior Audit Coverage

Report Title	Objective	Report Number	Final Report Date	Monetary Impact (in millions)
What's Driving Postal Transportation Costs?	Assess trends in Postal Service transportation expenses.	RARC-WP-19-002	3/18/2019	None
Use of IMb for First-Class Mail Letters' Processing Costs	Assess whether the Postal Service can leverage IMb data in the IV system to enhance the accuracy and reliability of mail processing costs.	CP-AR-18-007	9/25/2018	None
Accuracy of In-Office Cost System Data	Assess the accuracy and reliability of IOCS telephone readings.	CP-AR-18-001	10/18/2017	$31

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17   A document management prepared to recommend an investment for approval with sufficient detail, including backup documentation, to enable the approving authorities to make an informed decision regarding the use of postal funds.

Report Title	Objective	Report Number	Final Report Date	Monetary Impact (in millions)
Transportation Cost System-Air	Assess the accuracy and reliability of TRACS-Air sampling data.	CP-AR-17-009	8/29/2017	None
Greenfield Costing Methodology: An Opportunity to Deliver Transformative Change	Identify a Greenfield cost allocation methodology to directly support its current and future needs.	RARC-WP-14-005	1/7/2014	None

Appendix B: Management's Comments

Steven Phelps
A/VP, Pricing and Costing

UNITED STATES POSTAL SERVICE

September 9, 2019

LAZERICK POLAND
DIRECTOR, AUDIT OPERATIONS

SUBJECT: Costing Best Practices (Report Number CP-AR-19-DRAFT)

Recommendation #1:

We recommend the Acting Vice President, Pricing and Costing, develop a plan with milestones to implement a modern costing system using enhanced technologies in an effort to incorporate real-time, granular data for product cost attribution.

Management Response:

Management disagrees with Recommendation #1. Management cannot agree with Recommendation #1 for three reasons: 1) the Postal Service currently has a modern cost system; 2) developing milestones to incorporate real-time, granular data for product cost attribution is unfeasible because it is unknown when such data will be available, reliable, and suitable for costing purposes; and 3) a bottom-up cost system, which is implicit in Recommendation #1, is inappropriate for theoretical, regulatory, and practical reasons for a multiproduct firm such as the Postal Service that experiences material economies of scale and scope.

However, Management confirms its strong commitment to continue its current efforts to investigate and utilize operational data when such data is available, reliable, and suitable for costing purposes. Management is committed to maintaining an accurate cost system so that it can be used to make well-informed pricing and other important business decisions.

Recommendation #1 requests a plan to implement a modern costing system for product cost attribution, which suggests that the current costing system is, in some fashion, not modern, or perhaps is even antiquated. Management strongly disagrees with the notion that its current product costing system is not modern. The report lacks details on any specific aspects of the costing system that are not modern. Management believes the report on several occasions conflates a modern costing system with a bottom-up costing system, and those two are not analogous and consequently should not be considered to be equivalent in any fashion. Bottom-up and top-down costing methods can both be either modern or antiquated, depending

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on the vintage and validity of the data and assumptions used. A bottom-up costing approach is not by definition any more modern than a top-down method.

The Postal Service currently uses a top-down product costing approach that is modern, sophisticated, flexible, and transparent. The fact that the vast majority of its data inputs (including costs and distribution factors) are updated annually supports the fact that it is modern. The product cost model is updated annually with current relevant data that reflects the existing operating environment. Its sophistication and flexibility are exhibited by the fact that it has several hundred cost components that are annually updated with general ledger expenses, and are thoroughly analyzed by two distinct and important processes to properly attribute costs to products. Annually, the components are first populated with expenses from the applicable general ledger account. Then, two processes, attribution and distribution, are applied to each of the several hundred cost components. Attribution determines the variable portion of costs within each component. Distribution establishes a set of factors ("keys") that sum to one and that are based on the relevant cost driver (e.g. pieces, cubic-foot miles). These factors are used to distribute the attributable costs to postal products. The attribution process is reviewed annually by the Postal Service internally and by the Postal Regulatory Commission (hereafter "Commission") and updated as appropriate. For the vast majority of the cost components, the set of distribution factors are updated annually through a rigorous process that reflects the current cost drivers and mail mix. Thus, on an annual basis, the product cost model accurately reflects the attributable costs by product for that year. Moreover, the flexibility of the current cost model is further demonstrated by the fact that the model allows cost components to be added or deleted to reflect operational changes. Recently, the cost model added a component for city carrier Sunday/Holiday costs, so those costs could be separately analyzed and hence, the attributable costs by product could be accurately calculated. Lastly, the transparency of the cost model is shown by the fact that the attribution and distribution methods are established by the Commission and are available in the public domain. The Postal Service files its cost models annually as part of the Annual Compliance Report (ACR) and the Commission extensively reviews the models and reports its findings in the publicly available Annual Compliance Determination (ACD). Moreover, the Commission has repeatedly communicated that changes to costing methods can be submitted by outside parties and those will be fully litigated by the Commission.[1] Thus, the costing methods used by the Postal Service are transparent and can be modified by external stakeholders as well as the Postal Service and the Commission.

