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BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Improving The Productivity Of Federal Payment Centers Could Save Millions

The Government can achieve high productiv ity in processing its vendor bills for payment but does not, primarily because most payment centers are not concerned about how or why productivity should be measured.

Productivity should be a prime concern of Government managers at all levels. Their lack of concern for productivity improvements and measurement in the payment process is largely a result of the lack of incen tives and the presence of strong disincentives to improve productivity.

Government payment centers could save millions in labor costs by developing measures of productivity and implementing identified improvement techniques.

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report describes how improving the productivity of Federal payment centers could save millions of dollars. We found that productivity rates in the vendor bill payment function vary by about 600 percent. We also found that a lack of emphasis on productivity and measurement systems is the primary cause of low productivity among most of the payment centers studied. We identified millions of dollars of savings in labor costs that could be achieved among payment centers by developing measures of productivity and implementing identified improvement techniques.

This review was made as a part of our ongoing program for identifying potential productivity improvements in governmental functions.

We are sending copies of this report to the Director, Office of Management and Budget; the Director, Office of Personnel Management; the Chairmen, Senate and House Committees on Appropriations; and the heads of all departments and agencies.

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

IMPROVING THE PRODUCTIVITY OF FEDERAL PAYMENT CENTERS COULD SAVE MILLIONS

D I G E S T

Inefficiencies in processing payments to vendors for goods and services is costing the Federal Government millions annually.

Productivity rates achieved by Federal payment centers in processing the necessary paperwork to pay bills for goods and services ordered from commercial firms varied by as much as 600 percent among 22 representative payment centers GAO examined. The rate ranged from a low of 3 documents per staff-hour to a high of 18 documents per staff-hour. From its study of various processing centers, GAO believes that payment centers should be able to process a minimum of 11 documents per staff-hour. Higher per-hour processing rates are possible with automation and the consolidation of small centers.

Although the bill-payment function is a readily measurable, repetitive process, most payment centers GAO examined did not have productivity measures. Thus, GAO had to construct many of the measures on which the performance data presented in its report is based.

REASONS FOR VARIANCE IN PRODUCTIVITY

GAO determined three primary reasons for the large variance in processing rates.

--The degree of management concern for, and use of, efficiency measures.

--The volume of workload processed by the centers.

--The degree to which automation or improved processes and procedures were used in the payment process.

MANAGEMENT CONCERN FOR PRODUCTIVITY

The managers at payment centers with high productivity showed a high degree of concern about productivity and had reasonably good systems designed to identify expected performance and measure against it. Managers at centers with low productivity, on the other hand, had little or no measurement or made little use of measures that existed and expressed little concern about productivity. They expressed a greater concern for effectiveness (for example, paying bills on time). Some equated effectiveness with productivity. Others felt the two were in opposition. In contrast to the contention that productivity conflicts with effectiveness, GAO found that one center with high productivity was just as timely in paying bills as one center with very low productivity.

According to payment center managers, the major cause of low productivity was the disincentive to them to be efficient. These disincentives, which were identified in previous GAO reports, include

--across-the-board budget cuts, which encourage managers to keep staff above minimum levels in order to absorb the cuts and still perform the work;

--tying grade levels to number of staff supervised; and

--inability of managers to discipline employees who do not perform.

PRODUCTIVITY RELATED TO VOLUME

One nonprocedural factor that affects productivity is workload volume. Payment centers with a large workload normally achieved higher productivity rates than centers with low volumes. High volume allows economies of scale and assembly-line techniques to be used. This suggests that agencies presently operating many small payment centers should consider consolidating them to improve productivity. Centers annually processing under 25,000 payments are prime candidates.

PRODUCTIVITY RELATED TO
PROCESS AND PROCEDURAL IMPROVEMENT

The use of more efficient processes and procedures, such as statistical sampling and automation, was, in part, responsible for higher processing rates at some of the centers. For example, the center with the highest processing rate has a fully automated approach to auditing the payment transaction before payment. GAO noted two instances of payment centers within the same agencies where one center used statistical sampling for auditing transactions and the other did not. In both instances, the center which used sampling had a processing rate almost double its counterpart.

Just as automation and statistical sampling contribute to high productivity rates, duplication of effort, problems in timely submission of receiving reports, and limited sharing of knowledge on processing rates and methods used to improve efficiency contribute to the low processing rates. Untimely submission of reports showing that the goods have been received by the Government was an almost universal problem and a major contributor to inefficiency as well as to untimely payment. This problem was identified in a previous GAO report (FGMSD-78-16, Feb. 28, 1978).

The recently enacted Civil Service Reform Act of 1978, which relates pay to performance, should help make managers more acutely aware of the need for emphasizing productivity. However, GAO does not feel that the act alone will result in a significant increase in productivity measurement and the use of productivity data by Government managers. The new Office of Personnel Management will need to take an active role in supporting productivity measurement, and a special effort to measure common government functions, such as payment centers, should be undertaken. By exchanging ideas, methods, tools, and techniques, productivity improvements within a single agency can result in similar improvements in numerous agencies.

RECOMMENDATION TO THE OFFICE OF PERSONNEL MANAGEMENT

The Director, Office of Personnel Management (OPM), in fulfilling his new responsibility for managing the Federal productivity program and fostering productivity improvement, should establish a mechanism for exchanging data between representatives of common functions such as payment centers so that productivity improvement ideas can be shared. For payment centers and related financial management functions, the Joint Financial Management Improvement Program has a role which OPM should consider drawing upon.

RECOMMENDATIONS TO DEPARTMENTS AND AGENCIES

The heads of individual departments and agencies should develop systematic measures of productivity covering their payment centers. In addition, these departments and agencies should carefully examine the following potential areas of productivity improvement for possible implementation.

--Eliminate or consolidate payment centers which, due to low volume, cannot be made efficient. When agency total volume is small, agencies should consider obtaining payment center services through a larger agency.

--Use alternatives to receiving reports such as fast-pay procedures, where possible. Hold receiving activities accountable by accumulating accurate data on untimely submission of receiving reports (i.e., lost discounts and administrative costs) and take appropriate action to permit timely submission where indicated.

--Analyze the processes and procedures used in examining payment transactions to identify and eliminate unnecessary or redundant steps.

--Use statistical sampling techniques in auditing payment transactions in accord with GAO requirements.

--Initiate periodic exchange of information on methods and procedures between payment centers that are within the same agency and with other agencies. (See p. 19.)

Recommendation to the Joint Financial Management Improvement Program

GAO recommends that the Executive Director, Joint Financial Management Improvement Program, request that agencies report the progress made in measuring and improving productivity within their payment centers as part of the agency's annual financial management improvement report.

AGENCY COMMENTS

The findings at each agency visited were discussed with payment center managers. Their comments were incorporated where appropriate. Overall findings were discussed with the Office of Management and Budget and the Office of Personnel Management. The Office of Personnel Management agreed that action should be taken to develop payment center productivity measures, and it plans to begin such an effort.

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ABBREVIATIONS

GAO	General Accounting Office
OPM	Office of Personnel Management

CHAPTER 1

INTRODUCTION

Each year, Federal agencies purchase several billion dollars of goods and services from commercial companies. To pay the bills for these goods and services, each agency has set up one or more specialized organizations called payment centers. Several thousand persons are employed in over 1,100 payment centers costing about $200 million annually. Accordingly, the productivity of the bill-paying process is important, and increases in it could result in sizable savings.

PURPOSE OF REVIEW

Previous studies of Federal Government productivity by the Office of Management and Budget, Civil Service Commission, and General Accounting Office task force, and later by the Joint Financial Management Improvement Program, found that one of the best vehicles for improving productivity was the exchange of information and ideas between common Government functions or comparisons of productivity between Government and industry for specific common functions.

This review was designed to study the systems and procedures employed in one specific common function--individual payment centers. We wanted to identify the more efficient payment centers and assess whether their structural or procedural efficiencies could be adopted Government-wide. Also, we hoped that by reporting on the potential productivity improvements possible in one common Government function, we could demonstrate the need for greater emphasis on productivity measurement and the interchange of good ideas in other common Government functions.

THE PAYMENT PROCESS

The primary function of a Federal payment center is to determine that payment is proper. While payment centers are a common function Government-wide, they follow no standard or prescribed organization. A few, such as the Department of Agriculture and Veterans Administration, have national centers; others, such as the General Services Administration and Environmental Protection Agency, have regional centers. Still others have payment centers at nearly every installation. Some agencies have automated payment systems while others have manual or partially manual systems. Military centers issue their own checks while civil agency checks are issued by the Treasury Department.

Even though the organization of payment centers is not standard, the centers are similar with respect to the process flow and procedures employed in paying bills. This basic process includes:

--Assembling the necessary documents 1/ and preparing a payment voucher. With some exceptions, the documents consist of an invoice from the vendor/contractor, a contract or purchase order from the Federal procurement activity, and a receiving report from the Federal receiving activity.

--Auditing the payment document to ensure propriety and accuracy. First, any terms, regulations, and agreements are checked for compliance. Then, the documents are compared to verify that (1) what is billed was received, (2) the invoice cost is correct, (3) any freight charges and discounts are properly computed, (4) the voucher is mathematically sound, and (5) authorizing signatures are present.

