

Analysis Plan

Evaluation Name: Enhancing TMF Outcome Measurement and Reporting through a Refined Measurement Approach, Toolkit Development, and Investment Partner Engagement

Evaluation Code: 2610

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Project Description

The Technology Modernization Fund (TMF), administered by the U.S. General Services Administration (GSA) according to guidance issued by the Office of Management and Budget, has so far funded 34 federal agencies' efforts to upgrade information technology systems, enabling them to adapt to changing needs, accelerate impactful technological projects, and break the cycle of costly legacy IT maintenance for outdated systems. This evaluation describes investment outcomes for FY25 that show TMF how its investments have made progress towards cost savings, process improvement, and strengthened public service goals, during and after implementation. This work aligns with the [President's Management Agenda](#) goal to "Leverage Technology to Deliver Faster, More Secure Services." GSA is leading this effort with a strategic focus on prioritizing IT projects that need to move quickly. On February 11, 2026, GSA's Administrator [announced](#) that he tasked agency executives with ensuring every dollar of TMF investments produces clear, defensible results, and to improve metric collection and reporting to assess impact of TMF investments.

Federal agencies managing TMF investments must track how they spend TMF funds and what those investments produce, and report progress toward pre-defined milestones. This project will build on a survey that OES administered in FY25 to gather information from funded agencies on investment outcomes in key areas of interest and report outcomes for the investment portfolio. Findings from this project can be used in three ways:

1. Refining and updating the investment survey and dashboard will let us check agencies' progress a second time and compare it to the first survey, so we can share updated information about how TMF investments are performing.
2. Updated reporting can hold investments accountable and inform TMF's future strategies by ensuring that priority outcomes are consistently measured.
3. Agency workshops, other kinds of in-depth engagement, and creation of an outcome reporting toolkit will clearly define what TMF outcome measures mean in practice (e.g., cost savings, time savings) and clarify how they should be measured. This will make TMF investment performance easier to understand in a consistent, accurate way.

Preregistration Details

This Analysis Plan will be posted on the OES website at oes.gsa.gov before outcome data are analyzed.

Data and Data Structure

This section describes variables that will be analyzed, as well as changes that will be made to the raw data with respect to data structure and variables.

Data Source(s)

The primary data source is a survey fielded via Qualtrics beginning on May 29, 2026. The survey was sent to 119 investment managers representing 68 TMF investments.

Investment information, including total investment amount, start and end dates of the investment, and primary investment category, were provided by TMF from project records.

Outcomes To Be Analyzed

We will summarize respondents' self-reported values for the following outcomes:

- Cost savings: Difference between the amount of money (in dollars) spent in FY25 on project costs, operations and maintenance, personnel, contract support, travel, training, supplies, and other costs compared to the agencies' projections of what they would have spent without the TMF investments.
- Time savings: Difference between the time spent on tasks after TMF investments upgraded them and the time spent on those same tasks before the upgrade.
- AI adoption: Number of monthly AI-tool users as a result of TMF investments.
- Form digitization: Number of users of forms or applications that have been fully digitized as a result of TMF investments.
- Cybersecurity: Number of TMF investments that have implemented cybersecurity upgrades; percent of TMF investments that focus on cybersecurity reporting that their cyber risk profile is "Somewhat Better" or "Much Better" than prior to upgrades.
- Agency collaboration: Percent of TMF investments that plan to share, or have already shared, tools and resources from their investment with other agencies.

Imported Variables

Imported variables include information about each agency's TMF investment. These data are provided by TMF from investment project records, including:

- Total investment amount (\$)
- Agency implementing the investment
- Investment start date
- Investment end date
- Primary investment category

Transformations of Variables

Survey responses will be transformed for the following variables so we can summarize the outcomes described above:

Table 1

New and Transformed Variables Based On Survey Response Fields

Survey response field(s)	New variable and transformation
<u>Cost savings</u>	
cost_om_accur_emb cost_person_accur_emb cost_cont_accur_emb cost_trvl_accur_emb	cost_total = Sum all non-null values across the 'cost_*_emb' fields within respondent to calculate total cost savings for each respondent

cost_train_accur_emb cost_splies_accur_emb cost_other_accur_emb	
<u>Time savings</u>	
time_accur_hr_emb time_accur1_hr_emb time_accur2_hr_emb time_accur3_hr_emb time_accur4_hr_emb time_accur5_hr_emb	time_total = Sum all non-null values across the 'time*_emb' fields within respondent to calculate total time savings for each respondent Description: Total number of hours saved per year on all reported tasks.
<u>Form digitization</u>	
forms_users_2_TEXT	forms_users_number = numeric format of non-null text entries
<u>Security</u>	
cyber_risk	cyber_risk_better = 1 if 'cyber_risk' = "Somewhat better than before" or "Much better than before"; = 0 otherwise
security_logic_1	security_focus = 1 if security_logic_1 == 'Yes' and = 0 otherwise
security_logic_2	security_upgrade_implement = 1 if security_logic_2 == 'Yes' and = 0 if security_logic_2 == 'No'
<u>Agency collaboration</u>	
agency_desc_5 agency_desc_6 agency_desc_7 agency_desc_8 agency_desc_9 agency_desc_10	agency_collab_5 = 1 if any agency is listed in agency_desc_5 and = 0 if no value entered or skipped. agency_collab_6 = 1 if any agency is listed in agency_desc_6 and = 0 if no value entered or skipped. agency_collab_7 = 1 if any agency is listed in agency_desc_7 and = 0 if no value entered or skipped. agency_collab_8 = 1 if any agency is listed in agency_desc_8 and = 0 if no value entered or skipped. agency_collab_9 = 1 if any agency is listed in agency_desc_9 and = 0 if no value entered or skipped. agency_collab_10 = 1 if any agency is listed in agency_desc_10 and = 0 if no value entered or skipped.
agencies_willshare agencies_shared	collab_plan_sharing = 1 if agencies_willshare is non-null and != 'NA'; = 0 if agencies_willshare is null or == 'NA'

	collab_shared = 1 if agencies_shared is non-null and !='NA'; = 0 if agencies_shared is null or =='NA' any_collab = 1 if collab_plan_sharing ==1 OR collab_shared ==1; =0 otherwise
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Transformations of Data Structure

No transformations of the data structure are planned.