In sum, Management believes the current product cost model is modern. For this reason, Management disagrees with the portion of Recommendation #1 that requests the Postal Service implement a "modern" costing system.

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[1] For example, in Docket No. RM2016-2 UPS petitioned the Commission to adopt changes related to attributable costs and to the "appropriate share" of institutional costs that competitive products must cover. As stated in Order No. 3506 (September 9, 2016), "While the Commission does not adopt Proposals One or Two, it recognizes the significant contribution UPS makes with its analysis and discussion of costing methodologies. The Commission encourages continued proposals to improve current costing methodologies, and expects this Order to provide additional transparency as to the Commission's review of those proposals."

Postal Service to develop milestones to incorporate real-time, granular data for product cost attribution. Management cannot agree with this portion of Recommendation #1 because it finds it is impractical and unachievable. Management does not know, with any degree of certainty, when such granular data will be available, reliable, and suitable for costing purposes. The costing methods employed by the Postal Service are determined by the Commission. Any changes to the techniques, including the use of new or different data sources, must be approved by the Commission through litigation that starts with the Postal Service, the Commission, or some other party initiating a rulemaking proceeding to consider changes to analytical principles relating to periodic reports, such as the ACR. The standard employed by the Commission to approve any changes to costing methods, including the use of different data sources, is that the change must "improve the quality, accuracy, or completeness of the data or analysis of the data contained in the Postal Service's annual periodic reports to the Commission"[2]. The uncertainties associated with the availability of such granular data that meets Commission standards make developing practical milestones unworkable and unrealistic. Consequently, Management disagrees with this component of Recommendation #1.

Also, the lack of clarity regarding the term "real-time" in the context of this portion of Recommendation #1 creates the opportunity to reiterate basic concepts and avoid any possible confusion over the data currently used in the cost system. Currently, the cost system uses timely expense, operational and sampled data from the current fiscal year to develop its costs. Thus, the vast majority of the data inputs used in the cost model are "real-time," in the sense that they are from the year of activity for which the Cost and Revenue Analysis (CRA) report shows the attributable costs by product. If the report intends to imply that the cost model could be updated instantaneously as soon as the cost-causing activity occurs and would be available on demand throughout the year, this is not possible since the costs themselves may not be incurred and recorded instantaneously.

While Recommendation #1 does not explicitly include the term "bottom-up" costs or costing, the term "bottom-up" is used ten times in the narrative of the report. Therefore, Management believed it was reasonable to infer that implicit in the part of the Recommendation #1 that calls for "an effort to incorporate real-time, granular data for product cost attribution" is also the suggestion that a "bottom-up approach" be used. Further support for the conclusion that the report is expressly seeking that the Postal Service implement "bottom-up" costing system comes from page 4 of the report which states the following:

"The Postal Service currently uses a top-down costing process to assign costs to products; however, bottom-up costing methodologies would provide more real-time, detailed data. Bottom-up costing systems attach granular costs at every step in the operational process, allowing for unique data views of the business by region, facility, customer, product, and sub-products. Costing in this way would allow the Postal

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[2] 39 C.F.R § 3050.11.

transportation, mail processing, and marketing. Bottom-up costing systems can generate frequent profit and loss statements, other statistics, and reports at any time, using real-time data. This methodology should lead to improved pricing decisions that could increase the Postal Service's ability to compete in an ever-changing fast-paced market." (footnote omitted)