--Preparing a list of checks to be paid. The vendor's name and address and the amount to be paid are listed on a Standard Form 1166 (Schedule of Disbursements). For civil agencies, this document goes to the closest Treasury disbursing branch where checks are prepared and mailed; military payment centers issue their own checks.

--Certifying the vouchers' accuracy. Each payment center has authorized certifying officers who must sign all outgoing vouchers. If the Standard Form 1166 is used, the schedule itself instead of each individual voucher entry is certified. Some certifying officers conduct a postaudit before signing off on payment schedules.

Overall, the payment center operation is only part of a larger financial cycle which begins when the procurement activity issues a purchase order and ends with the Government accounting for payment to a vendor. The process includes receipt of the goods or services by the requisitioning activity. The payment center's responsibility lies in the middle of the cycle as it reviews and audits the required documents for propriety.

1/More and more in the advanced systems, the documents themselves may not be sent to the Center. Instead, the information is transmitted by computer.

Reviewing documents assures that payment was proper from the documentation standpoint. However, that review alone does not assure that products or services being paid for have been received or were needed. Internal control of the payment process--in the sense of assuring that goods and services are needed, procured, and received--is only as good as the internal controls placed on the procuring and receiving activities.

LEGAL PROVISIONS GOVERNING PAYMENT

The basic statutory provisions governing Federal payments (31 U.S.C. 529) were established in 1923. They provide that payment shall not exceed the value of the service rendered or of the articles delivered before such payment.

More recent legislation, passed in 1948 and 1949 (20 U.S.C. 2307 and 41 U.S.C. 255, respectively) and amended in 1958, authorized advance, partial, progress, or other types of payment. This payment would be made under contracts for property or services, provided the contractor gave adequate security and the head of the contracting agency determined that advance payment was in the public interest.

Basic policies and document requirements for making payment are contained in (1) the Defense Acquisition Regulation, applicable to the military services and published by the Defense Department and (2) the Federal Procurement Regulation, applicable to civil agencies and published by the General Services Administration. Individual agency regulations are based on the Comptroller General's guidance and on either the Defense Acquisition Regulations or the Federal Procurement Regulations.

Since 1976, the Office of Federal Procurement Policy, in the Office of Management and Budget, has been responsible for the administrative review of all Federal procurement policies. Both Defense and General Services are required to act on procurement recommendations issued by the Office of Federal Procurement Policy.

SCOPE OF REVIEW

We examined the operation of 22 Federal Government payment centers; they represented a cross section of the more than 1,100 centers. Our sample included both large and small payment centers and represented most of the major agencies. We tried to obtain maximum coverage of agency payment centers with various organizational alignments, payment volumes, degrees of automation, and differing processes. A list of the sites visited is contained in appendix I.

CHAPTER 2

MANAGEMENT IMPROVEMENTS COULD SAVE MILLIONS ANNUALLY

Productivity rates achieved by the agency payment centers we reviewed vary by as much as 600 percent. Individual agency centers process the necessary paperwork to pay bills at a minimum rate of less than 3 documents per staff-hour to a high of nearly 18 documents per staff-hour.

We believe that with current resources, all centers could readily achieve a processing rate of 11 documents per staff-hour--the standard or "should take" rate. By reaching that rate, the agencies in our sample could save about $750,000. (See app. II.) Based on this finding, it is reasonable to assume that millions of dollars could be saved of the current estimated $200 million total payment center labor cost.

PRODUCTIVITY LEVELS OF PAYMENT CENTERS VARY WIDELY

Payment centers should try to achieve maximum productivity in paying bills, while assuring that the bill is valid and the amount paid is correct. Most Federal payment centers maintain a similar bill-paying process. However, the productivity of the 22 centers visited varied by 600 percent. The following schedule shows that the processing rates (payment documents processed per staff-hour) vary from only about 3 documents to nearly 18 documents per staff-hour. (Most of the centers did not measure productivity so we had to develop productivity measures.)

Center reviewed	Payment center	Documents per staff-hour
Fleet Accounting and Disbursement Center	Atlantic	(a)

a/The processing rate for this center computes to 25.2 documents per hour. However, since the payment documents are matched at the receiving activities, the processing rate at the center is overstated. While we were not able to factor the matching process into their rate, we firmly believe that with proper adjustment their rate would remain in the top three.

Center reviewed	Payment center	Documents per staff-hour
National Finance Center	Department of Agriculture	17.9
Veterans Administration	Data Processing Center	17.5
Social Security Administration	Social Security Administration	10.1
Defense General Supply Center	Defense General Supply Center	10.1
General Services Administration	Region - III	9.7
Internal Revenue Service	Region - IV	9.1
Environmental Protection Agency	North Carolina	8.5
Department of the Interior (National Park Service)	Department of the Interior - III	8.2
Naval Weapons Station	Yorktown, Va.	7.0
U.S. Army	Fort MacPherson, Va.	6.5
Fifth Coast Guard District	Portsmouth, Va.	6.4
U.S. Army	Fort Eustis, Va.	5.6
Department of Housing and Urban Development	Region - III	5.3
Department of Health, Education, and Welfare	Region - IV	5.3
Environmental Protection Agency	Region - IV	5.1
National Oceanic and Atmospheric Administration	Washington, D.C.	5.0
Defense Personnel Support Center	DPSC	4.4
Langley Air Force Base	Langley, Va.	4.3
National Aeronautic and Space Administration	Langley, Va.	3.2
Corps of Engineers	Norfolk, Va.	3.1
Department of Health, Education, and Welfare	Region - III	2.7

Large centers are the most efficient. Their large volume of documents allows for economies of scale; they are more automated than smaller centers; and their managers tend to be concerned with productivity measurement and improvement.

LARGE SAVINGS ARE ACHIEVABLE

To demonstrate the potential magnitude of savings, we studied one of the smaller, less efficient payment centers

indepth. We developed a standard or "should take" time to process a payment which, for this smaller center, was 11 documents per staff-hour. Using an average labor cost of $5.22 per hour for a voucher examiner in fiscal 1978, this computes to a per-document-processing cost of $0.47.

By comparison, one of the larger, more efficient centers processed documents at a standard expected rate of 21 per staff-hour, which computes to $0.29 per document. This standard was developed by a special agency team using existing work measurement data. The least efficient center we visited processed 2.7 documents per hour (see app. II) which, using the average labor cost of $5.22 per hour, calculates to $1.93 per document.

By comparing the "should take" document processing cost of $0.47 for the center discussed above, with the actual processing costs for each of the centers we visited (see app. II), we estimated about $750,000 could be saved if the less efficient centers achieved their "should take" rate. If all Federal payment centers achieved the "should take" rate, millions of dollars in labor costs could be saved.

Case study of potential savings

The payment center that we analyzed indepth functioned the same as the 21 other payment centers included in our sample but was one of the smaller centers with an annual document volume of less than 100,000. The center was organized into sections or units, each of which was responsible for specific types of payments. Because the following three units paid vendors, we selected them for the study.

--One-time orders (purchase order transactions).

--Contracts (formal contractual arrangements between the Government and a contractor).

--Recurring orders (a blanket order against which periodic reorders are placed).

For each unit, we gathered input and output data for a 13-week base period and a 3-week survey period. We also studied how employees spent their time during the survey period and used that information along with predetermined time data to develop standards or "should take" times. We evaluated methods and procedures and computed how productivity could be increased with improved methods.

Our study showed that each of the three units was performing considerably below the standard or "should take" rate, as shown below.

Unit	Present performance as a percentage of the standard
One-time	50
Recurring	63
Contracts	75

The potential staff-hour savings that can be achieved by bringing the organization's performance up to its "should take" time are shown in the following table.

Unit	Annual staff-hours required: Presently	Annual staff-hours required: "Should take" rate	Potential savings
One-time	11,328	5,664	5,664
Recurring	9,716	6,120	3,596
Contracts	5,272	3,952	1,320
Total Staff-hours	26,316	15,736	10,580

Ironically, this payment center has requested an increase in staff to handle an increasing workload. However, our study shows that if the center achieves the expected performance level, the present staff could handle the additional volume.

In addition to savings achieved from meeting established standards, the three units in our sample center could save further by eliminating a number of redundant or overlapping tasks. We developed a revised "should take" time based on improved methods which would eliminate the redundant and overlapping tasks; the potential savings are shown below.

Unit	Annual staff-hours required: Presently	Annual staff-hours required: With improved "should take" standards	Potential savings
One-time	11,328	3,680	7,648
Recurring	9,716	4,896	4,820
Contracting	5,272	3,164	2,108
Total Staff-hours	26,316	11,740	14,576

The methodology used in this case study demonstrates the technique of productivity analysis and is applicable to all

payment centers. Therefore, based on that and on our observations at 22 centers, we believe that the majority of Federal payment centers could potentially achieve similar savings. (See app. III.)

IMPROVED PRODUCTIVITY DOES NOT MEAN UNTIMELY PAYMENTS

The managers of some small centers felt that if they were consolidated into centralized centers, the response time to vendors would increase. Further, most of the small centers considered effectiveness more important than efficiency in processing payments. Management, therefore, was more concerned with the timeliness of payment than with the efficiency or productivity in processing the documentation.