Data Exclusion

Some responses may not be included in reported quantitative summaries because responses are null or not applicable; our summaries report quantities for responses that are non-null or include numeric responses. It is possible that some item responses would be excluded on a case-by-case basis if responses are unclear, include invalid responses, or report implausible values that cannot be validated. In the case of duplicate responses from a single investment team, we will keep the most complete response and delete any duplicates. Item response exclusion will be documented and reported without revealing the identity of the agency and respondent whose response was excluded.

Treatment of Missing Data

The summary analyses below use only the answers respondents actually gave, whether numbers or categories, and leave out any question a respondent skipped ("complete case analysis" or "listwise deletion"). We do not plan to fill in missing answers with estimates or adjust the data to make up for people who didn't respond.

We will discuss and prepare mitigation ideas for future years to help improve data quality.

Descriptive Statistics, Tables, and Graphs

The primary way of reporting outcomes will be summary statistics of the survey response variables. These will include means, medians, totals, and proportions of the outcomes.

Table 2

Descriptive Statistics To Report Survey Outcomes

Outcome	Descriptive statistic	Calculation method
Cost savings	Median cost savings, FY25 \$	Median of 'cost_total' for all non-null responses.
	Total cost savings, FY25 \$	Sum of 'cost_total' across all non-null responses.
Time savings	Median time savings per task, yearly hours	Median of 'time_accur*' across all non-null responses.
	Total time savings, yearly hours	Sum of 'time_total' across all non-null responses.
AI adoption	Total number of AI-tool users per month	Sum of 'ai_adoption' across all responses.

	Average number of users of AI tools per month among investments reporting AI users	Mean of 'ai_adoption' across all non-null responses.
Form digitization	Total number of forms or applications digitized	Sum of 'forms_digitized' across all non-null responses.
	Total number of users of digitized forms or applications	Sum of 'forms_users_number' across all non-null responses.
Cybersecurity	Total number of cybersecurity-focused agencies that have implemented cybersecurity upgrades	Sum of 'security_upgrade_implement' across all responses.
	Percent of agencies reporting cyber risk profile is "Somewhat Better" or "Much Better" than prior to upgrades	(Sum of 'cyber_risk_better' / Sum of 'security_focus') * 100
Agency collaboration	Percent of agencies already sharing or planning to share tools/resources with other agencies	(Sum of 'any_collab' / N responses) * 100

Statistical Models and Hypothesis Tests

This section describes the statistical models and hypothesis tests that will make up the analysis — including any follow-ups on effects in the main statistical model and any exploratory analyses that can be anticipated prior to analysis.

Statistical Models

We do not intend to estimate any statistical quantities or models. For some descriptive quantities in Table 2 we may report values from the previous year's survey if informative (which reported on FY24 outcomes) for comparison, but we do not plan to draw any statistical inferences from these comparisons.

Confirmatory Analyses

We will not conduct any confirmatory analyses beyond reporting the quantities described in Table 2.

Exploratory Analysis

In addition to the quantities in Table 2, we will report the following additional descriptive quantities:

- Cost savings:
 - Number of respondents reporting non-zero cost savings.
 - Total cost savings by category (operations and maintenance, personnel, contracts, travel, training, and supplies).
- Time savings:
 - Number and percentage of respondents reporting time savings on at least one task.
 - Median number of tasks that agencies report time savings on.

- Frequency of percent time reduced for each task reported.
- AI adoption:
 - Number of investments that include the development or introduction of any AI tools.
- Form digitization:
 - Number of investments involving form digitization.
 - Number of forms eliminated.
- Cybersecurity:
 - Number of investments prioritizing cybersecurity ('security_logic1' = YES).
 - Count or percentage of investments prioritizing cybersecurity at each level of system security compliance ('percent_compliance' = unsure, <25%, 25%-49%, 50%-74%, 75%-99%, 100%).
- Agency collaboration:
 - Number of unique collaborating agencies.
 - Number of respondents that report collaborating with at least one other agency.

Inference Criteria, Including any Adjustments for Multiple Comparisons

No statistical inferences will be made for any of the descriptive quantities reported.

Limitations

The analysis is limited to descriptive quantities only, summarizing responses to the survey. We will not be able to draw any causal inferences from the analyses. While some of our survey questions explore respondents' self-assessments of the impacts of TMF spending (e.g., cost savings), and we report summaries of these assessments, we are not able to claim that these impacts are directly and causally due to TMF's investments.

A key limitation is that the survey data may contain item non-responses, and not every agency invited to respond provided data. The descriptive analyses cannot be interpreted as a census of TMF investment outcomes; some outcomes, like cost savings and time savings, may be undercounted due to nonresponse. Those responding may be different from non-responders in ways we cannot observe.

Another limitation is that the data are self-reported, and we have limited information about what data sources respondents used to arrive at their answers. In some instances, such as cost savings, we ask respondents to describe the documentation they used to report their responses, but some reported values may be estimates or based on documentation that we do not know about.