Bottom-up cost models generally assume a linear cost structure or a flat marginal cost curve. A flat marginal cost curve for an activity suggests that the unit cost of an activity (sorting, delivering) is constant and does not vary with the amount of volume incurring that activity. Operations with flat marginal cost curves do not experience economies of scale or scope. This assumption is inappropriate for a multi-product firm (such as the Postal Service) with a non-linear cost structure caused by economies of scale and scope occurring within many of its operational networks. Instead, it is necessary that scale and scope economies be incorporated into its cost models in order to accurately produce marginal costs. Bottom-up costing in a cost structure with scale and scope economies do not produce marginal costs. Rather, "bottom-up" costing in these environments generates a type of average cost, which is not appropriate for regulatory or pricing purposes. Moreover, average cost is not the conceptually correct cost measure for a multiproduct firm like the Postal Service. Marginal cost is the theoretically correct approach and thus has been historically supported by the Commission.[3] The current product cost system correctly and accurately produces marginal costs by product.
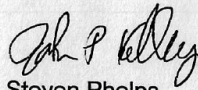
Despite Management's disagreement with Recommendation #1, Management agrees that it should continue its current practice of vigorously reviewing and evaluating its data collected via sampling from its ongoing statistical systems (e.g. CCS, IOCS, and TRACS), as well as all relevant operational data sources, for availability, reliability and suitability for costing purposes. Moreover, where appropriate, the Postal Service will file petitions with the Commission to incorporate the improved data in its cost models. Management has successfully enhanced the data collected by its ongoing sampling systems, and has discovered improved operational data sources as well. In fact, since the beginning of FY 2017, Management has filed eight formal petitions with the Commission to consider an alternative operational data source for use in its cost models. The Commission has approved six of the proposals, and two are currently still in litigation. See the Appendix for more details.

However, there is no guarantee that the Commission will support the replacement of sample data with data from operational systems. On October 31, 2014, the Postal Service proposed a change in analytical principles to replace some data collected from the In-Office Cost System with data from the Time and Attendance Collection

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[3] The Commission stated in Docket No. R80-1 that it was "on record as favoring the use of marginal-cost pricing principles in postal ratemaking." See Docket No. R80-1, Opinion and Recommended Decision, Volume 1 of 2, February 19, 1981, ¶ 0344 (Docket No. R80-1 Opinion Vol. 1). Similarly, the Commission has more recently affirmed this approach when presented with alternative methods, stating that, "marginal costs should remain the Postal Service's basis for setting prices, with the application of appropriate markups to ensure that each product covers its incremental costs and

System, an operational data source.[4] The Commission ultimately rejected this proposal, citing anomalies in the operational data.[5] Therefore, it is clear that operational data is not inherently superior to sample data, and in some cases sample data is preferred to operational data. The Appendix contains further discussion of this issue and also includes an important clarification regarding the distinction between census data and operational data, which the report seems to conflate.

In conclusion, the OIG and Management agree that the cost system employed by the Postal Service should use the best available data for the purposes of developing and reporting accurate costs. For theoretical and practical reasons, Management does not believe that Recommendation #1 from this audit is the appropriate approach to improve its cost system. Management believes that the Postal Service currently has a modern and accurate cost system that is approved by the Commission and is used for pricing and other important business decisions. Management is highly motivated to continue to have a cost system with a strong theoretical basis that aligns with its cost structure, and that develops accurate costs using the best available data. Thus, Management agrees to continue its aggressive efforts to investigate and implement improved data sources, as appropriate, from its ongoing sampling and operational data systems in its cost models. However, Management for the reasons discussed in detail in this response, disagrees with Recommendation #1.

for Steven Phelps

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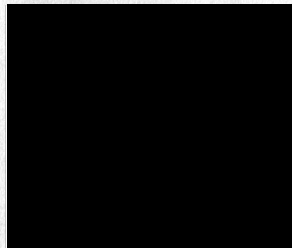
Manager, Corporate Audit Response Management

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[4] Docket No. RM2015-2
[5] Order No. 3526 at 36 (September 22, 2016).

Appendix

List of Formal Petitions Filed with the Commission Where Management Has Requested to Use Operational Data in its Cost Models

Docket No.	Proposal No.	Summary	Result
RM2017-8	Four	Use city carrier route evaluation data to annually adjust parcel cost pool in city carrier letter route model.	Approved
RM2017-9	Five	Use TACS data in lieu of IOCS to distinguish between city carrier letter route and special purpose route costs.	Approved
RM2017-10	Six	Use PTR data to adjust assumptions about number of transportation legs used by entry point.	Approved
RM2017-13	Nine	Use of digitally captured data to replace manually collected information on DPS letter data on City Carrier Cost System (CCCS) tests.	Approved
RM2018-4	One	Use of digitally captured data to replace manually collected information on DPS letter data on Rural Carrier Cost System (RCCS) tests.	Approved
RM2018-5	Two	Use TACS data in conjunction with PTR data to replace IOCS readings of city carriers on Sundays.	Approved
RM2019-6	One	Use PTR data in conjunction with TACS data to update its city carrier special purpose route cost model.	Under Litigation
RM2019-12	Seven	Use TACS data to replace IOCS readings of carrier supervisors on Sundays.	Under Litigation