Although most managers voiced their concern that payments be timely, little information was available on which timeliness could be evaluated. Data on vendor inquiries was almost nonexistent, and data on lost discounts, which can be equated to late payments, was not available at many centers. From the lost discount data that was available, we could find no support for the claim that the larger the center the less timely the payment. In fact, the percentage of lost discounts for total payments processed by one of the largest and most efficient centers is almost the same as for one of the smallest and least efficient centers. In both cases, the lost discounts as a percentage of total payment documents processed were less than 0.4 percent. The efficient center rate was 0.2 percent while the inefficient center had a rate of 0.4 percent.

Our February 1978 report on the effectiveness of vendor payments (FGMSD-78-16) also refuted the notion that larger payment centers are less timely in making payments. Although that study did not cover all the same sites we reviewed, it did include two of the largest centers which we computed to be most efficient. For these two centers, more than 84 percent of invoices were paid within 30 days after invoice date as compared to only 30 percent for other, smaller centers in the sample.

CHAPTER 3

MANAGERS ARE NOT CONCERNED ABOUT PRODUCTIVITY AND MEASUREMENT SYSTEMS

The potential for productivity improvement in the vendor bill-paying process is significant. However, this potential will not be realized unless the causes of low productivity are eliminated. Low productivity results from a number of causes, but the major underlying causes appear to be the lack of management emphasis on productivity and the lack of productivity measurement.

In our review of the payment center process we determined that productivity measurement was both feasible and beneficial. The benefits of establishing and using productivity measures were readily demonstratable by the few centers using measures. However, most center managers were more concerned with making sure payment was made rather than with improving the productivity of the payment process.

MANAGERS ARE MORE CONCERNED WITH EFFECTIVENESS THAN EFFICIENCY

Most managers at centers with low productivity did not see a need to be concerned about productivity. They felt that their primary responsibility was to pay bills on time, and were therefore most concerned with such things as turnaround time, backlog data, and the extent of vendor inquiries (although very few kept any statistics on the latter.) This emphasis has been fueled by continued congressional inquiries generated by vendor complaints about late payment. For example, one congressman wrote every Government agency within his district to protest agency delays in paying vendors.

Management's lack of concern is due to built-in disincentives

We found that managers were not concerned with improving productivity basically for two overlapping reasons--they had no incentive to improve productivity and, in fact, faced strong disincentives. One manager summed up the situation when we asked him how his supervisor would react if he volunteered that he could perform his mission with 10 fewer people. The manager said he would never suggest such a reduction because his boss would say "if 10, why not 15." Also, if his workload increased in the future, he would never be able to regain the 10 people.

In effect, the manager was underscoring a disincentive cited in other GAO reviews--the present system of budgeting and allocating resources penalizes the efficient manager and rewards the inefficient one. We have often found such disincentives as:

--Across-the-board budget reductions, whereby all managers are subject to equal percentage reductions. Therefore, managers have a disincentive to improve productivity and an incentive to overstaff.

--Tying managers' grade levels to the number of staff they supervise.

--Difficulty in disciplining employees who do not perform satisfactorily.

A good example of the last disincentive was found at the Defense Logistics Supply Center. We visited the center early in the review when it was in the process of converting to a different and hopefully more efficient system. Therefore, we computed a processing rate using their old system and agreed to return in 3 to 5 months to compute a new rate.

Upon our return, we found basically the same rate, although the manager claimed the system was much more efficient. When asked why the processing rate had not improved with the more efficient system, the manager blamed the employees. The system reduced the amount of work the employees needed to do and, to compensate, the employees slowed their pace. The manager felt he could take no action because of the red tape involved in disciplining employees. This manager, like many throughout the Government, was (1) frustrated with the civil service system and (2) unaware of or unable to use performance measurement to achieve employee accountability. 1/

PRODUCTIVITY MEASUREMENT IS NOT WIDELY USED

Measurement is a basic management function. Without measurement, managers are unable to assess progress toward organizational goals or to determine what managerial actions need to be taken.

As Peter Drucker states, "Without productivity objectives, a business does not have direction. Without productivity

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1/This issue is discussed indepth in our August 10, 1978, report "A Management Concern: How to Deal with the Nonproductive Employee," FPCD-78-71.

measurements, it does not have control." 1/ Studies have shown that organizations that properly use work measurement systems can achieve significantly higher productivity than organizations without such systems. In our report on real property management (LCD-76-320, Aug. 19, 1976) we found that once productivity measurement systems based on engineering standards were implemented, performance efficiency increased to 80 percent or more.

Payment center productivity measurement is feasible and beneficial but not being done

To measure productivity, output must be clearly defined and the input required to produce it must be identified. To compare productivity data between units, the output produced and the steps required to produce the output must be similar for the units. Measuring the productivity of payment centers should be a relatively easy task because the inputs and outputs of the process are readily identifiable and measureable. However, we found that very little measurement was being done.

We compared the productivity of payment centers to find whether measurement systems led to greater productivity. Since most centers in our sample did not measure productivity, we developed our own measures. (See app. IV.)

In a statistical analysis of key variables affecting the productivity rates, the lack of systematic productivity measurement proved to be closely related to low productivity. Of the 22 centers we visited, 17 maintained a low processing rate (less than 10 documents per staff-hour) and had very little systematic measurement. In fact, only one center had even established standards. The other 5 centers, which maintained high processing rates (10 or more documents per staff-hour) regularly measured performance.

Managers do not believe measures will help them manage better

Most managers at the centers with high processing rates were concerned with productivity and emphasized the need for systematic measurement. For example, a manager at the Naval Payment Center said he could not evaluate his employees' performance without using standards. On the other hand, many of the managers of centers with low processing rates did not understand systematic measures or how they should be used.

1/Drucker, Peter F., Management, Harper and Row, New York, 1974.

A manager at the regional office of the Department of Housing and Urban Development said "the supervisor's presence insures that the staff will execute all their delegated duties and responsibilities." He further stated that "a good supervisor carefully watches his people to see that they perform effectively and efficiently."

In further downplaying the significance of measurement, other managers at the less productive centers believed that measurement can actually be a hindrance. For example:

--A section chief said that "performance measurement data would not help me manage better, and at times it could be more of a hindrance than a help."

--A manager who developed standards based on past experience said that "the standards did not induce slow workers to work faster, but did induce fast workers to work slower."

--Another section chief said that "measurement and standards could reduce any incentive to do better."

Many managers equated productivity with effectiveness. For example, at some payment centers, volume of vendor inquiries was the yardstick used to measure productivity. If vendors did not complain, management assumed the center was operating productively. Other centers developed detailed backlog reports to measure their "productivity."

Although most payment center managers are skeptical of productivity measures, the value of such measures can be seen by how two organizations handled increased work backlogs.

Fort Norfolk, one of the least productive centers, hired additional staff without considering other alternatives.

In contrast, the Department of Agriculture's National Finance Center, when twice faced with increases in backlog, analyzed productivity data. Its analyses showed that although workload had increased, staff had also increased proportionately so the productivity of each function within the process was analyzed. Based on those analyses, the center's managers made recommendations aimed at increasing productivity through better methods and training. The availability of productivity data and the willingness to use the data as a management tool enabled this center to improve productivity while maintaining payment timeliness.

However, unlike the National Finance Center managers, most managers feel that effectiveness indicators along with

their intimate knowledge of the operation are their best tools. The major concern is effectiveness, so workload volume and backlog are closely monitored and are used to determine overtime and increased staffing. By using backlog data and turnaround time as the major and sometimes only indicators of a center's performance, management loses sight of the importance of efficiency to the payment process. We believe that managers should be equally concerned with the effectiveness and efficiency aspects of productivity.

While we recognize that timeliness of payments to vendors is a valid concern, we do not feel that timely payments must result in low productivity for the payment center. The two objectives are complementary, not competing. We found in our review that the centers with higher productivity rates were as timely as the centers with low productivity rates.

RECOMMENDATION TO DEPARTMENTS AND AGENCIES

Based on our review, we believe that the correlation between the presence of measurement and high productivity is high at Federal payment centers. Therefore, individual departments and agencies should develop measures of productivity for payment centers.

CHAPTER 4

MANAGERS LACK KNOWLEDGE OF OR CONCERN FOR OPERATIONAL IMPROVEMENTS THAT CAN INCREASE PRODUCTIVITY

Streamlining and automating the payment process, eliminating redundancies, and implementing improved procedures have been major factors in improving productivity. However, many improvements made by one payment center have not been implemented by others even though within the same agency. Payment center managers are either unaware of what these operational improvements are, or because of disincentives previously discussed, are reluctant to seek ways to improve productivity.

PROCESSES AND PROCEDURES AFFECTING THE PRODUCTIVITY OF PAYMENT CENTERS

During our review, we noted both efficient and inefficient processes and procedures. Of course, workload volume has an overall impact on productivity rates. In addition, automation and the use of statistical sampling techniques had a major positive impact on productivity while duplication of effort, untimely submission of receiving reports, and the lack of interchange of information adversely affected productivity.

A discussion of the impact of these factors follows and a summary of the impact of these factors is contained in appendix V.

Automation fosters high productivity

Automation proved to be not only a source of high efficiency but also a necessity for the high volume centers. For example, the Department of Agriculture's National Finance Center, which demonstrated the highest measurable processing rate--17.9 documents per hour--is totally automated, including the audit of documents. 1/ All documents are entered into a computer where they are matched and audited. We found a total computer audit only at this payment center.

1/Audit as used here means checking to see that quantities are correct, that footings and extensions are accurate, and taking other steps necessary to determine that the amount paid is correct.

Those payment centers with manual operations appear to have a significant document control problem. For example, in 1972 the Veterans Administration Data Processing Center tried to centralize its payment process, but could not handle the volume of 1.5 million documents with its manual system. The Navy's Fleet Accounting and Disbursing Center Atlantic, which processed 3.8 million documents, has virtually no control over documents as they are processed. Officials at that center admitted that once a batch of documents enters the system, it cannot be found again until it is fully processed. In contrast, the totally automated National Finance Center can track each of its 4.3 million documents from data entry to output.

Naval officials indicated that they expect their efficiency and control of documents to improve once their new computer match system is in operation. With their new system, data will be transmitted to a regionalized point where a computer will process payments. We could not adequately evaluate this new system because it was not completely operational during our review.

Automation appears to be a necessity not only for efficiency improvement but, beyond a certain volume, for document control. While the point where volume dictates automation cannot be specified, we believe it is between 2 and 3 million documents annually.

Statistical sampling can improve productivity

Using statistical sampling in the bill-paying process can reduce processing (handling) time and thus increase productivity. 1/

Sampling eliminates the audit of most low-dollar-value payments. At present, all payments of $500 or less can be subjected to sampling. Once the required paperwork has been received, a random sample reflecting the payment universe is selected for full audit. The remaining payments can be scheduled for payment without an audit of each document. The selected payments will provide a means of calculating the error rate and amount of overpayments. This analysis will prove the worth of the procedure by providing cost/benefit relationships.

1/Guidance on the proper use of statistical sampling is contained in title III, ch. 10 of the GAO Manual for Guidance of Federal Agencies.

Agencies using statistical sampling claim that the reduced handling costs far exceed the amount of overpayments which may occur with sampling. For example, one center conducted a feasibility study in 1977 for statistical sampling of vouchers under $500. They concluded that a minimum of 30 minutes per voucher, or one-half staff-year of audit time, would be saved by increasing the statistical sampling limit from $300 to $500.

During the review, we observed a variety of situations concerning statistical sampling.

--Three of the payment centers with the highest processing rates made extensive use of sampling.

--We reviewed two payment centers in the same agency on two occasions and found that one sampled and the other did not. Productivity was nearly twice as high for those centers that sampled.

--Some centers used sampling in name only. They continued to perform an audit or a limited audit on the universe, thereby reducing the savings that could have been realized if the sampling had been properly applied.

--Fifteen of the centers we visited did not use sampling even though, on the average, 71 percent of their payments were under $500.

Duplication of audit effort lowers productivity

Among process or procedural factors we found that negatively affect productivity was wasteful duplication of effort at some of the sites visited. Naturally, when effort is duplicated for no apparent reason, staff-time is wasted and productivity suffers.

The Navy Accounting and Disbursing Center, Atlantic Fleet, which serves a number of large customers and processes a high volume, is a good example. Some receiving activities within its region match and audit documents before sending them to the center for processing. Once at the center, the documents are again subjected to a thorough audit and post-audit.

At the Fort Eustis, Virginia, center, after all of the payments were completely audited, they were reaudited by a senior voucher examiner. This complete reaudit did not appear to be justified. A similar situation existed at the

Naval weapons station in Yorktown, Virginia. This site's voucher examiners would audit their own work and then exchange work with other auditors and perform the audit process over again.

Untimely receipt of receiving reports is an extensive, costly problem

The receiving report is a payment document which indicates to the payment center that goods ordered have been received. With some exceptions, no payment can be authorized until the receiving report arrives at the center.

Officials at many payment centers indicated that most of their late payments resulted because receiving reports were submitted late. In an earlier report on the timeliness of paying vendor bills, 1/ we found that late receiving reports were a major detriment to payment center effectiveness. We found that this situation adversely affects efficiency as well. Two of these effects are:

--An increase in vendor inquiries. When payments are late, vendors will inquire about the status of their invoice. At most centers, these inquiries are handled by the voucher examiners. The more inquiries examiners have to handle, the less time they have to process payments.

--Additional time required to locate the receiving report. When receiving reports are late, the examiners must spend time contacting receiving activities, which takes up the examiner's time and thus impedes efficiency.

A case in point involves the most efficient payment center in our sample, the National Finance Center. This center's management is constantly monitoring and evaluating the efficiency of its operation through systematic measurement and studies conducted on specific problem areas. One area investigated by the center's evaluation staff is the receiving report problem.

Statistics show that at any time, 10,000 invoices await receiving reports at the center. Approximately 13.25 staff-years are devoted to following up on late receiving reports agencywide in the Department of Agriculture.

1/"The Federal Government's Bill Payment Performance Is Good But Should Be Better," (FGMSD-78-16, Feb. 24, 1978).

The impact of the late reports is felt not only in the additional staff effort, but in lost discounts as well. Results of a center study indicate that the National Finance Center is losing a substantial amount of money by not taking advantage of quick payment discounts. Of the average 10,000 invoices awaiting receiving reports, approximately 17.5 percent have short discount terms. The study estimates that the losses probably exceed $100,000 per year.

In looking for a solution to this problem of late receiving reports, National Finance Center managers are considering a procedure which eliminates the need for receiving reports--the "fast-pay" procedure.

Two military payment centers we visited used fast-pay procedures to pay invoices. This alternative is available if, beforehand, vendors guarantee delivery of all goods and services ordered. Although civil procurement regulations do not contain comparable fast-pay provisions, we at GAO can approve similar procedures and have done so for certain agencies.

CIRCUITOUS ROUTING OF RECEIVING REPORTS

The Social Security Administration Payment Center had a procedural problem which affected the flow of receiving information through the system. Instead of going directly from the receiver to the payment center, the receiving report went to the center's procurement authority and then to the payment center. This procedure worsens an already bad situation by further delaying the time for the receiving reports to arrive at the payment center. Also, in our opinion, this creates a potential weakness in internal control.

The untimely submission of receiving reports is a costly impediment to productivity, to cash management through failure to take discounts, and to payment timeliness. We recognize that the problem has no easy solution, but at a minimum, greater use must be made of fast-pay procedures and a system for more accountability at the receiving activity must be established.

Consolidation of payment centers promotes productivity

The high volume centers--those processing 200,000 documents or more annually--had an average productivity rate of 11.6 documents per hour. Payment centers with less than 200,000 documents annually processed at half that rate, or 5.7 documents per hour.

High or increasing volume has been found to be a prime factor in improving productivity or maintaining high productivity. Past analyses of productivity trends of common Government functions have shown that increasing workload is almost always a source of productivity improvement, while declining workload normally produced productivity declines.

High volume also makes investment in capital equipment cost beneficial and produces economies of scale which allow for significantly greater production without increasing staff.

Payment centers which were decentralized and servicing only one or a few activities usually had a much smaller volume than the regionalized or centralized centers. As a result, most decentralized centers had low productivity while the centralized or regionalized centers had high productivity. Although likely to improve productivity, a payment center's increased document volume, is only one factor in producing productivity increases.

RECOMMENDATIONS TO DEPARTMENTS AND AGENCIES

Departments and agencies should carefully evaluate the structure, processes, and procedures for their bill-paying activities. We recommend that departments and agencies examine the following potential areas of productivity improvement for possible implementation.

--Eliminate or consolidate payment centers which, due to low volume, cannot be made efficient. When agency total volume is small, agencies should consider obtaining payment center services through a larger agency.

--Use statistical sampling techniques in auditing payment transactions in accord with GAO requirements.

--Use alternatives to receiving reports, such as fast-pay procedures, where possible. Hold receiving activities accountable by accumulating accurate data on untimely submission of receiving reports, and the related cost (i.e., lost discounts and administrative costs), and take appropriate action to ensure timely submission where indicated.

--Analyze the processes and procedures used in examining payment transactions to identify and eliminate unnecessary or redundant steps.

--Initiate periodic exchange of information among individual payment centers within the agency and with

other agencies to learn more efficient procedures and techniques.

Recommendation to the Joint Financial Management Improvement Program

The overall objective of the Joint Financial Management Improvement Program, which is authorized by the Budget and Accounting Procedures Act of 1950, is to improve financial management practices throughout the Government. Progress in meeting this objective is reported annually in the program's annual financial management improvement report.

We recommend that the Executive Director, Joint Financial Management Improvement Program, request that agencies report the progress made in measuring and improving productivity within their payment centers as part of the agency annual financial management improvement report.

CHAPTER 5

COMMON FUNCTIONS--

A KEY TO PRODUCTIVITY IMPROVEMENT

Payment centers represent only one of many common functions performed by Federal agencies. We believe that the detailed study of other common Government functions, such as printing, library services, and maintenance would show productivity improvement potential similar to that identified in this report for payment centers. Although productivity improvement in all aspects of Government activity should be pursued, special emphasis should be placed on those common Government functions where effects can be multiplied by interchanging improved methods, tools, and techniques.

Productivity analyses of common Government functions and interchanging improvement ideas among managers have previously been identified as the best vehicles for improving Government productivity. The Joint Financial Management Improvement Program and the National Center for Productivity and Quality of Working Life had some success with this approach. However, the approach was discontinued when the Productivity Center was terminated in September 1978.