A Clarification of the Distinction between Census Data and Operational Data

In discussing the investigation and use of operational data, Management believes it is appropriate to further discuss the important distinction between operational and census data. The report repeatedly refers to the use of census data in places in which Management believes the term operational data would be more appropriate.[6] This is a critical distinction that warrants further discussion and explanation. On page 1, footnote 9, the report accurately defines census data as such data that "capture information about everything in the population." Operational data, as defined here, is considered to be data that is regularly captured from the normal course of the business. Operational data includes scan data from processing equipment such as a DBCS or APPS, Surface Visibility (SV) scans, and Product Tracking Reporting (PTR) scans. A census, as was correctly defined by the report, captures information about everything in the population. Thus, for a census of SV data to be used in a cost model, it would mean that each SV scan would have to be harnessed and summarized in a fashion suitable for the applicable cost model. This would likely involve mining and summarizing millions of scans, which is impractical, unreasonable, and may not even be possible. In its investigation of operational data, Management has sought to use a pertinent subset, or *sample*, of operational data in its models, rather than a census of the operational data. It is generally impractical and unnecessary to use census data for costing purposes.

For example, on page 3, the report cites an instance where "the Postal Service filed a petition with the Commission to update its transportation cost model to replace some sample data with census data."[7] This example is erroneous and misleading for two reasons. One, in Docket No. RM2017-10, the Postal Service utilized a subset, hence a sample, of operational PTR data in conjunction with TRACS sample data to improve its cost model. Both the TRACS data and the sample of PTR data were needed to improve the cost model. The PTR data indicated the entry point (e.g. DNDC, DSCF, and DDU) and the TRACS data determined the type of transportation experienced (e.g. local, intermediate, or long-distance). This is important because further down on page 3, the report says the Postal Service spent $26 million on data collection in FY 2018 which gives the false impression that a portion of that expense could have been saved by utilization of PTR data in a similar fashion that was done in Docket No. RM2017-10. In fact, the proposal needed both sets of data to improve the cost model and obtain approval from the Commission. Therefore, utilization of PTR data in this instance would not have resulted in any savings from costs associated with TRACS sampling. Two, census PTR data were not used. If census PTR data were used, the Postal Service would have had to harness every PTR scan performed, across all facilities, from FY 2017. This would likely amount to capturing and summarizing millions of scans for inclusion in this cost

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[6] The word census is used 29 times in the audit report.
[7] Docket No. RM2017-10.

model, which is clearly impractical, and likely not feasible. Instead, an appropriate sample of PTR data was used in conjunction with TRACS sample data to improve the cost model.

On page 8, the report cites another OIG report on the *Use IMb for First-Class Mail Letters' Processing Costs.*[8] In that report, the OIG analyzed a sample of IMb data and found some nonstandard mail flows that were not explicitly modeled in the Postal Service's corresponding First-Class Letters' cost model (ACR folder 10). For this response, the noteworthy part is that the OIG analyzed a sample, and not a census, of IMb data for its report. In FY 2018, there were nearly 36 billion First-Class Presort Letters that, on average, received two to five processing scans during sortation. Thus, capturing a census of IMb data, for this model would require harnessing and summarizing a minimum of approximately 72 billion scans, which is clearly unrealistic, unreasonable, and unnecessary for this cost model.

Moreover, it is not necessarily the case that an operational data source is also a census. For example, Surface Visibility (SV) is not a census of transportation operations because it is not the case that 100 percent of trucks are scanned at every arrival and departure. SV data are still useful as an operational data source, but it cannot be labeled as census data simply because it is not collected via a random sample. In fact, in cases where operational data is known to exclude certain portions of the population, a random sample is often preferred. Even if there are fewer data records, the records obtained by a random sample are more representative of the full population.

In sum, the use of operational data is not equivalent to the use of census data. Because the report blurs the two concepts, Management believed it was important to highlight the necessary distinction in this response.

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[8] *Use of IMb for First-Class Letters' Processing Costs*, CP-AR-18-007, September 25, 2018.

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