NEED FOR A FORMAL INTERCHANGE PROGRAM

We found many instances where a lack of exchanging information on productivity improvement among payment centers could have been responsible for differences in processing rates. We also found instances where centers within the same agency were not communicating improvement techniques to each other. For example, we visited two centers within each of two agencies--the Department of Health, Education, and Welfare and the Environmental Protection Agency (EPA).

Within both agencies, we found that one center used statistical sampling and one did not; the processing rate of the center with sampling was almost double the rate of the other center. Within the Environmental Protection Agency, the center with sampling also had a productivity measurement system while the other center did not measure its productivity. It could be expected that any efficiency measures successfully used by one center would be required of all centers within the agency, yet this was not the case.

By bringing together managers of common Government functions, the above situation could likely be avoided. Such a meeting would have other benefits. First, it increases the

likelihood that the productivity improvement ideas will be transferred to operations managed by others. Second, it insures that the participants are involved in similar enough activities to be able to communicate about their productivity issues and management concerns. Finally, the problem-solving power of the group may also be used to resolve complex productivity measurement and improvement issues.

Past interchange efforts

The National Center for Productivity and Quality of Working Life sponsored a series of seminars during 1978 in two common functional areas--grant and loan administration and field inspection services. The seminars were designed to promote the sharing of productivity-related information and experience among Federal executives managing similar activities. The participants were carefully selected to bring together people with similar levels of knowledge and positions of responsibility regarding the programs they manage.

The seminars were conducted using a problem-solving, participatory approach, and covered such subjects as productivity measurement and analysis of historical trend data, the causes of productivity change, the barriers to productivity improvement, and managing for productivity improvement.

During the seminars, the Center found that the managers shared many common problems and that most of the improvement actions discussed can be applied in other organizations at the conceptual level, if not in the same specific form.

Most of the participants believed they shared common problems with the group and that the discussions were relevant to their problems. In fact, on a seminar evaluation questionnaire, over 80 percent of the respondents felt the seminar was worthwhile, and all indicated a desire for more meetings periodically. Over one-half indicated that they expected to take direct actions to improve the productivity of their operations based on the ideas they had gained from the discussions.

When the Joint Financial Management Improvement Program was responsible for Federal productivity, it annually sponsored workshops by common functional categories, such as printing, facility maintenance, and medical services. These workshops served as a forum to discuss measurement data, to exchange ideas for enhancing productivity, and to identify barriers inhibiting productivity growth.

While both of these efforts had some success, a common problem which inhibited further success was the managers'

belief that little incentive exists for them to take any action to improve productivity. This attitude created a problem not only in getting operating managers to participate in workshops but, more importantly, to take any action to improve productivity.

Managers also expressed the belief that their top managers did not put much emphasis on improving productivity, as evidenced by the fact that top management is not held accountable for productivity performance or required to establish goals for improved performance.

Lack of incentives

It has been shown repeatedly that people are motivated to increase their productivity when they are rewarded for it. Conversely, they tend to decrease their productivity when their efforts to improve are punished. Thus, it is apparent that motivation to increase productivity is closely linked to rewards, incentives, punishment, and disincentives.

Managers are often unconcerned with the performance of their operations because performance has not been part of the system by which they are evaluated and rewarded. We found this lack of concern to be a Government-wide problem and reported on it previously. 1/ Further, the Joint Financial Management Improvement Program and the National Center for Productivity and Quality of Working Life also found the same problems in their attempts to bring together managers from common Government functions.

Managers attending these past sessions reiterated that they are faced with more disincentives than incentives to improve productivity. And, since so few rewards exist for improving productivity, on balance, the manager may be better off by not trying to improve. Innovative managers, who on their own initiative decide to improve productivity in their areas of responsibility are more likely to be penalized than rewarded. Specific examples cited by managers during these past sessions and recent GAO audits include the following.

--Arbitrary across-the-board cuts in personnel severely penalize the manager who has striven to be efficient; meanwhile, the cuts do not affect his inefficient counterpart. This happens because the efficient manager has, before the cut, reduced his staff to the minimum

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1/"Does the Federal Incentive Awards Program Improve Productivity?" (FGMSD 79-9, Mar. 15, 1979).

necessary to do the work and cannot perform his work with fewer people.

--Managers who strive to be efficient are viewed with suspicion and sometimes even contempt by their peers and supervisors.

--Managers, who significantly reduce staff by adopting more efficient systems and procedures or by installing capital equipment, risk being reduced in grade.

--Civil service regulations are viewed by managers as a "straight jacket"; a manager feels the regulations often prevent him from hiring and retaining the most qualified employees and from firing those who prove unqualified.

The conclusion reached at these sessions with the managers of common functions was that managers would not take action on their own initiative to improve productivity because the barriers were too great for them to take more than token steps. These barriers, however, may soon be overcome by an important change in Civil Service legislation.

The Civil Service Reform Act of 1978 made several significant changes to the Federal Civil Service. Many of those changes address the incentives and disincentives to managers for improving the productivity of their operations.

Of particular significance are the act's provisions tying manager's pay to performance. One of the key measures of performance is to be the productivity of the managers' organizations. Hopefully, this provision will direct management's attention to high productivity instead of concern with maintaining large staffs as a means of maintaining grade and pay levels.

The act establishes a merit pay system for supervisors and managers in grades GS-13 through GS-15. It requires merit pay increases to be based on such factors as

--improvements in efficiency, productivity, and quality of work or service, including reducing paperwork;

--cost efficiency;

--timeliness of performance; and

--the productivity and quality of performance by the employees for whom the manager or supervisor is responsible.

In addition, the act also requires that performance standards be established to permit performance to be evaluated on the basis of objective criteria that are related to the job of each employee. Once these performance standards are identified and employed, the incentives for productivity improvement should be meaningful. A hopeful consequence of the act will be more management attention to productivity improvement at all levels of the organization.

Role for the Office of Personnel Management

With the discontinuation of the Productivity Center and of the Joint Financial Management Improvement Program's responsibility for Federal productivity, a formal program of interchange no longer exists. However, in an October 23, 1978, memo to the heads of departments and agencies, the President assigned responsibility to the Office of Personnel Management (OPM) for productivity of the Federal work force. An Office of Productivity Programs has been established within OPM to carry out this responsibility. Therefore, the authority and organization already exist for OPM to take the lead in establishing a formal interchange program among managers of common Government functions.

We discussed the need for a formal vehicle for communication with productivity officials in both the Office of Management and Budget and OPM. They agreed that the need for such a vehicle exists and that OPM should take the lead. This could take the form of interagency task forces chaired by OPM. Such task forces could be established on a function-by-function basis and be staffed by representatives of participating agencies.

OPM recently used this approach successfully in developing and implementing a personnel office productivity measurement system covering common personnel functions. The task forces would cover productivity measurement, analysis of historical data, causes of productivity change, barriers to improvement, effective improvement techniques, and areas needing further research.

CONCLUSIONS

Incentives and disincentives may begin to present less of a barrier to management action toward improving productivity when the Civil Service Reform Act of 1978 becomes fully implemented. Therefore, the time appears right for positive action to bring managers together in a concerted effort to improve productivity in common Government functions. To do so requires the establishment of a formal working relationship.

The Office of Personnel Management has the authority under its assigned responsibility for Federal productivity, to establish a forum for the exchange of information and productivity improvement ideas among managers of common Government functions.

RECOMMENDATION TO THE OFFICE OF PERSONNEL MANAGEMENT

The Director of the Office of Personnel Management, in fulfilling his new responsibility for managing the Federal productivity program and fostering productivity improvement, should establish a mechanism for exchanging data between representatives of common functions, such as payment centers, so that productivity improvement ideas can be shared.

The Joint Financial Management Improvement Program is assigned responsibilities for payment centers and related financial management functions. OPM should consider drawing upon that program.

AGENCY COMMENTS

The findings at each agency visited were discussed with payment center managers. Their comments were incorporated where appropriate. Overall findings were discussed with the Office of Management and Budget and the Office of Personnel Management. OPM agreed that action should be taken to develop payment center productivity measures and plans to begin such an effort.

LISTING OF HEADQUARTERS ACTIVITIES AND PAYMENT CENTERS VISITED

Headquarters

U.S. Army Finance Center, Indianapolis, Ind.
U.S. Air Force Finance Center, Denver, Colo.
Department of the Navy, Washington, D.C.
National Aeronautics and Space Administration, Washington, D.C.
Defense Logistics Agency, Washington, D.C.
U.S. Coast Guard, Washington, D.C.
Social Security Administration, Baltimore, Md.
Department of Agriculture, Washington, D.C.
Veterans Administration, Washington, D.C.
General Services Administration, Washington, D.C.

Payment centers	ID Symbol
Fleet Accounting and Disbursing Center, Norfolk, Va. (Navy)	FAADCLANT
National Finance Center, New Orleans, La. (Agriculture)	NFC
Data Processing Center, Austin, Tex. (Veterans Administration)	VA-DPC
Social Security Administration, Finance Division, Baltimore, Md.	SSA
Defense General Supply Center, Richmond, Va.	DGSC
General Services Administration, Region III, Washington, D.C.	GSA-III
Internal Revenue Service, Regional Office, Atlanta, Ga.	IRS-IV
Environmental Protection Agency, Durham, N.C.	EPA-NC
Environmental Protection Agency, Atlanta, Ga.	EPA-IV
Department of the Interior, Regional Office, Philadelphia, Pa.	DOI-III
Naval Weapons Station, Yorktown, Va.	NWS
Finance and Accounting Division, Ft. McPhearson, Ga. (Army)	FT. MAC
Finance and Accounting Division, Ft. Eustis, Va. (Army)	EUSTIS
Coast Guard Station, Portsmouth, Va.	CG
Department of Housing and Urban Development, Philadelphia, Pa.	HUD-III
Department of Health, Education, and Welfare, Philadelphia, Pa.	HEW-III
Department of Health, Education, and Welfare, Atlanta, Ga.	HEW-IV

Finance and Accounting Office, Langley Air Force Base, Va.	LAFB
Langley Research Center, Hampton, Va. (NASA)	LARC
U.S. Army Corps of Engineers, Ft. Norfolk, Va.	CE
Defense Personnel Support Center, Philadelphia, Pa.	DPSC
National Oceanic and Atmospheric Administration (NOAA)	NOAA

Payment centers visited but not included in statistical data 1/

Naval Air Station, Pensacola, Fla.
Naval Supply Center, Norfolk, Va.
Soil Conservation Service, Richmond, Va.
Agriculture Research Service, New Orleans, La.
U.S. Forest Service, New Orleans, La.
VA Hospital, Hampton, Va.
VA Hospital, Salem, Va.
Federal Correctional Institution, Petersburg, Va.
Federal Prison Industries, Petersburg, Va.

1/These sites were not included in the statistical analysis. We visited them to collect information relevant to services rendered them by other payment centers or information covering specialized systems or procedures.

POTENTIAL DOLLAR SAVINGS ACHIEVABLE BY CENTERS REVIEWED (note a)

(1) Processing rates of sites visited (documents per hour)	(2) Processing cost per document--average hourly rate for voucher examiners processing rate $5.22 - (1)=(2)	(3) Excess cost for document over "should take" rate's cost (2)- $.47=(3)	(4) Document volume	(5) Potential savings (3)x(4)=(5)
b/ 25.2	$ .21	$ -	3,786,930	$ -
17.9	.29	-	4,192,895	-
17.5	.30	-	1,493,388	-
10.1	.52	.05	624,016	31,200.80
10.1	.52	.05	600,804	30,040.20
9.7	.54	.07	538,826	37,717.82
9.1	.57	.10	117,376	11,737.60
8.5	.61	.14	101,754	14,245.56
8.2	.64	.17	70,687	12,016.79
7.0	.75	.28	30,704	8,597.1
6.5	.80	.33	120,946	39,912.18
6.4	.82	.35	70,100	24,535.00
5.6	.93	.46	116,150	53,429.00
5.3	.98	.51	47,913	24,435.63
5.3	.98	.51	15,111	7,706.61
5.1	1.02	.55	13,573	7,465.15
4.4	1.19	.72	368,874	265,589.28
4.3	1.21	.74	71,605	52,987.70
3.2	1.63	1.16	81,934	95,043.14
3.1	1.68	1.21	15,887	19,223.27
2.7	1.93	1.46	9,272	13,537.12
Total				$749,420.27

a/Small center standard is 11 documents per hour, or $0.47 per document.

b/The 25.2 rate is not the true rate. Payment documents are matched at the receiving activities. While we were not able to factor the matching process into their rate, we firmly believe with proper adjustment their rate would remain in the top three.

APPENDIX II

A CASE EXAMPLE OF HOW USING PERFORMANCE MEASUREMENT AND METHODS IMPROVEMENT CAN IMPROVE PRODUCTIVITY

Our study of the vendor payment activities of a number of payment centers shows a large variability in processing rates and a relationship between efficiency and concentration on performance measurement. In an effort to determine the magnitude of improvement which could be expected by implementing a measurement system, we studied one payment center indepth, and with the help of a consultant developed work measurement standards for the various payment types within the center. In addition, we studied processing methods and designed improvements which we also factored into the measures to demonstrate the potential for efficiency improvement with both measures and methods improvements.

Our study showed that for three types of payment transactions (one-time payments, recurring payments, and contracts) performance efficiency ranged from 50 to 75 percent. That is, based on standards and methods in place, performance was considerably below what it should be. After factoring in possible methods improvements, performance efficiency became only 30 to 60 percent of what it could be if the methods improvements were adopted.

The payment center we studied performs basically the same functions as the 21 others included in our sample. In terms of size, it would be considered one of the smaller centers.

The center was organized into sections or units, each of which was responsible for specific payment types. The specific units included in our study were

--one-time order,

--contracts,

--recurring order,

--employee travel, 1/

--travel advance (cashier), 1/

1/Data for these sections is not discussed here. It will be included in a separate discussion of employee travel.

--transportation, 1/ and

--scheduling. 1/

Each of the three units for which data is presented here performed at a level considerably below a standard or expected rate as shown in the table below.

Summary - Performance Compared to Standards

Unit	Percent performance using present methods	Percent performance using improved methods
One-time	50	32
Recurring	63	50
Contracts	75	60
Overall vendor payment	60	45

The table shows that overall vendor payment efficiency is only 60 percent of what it should be, and only 45 percent of the efficiency level that can be achieved with methods improvement.

The results of the study are summarized in the following pages. The discussion covers the procedure used in conducting the survey, findings and conclusions, and recommendations.

A discussion of the survey data from the one-time order unit follows the discussion of the overall survey data.

1. CONDUCT OF THE SURVEY

The following steps were taken for each unit:

--Discussions were held with supervisors and key employees.

--Work flow charts were made.

--Output and staff-hour data for a 13-week base period (week ending June 9 through week ending Sept. 1, 1978) were summarized from weekly reports.

--A time survey was conducted whereby each employee reported time spent and work completed for 10 to 14 days.

1/Data is incomplete and not included in the study

--Output and staff-hour data for a 3-week period during the survey (week ending Nov. 24 through Dec. 8, 1978) were summarized from weekly reports.

--The time survey data was summarized by task, and average unit time was developed for each task.

--An engineered standard based on predetermined time data was developed for a principal task in each unit.

--Performance for the base period and survey period was calculated based on "survey" time, "standard" time, and "should take" time.

--Work methods were analyzed, and recommended improvements were developed.

--The potential savings were estimated with improved methods and performance.

--The survey results were documented.

2. SURVEY FINDINGS AND CONCLUSIONS

The survey findings and conclusions are based on survey techniques which are designed to provide management with a good indication of the current situation and the potential for improvement. The techniques are subject to some margin of error resulting from projections of small samples, inaccurate reporting of time and counts, and misunderstandings of information and requirements. In particular, projecting the performance of one task in each unit to the performance of all tasks may not be totally valid.

However, the results obtained are typical of results found in other unmeasured clerical operations, and allowances were added to make up for any operations that may have been overlooked. Accordingly, we believe that the survey results in total are valid as indicators of the current situation and the potential for improvement.

The chart on the next page summarizes findings from the the survey.

SUMMARY OF FINDINGS AND CONCLUSION

Unit	Percentage of performance	Effective hours	"Should take" hours	Potential hours saved annually	"Should take" and methods improvement hours	Percentage of effective hours	Potential hours saved annually
One-time	50	2,832	1,416	5,664	920	32	7,648
Recurring	63	2,429	1,530	3,596	1,224	50	4,820
Contracts	75	1,318	988	1,320	791	60	2,108
Total	60	6,579	3,934	10,580	2,935	45	14,576

Heading	What heading represents
Percentage of performance	Estimated performance during 13-week base period measured against "should take" time.
Hours:	
Effective	Hours reported on weekly reports.
"Should take"	Hours required to do the work accomplished during the base period at "should take" time.
Potential hours saved annually	Effective hours less "should take" hours multiplied by 4, since the effective and "should take" hours are for 13 weeks.
"Should take" and methods improvement hours	Hours required to do the work accomplished during the base period with methods improvement and at "should take" time.
Percentage of effective hours	The percentage of the hours used during the base period that would have been required with methods improvement and at "should take" time.
Potential hours saved annually	Effective hours less "should take" and improvement hours multiplied by 4, since the effective and "should take" hours are for 13 weeks.

APPENDIX III

(1) Performance

As shown in the table, the performance indicators in relation to "should take" time were 50, 63, and 75 percent, respectively. That is, the work that the three units completed in 6,579 effective hours could have been accomplished in 3,934 hours at the "should take" rate of performance. That equates to a 40-percent reduction which could be applied against the number of positions.

The "should take" performance could be achieved by:

--Installing a comprehensive work measurement system that provides performance indicators on an individual unit basis.

--Standardizing the operations in each task so that the best method is used.

--Telling employees what is expected of them and how they are doing and by providing special training for employees who do not perform as expected.

--Organizing work areas so that they are less cluttered and limit the motions required.

--Reducing the time lost from extended lunch periods.

(2) Methods improvement

It is estimated that methods improvements could have saved an additional 999 hours during the base period, or 15 percent of the time used.

Specific methods improvements are discussed for the one-time unit in the survey analysis. There were, however, several general recommendations that should be considered for all units studied. These are discussed below:

Use of coding document

Present procedures call for a handwritten coding sheet to be prepared with one line of coding for each entry into the computer. According to the information in the January 20, 1978, Staff Increase Report, 866,000 accounting entries were made in fiscal 1977. Presumably, each entry represents a line on the coding sheet and an

entry into the terminal. At 1 to 1-1/2 minutes per line, the manual coding required 14,400 to 21,600 hours per year for coding. At about 1,500 effective hours per year for direct work, this is equal to 9 to 14 positions.

It appears that, with some procedural changes, information could be entered in the terminal directly from the source documents in about the same amount of time that is presently required to enter it from the coding sheets. Doing so would also eliminate transcription errors in filling out the code sheet.

This potential improvement is worth serious consideration.

Checking for errors

The operation allows for an excessive amount of checking for errors. For example, all disobligation entries are checked against the active document status file, a process which takes more than 1 minute per line. In most cases, incorrect coding would be caught by the computer.

The emphasis is on catching errors rather than preventing them in the first place. Wherever possible, the computer should be used to catch errors through logic checks and other means; it is more dependable than manual checks.

Also, data on errors made should be kept for each employee so that those employees can be given special training and attention.

Data should be entered on a terminal that can enter and verify data by unit. This should take less than the 1 to 2 minutes per line that it presently takes to enter, balance, and correct the entries.

Also, the data should be entered by specialists who are trained to do the work and have an aptitude for it. Thus, the work could be done much more quickly and likely with fewer errors.

Duplication of data transcription

At the present time, there is excessive duplication of transcribing data on work sheets, code

sheets, purchase orders, receiving reports, and the like. The extent of this duplication is shown by example at the end of our discussion of the one-time order section.

3. RECOMMENDATIONS FOR IMPROVEMENT

We can make three general recommendations to the payment center to improve productivity and reduce costs. These recommendations are based on the study findings, and they incorporate the individual methods for improvement discussed in the previous section and in the unit reports. The recommendations describe the approach that should be taken to achieve the improvements.

(1) Implement a comprehensive work measurement system

--The work measurement system should be based on "should take" time standards that represent reasonable expected performance for a qualified person and should be established for the outputs of all principal tasks.

The system should provide:

--Measures of performance against standard rates for each unit on a monthly basis.

--Good indicators of individual performance and provide employees with information on expected performance.

--Unit supervisors with information needed to plan, schedule, and dispatch work. (Workloads and backlogs in work-hours.)

--Quality control with information on individual's error rates.

The system needs to be understood by managers and supervisors, and they must have confidence in the data. Also, the employees should understand the system and how it works.

To establish such a system, industrial engineering assistance must be sought to create the standards and management reports. Also, managers and supervisors must actively participate in establishing the standards and preparing the reports. In addition, the employee union will have to be advised of the system and how the information will be used.

The best way to gain supervisors' participation is to hold training sessions to explain the system and to have the supervisors actually establish the standards under the direction of the industrial engineering staff. With such an approach, the supervisors will understand the system and have confidence in the data it produces.

A comprehensive work measurement system, such as this one, will allow the employees to know what is expected of them and give the supervisors the control they need and allow them to give individual attention where needed.

(2) Analyze the overall system for major improvement possibilities

We identified major improvements which can be made to the system that should be analyzed.

- Use of coding document - Because using the coding document requires such a large amount of work (estimated at 21,000 hours per year), alternative methods for entering data should be investigated.

- Data input - The present method of data input is very slow and error prone. Other methods of entry, such as input and verification on a unit basis and using full-time operators, should be investigated. These operations should be reviewed for change.

(3) Analyze the detailed method and procedures

The detailed methods and procedures employees use day-to-day must be improved. Unnecessary steps and operations must be eliminated so the work can be performed as easily as possible. Also, when the best method is determined, all employees should be trained to do the work in the same manner.

Methods improvements include such things as using a stamp in place of repetitious writing and organizing the workplace so that pencils, pens, adding machines, papers, and the like are so positioned to minimize reach or effort.

The best way to improve daily procedures is to train the supervisors in the principles of methods improvement and work simplification. The training

would include such things as making a flow chart and analyzing the chart for improvement. Also, the training should include planning and organizing the work for better performance.

This training should be in conjunction with the work measurement training and should allow supervisors to apply the techniques to their own areas as part of the classroom work.

4. SURVEY DATA - ONE-TIME ORDER UNIT

This section of the report describes the survey results from one of the units covered by the report. The following information is provided:

--A summary of the time distribution from the time survey.

--The average time for each task covered.

--The unit times for the primary outputs of each unit based on survey data, standard time, and "should take" time.

--The performance during the base period related to the three unit times.

--The performance during the survey period related to three unit times.

--Conclusions about performance.

--Comments on methods improvement.

This data was presented to inform the chiefs and supervisors about areas of the work which can be improved.

(1) ONE-TIME ORDERS

Following are the results of the time survey and methods analysis in the One-Time Orders Unit.

1. Survey data

The time distribution and task data from the survey are shown in exhibit 3. This data was used in developing the unit time and performance data described in the following paragraphs.

Exhibit 3

Time distribution

Category	Minutes	Percentage
Tasks	14,075	66
Incomplete tasks	1,205	5
Regular miscellaneous	2,870	13
Nonregular miscellaneous	1,350	6
Breaks	1,185	6
Extra lunch	750	3
Total	21,435	

2. Unit time

The unit times developed from the survey data are described in exhibit 4 below and explained in the following paragraphs.

Exhibit 4

	Minutes		
	Survey data	Standard	"Should take"
Per invoice obligation	7.30	4.76	6.35
Per invoice paid	18.48	12.01	16.07
Request authorization	5.18	3.37	4.51
Line entered	1.71	1.11	1.49
Per day	74.80	48.62	65.00
Miscellaneous tasks (of direct)	19%	19%	19%
Breaks and extra lunch	10%	7%	7%

The "survey data" unit times are based on the combination of related tasks and estimated frequencies.

The "standard" unit times are 65 percent of the survey data. This factor was developed by applying standard time data to the "pay invoice" task. The standard data showed a performance factor of 54 percent which was applied to all tasks. Also, break time was reduced to 7 percent (30/450).

The "should take" unit times are based on a performance of 75 percent of the standard, which is reasonable to

expect for the type of work. Accordingly, survey data was factored by 87 percent (65/.75 = .87).

Average time for task

Code	Task	Volume	Minutes	Unit time	Item counted
A	Obligate purchase order	573	2,690	4.69	Purchase order
B	Pay invoices	370	4,145	11.20	Invoice
C	Distribute documents to open file	1,069	2,795	2.61	Document
D	File documents in closed file	301	620	2.06	Invoice
E	Request authorization	164	850	5.18	Authorizations
F	Handle phone calls from vendors	119	890	7.48	Call
J	Operate terminal	1,546	1,785	1.15	Line
L	Check batch on active document status list and prepare for input	270	300	1.11	Line

3. PERFORMANCE

Performance related to the unit times was calculated for the 3-month base period and for a 3-week period during the time of the survey. The results are as follows:

--Base period - survey data

		Hours
2,319 obligations @ 7.30/60	=	282
2,285 invoices paid @ 18.48/60	=	704
959 authorization requests @ 5.18/60	=	83
4,511 lines entered @ 1.71/60	=	129
64 days @ 74.8/60	=	80
Total		1,278
Miscellaneous @ 19 percent	=	243
Total		1,521
Breaks and extra lunch @ 10 percent	=	152
TOTAL		1,673

Hours of work accomplished / Effective hours of work = 1,673 / 2,832 = 59 percent performance

--Base period - standard

Hours of work accomplished / Effective hours of work = 1,058 / 2,832 = 37 percent performance

--Base period - "should take"

Hours of work accomplished / Effective hours of work = 1,416 / 2,832 = 50 percent performance

--Survey period - survey data

		Hours
280 obligations @ 7.30/60	=	34
501 invoices @ 18.48/60	=	154
197 authorization requests @ 5.18/60	=	17
777 lines entered @ 1.71/60	=	22
14 days @ 74.8/60	=	17
Total		244
Miscellaneous @ 19 percent		46
Total		290
Breaks and extra lunch @ 10 percent		29
TOTAL		319

$$\frac{\text{Hours of work accomplished}}{\text{Effective hours of work}} = \frac{319}{483} = 66 \text{ percent performance}$$

--Survey period - standard

$$\frac{\text{Hours of work accomplished}}{\text{Effective hours of work}} = \frac{202}{483} = 42 \text{ percent performance}$$

--Survey period - "should take"

$$\frac{\text{Hours of work accomplished}}{\text{Effective hours of work}} = \frac{270}{483} = 56 \text{ percent performance}$$

Several conclusions about performance can be drawn from the above data:

--During the actual survey, employees accomplished the work in 59 percent of the time required during the base period (or accomplished 41 percent more work in the same amount of time).

--During the survey period (3 weeks), employees accomplished the work in 89 percent of the time required during the base period.

--If employees had worked at the survey rate during the base period, 1,159 fewer hours (18 per day) would have been required to do the same amount of work.

--At "should take" time, base period work would have been accomplished in 1,416 fewer hours (22 per day).

--At "standard" time, the base period work would have required 1,774 fewer hours (28 per day).

4. METHODS IMPROVEMENT

Several methods improvements could be made in this unit to substantially reduce the amount of work required for processing one purchase order transaction.

Exhibit 5 shows the entries presently required to obligate and pay one invoice. About 388 digits or characters are entered. It also shows a proposed method wherein the vendor card, worksheet and code sheet are eliminated along with several other postings. Also, the invoice copies are not returned to the vendor. This method requires entering about 190 digits or characters. Exhibit 6 shows a flow chart of the present and proposed methods.

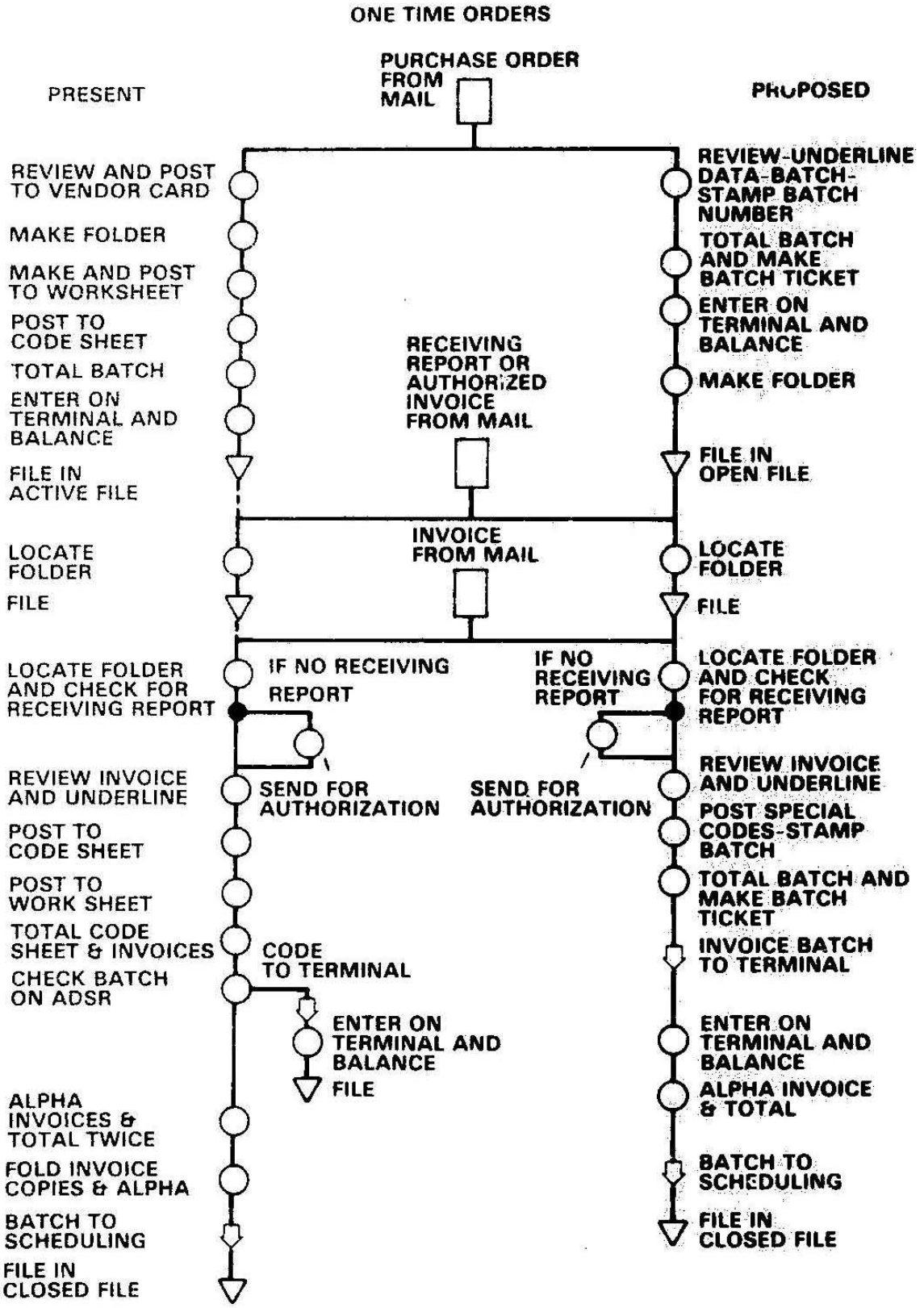
Exhibit 5

ENTRIES TO OBLIGATE AND PAY ONE INVOICE (ONE-TIME)

Item	Digits	Total digits	Numbers	Folder	Vendor card	Purchase order #3	Invoice and copy	Worksheet	Code sheet	Terminal	Schedule	Adding machine
Purchase order number:												
Present	9	90	10	1	1	1	2	1	2	2	-	-
Planned	9	27	3	1	-	-	-	-	-	2	-	-
Vendor name:												
Present	20	60	3	1	1	-	-	-	-	-	1	-
Planned	20	40	2	1	-	-	-	-	-	-	1	-
Vendor address:												
Present	36	36	1	-	-	-	-	-	-	-	1	-
Planned	36	36	1	-	-	-	-	-	-	-	1	-
Amount:												
Present	6	78	13	-	-	-	-	2	2	2	1	6
Planned	6	30	5	-	-	-	-	-	-	2	1	2
Invoice number:												
Present	6	6	1	-	-	-	-	1	-	-	-	-
Planned	6	6	-	-	-	-	-	-	-	-	-	-
Account codes:												
Present	16	48	3	-	-	-	-	1	1	1	-	-
Planned	16	16	1	-	-	-	-	-	-	1	-	-
Batch number:												
Present	7	28	4	-	-	-	1	2	-	-	1	-
Planned	7	14	2	-	-	-	1	-	-	-	1	-
Schedule number:												
Present	7	42	6	-	-	-	2	1	1	1	1	-
Planned	7	21	3	-	-	-	1	-	-	1	1	-
Total present		388	41									
Total planned		190	18									

APPENDIX III

Exhibit 6


ONE TIME ORDERS
PURCHASE ORDER FROM MAIL
PRESENT
PROPOSED
REVIEW AND POST TO VENDOR CARD
MAKE FOLDER
MAKE AND POST TO WORKSHEET
POST TO CODE SHEET
TOTAL BATCH
ENTER ON TERMINAL AND BALANCE
FILE IN ACTIVE FILE
RECEIVING REPORT OR AUTHORIZED INVOICE FROM MAIL
INVOICE FROM MAIL
LOCATE FOLDER
FILE
LOCATE FOLDER AND CHECK FOR RECEIVING REPORT
IF NO RECEIVING REPORT
SEND FOR AUTHORIZATION
REVIEW INVOICE AND UNDERLINE
POST TO CODE SHEET
POST TO WORK SHEET
TOTAL CODE SHEET & INVOICES
CHECK BATCH ON ADSR
CODE TO TERMINAL
ENTER ON TERMINAL AND BALANCE
FILE
ALPHA INVOICES & TOTAL TWICE
FOLD INVOICE COPIES & ALPHA
BATCH TO SCHEDULING
FILE IN CLOSED FILE
REVIEW-UNDERLINE DATA-BATCH-STAMP BATCH NUMBER
TOTAL BATCH AND MAKE BATCH TICKET
ENTER ON TERMINAL AND BALANCE
MAKE FOLDER
FILE IN OPEN FILE
LOCATE FOLDER
FILE
IF NO RECEIVING REPORT
LOCATE FOLDER AND CHECK FOR RECEIVING REPORT
SEND FOR AUTHORIZATION
REVIEW INVOICE AND UNDERLINE
POST SPECIAL CODES-STAMP BATCH
TOTAL BATCH AND MAKE BATCH TICKET
INVOICE BATCH TO TERMINAL
ENTER ON TERMINAL AND BALANCE
ALPHA INVOICE & TOTAL
BATCH TO SCHEDULING
FILE IN CLOSED FILE

More detailed analyses will be made, but apparently all of the information is available from other sources and direct entry could be made from the invoices with fewer errors using proper equipment and trained operators.

The proposed method would reduce the work required by an estimated 35 percent. This combined with "should take" performance would have reduced the time required during the base period by 1,911 hours (30 per day). Thirty-two percent of the hours used would have been required.

AGENCY COMMENTS

The results of our indepth study were presented to the management of the payment center. These officials were very receptive to the study results. The survey report containing the methodology and findings was presented to the agency and followed up 6 weeks later with a detailed discussion of the report.

Agency officials concurred with the need for measurement and methods improvement and in fact had started taking action both to develop measures and eliminate some of the inefficient methods that were pointed out in the survey report during the 6-week period.

Although agency officials did not concur with all of the methods changes proposed, they made a number of significant changes and were studying alternative improvements for a number of the others. For example, worksheets are no longer used on one-time orders and the time-consuming task of checking batches in the active document status file was eliminated.

Agency officials recognized the need for work measurement. They have taken steps to develop input and output data to construct some basic historical measures, and they plan to study the possibility of developing standards. They have some reservations about developing standards because of possible union implications, but they plan to explore how best to work within the union agreement and still use appropriate standard data for evaluating employees.

METHODOLOGY USED IN MEASURING PRODUCTIVITY OF PAYMENT CENTERS

To measure output, we counted all payment documents processed rather than only vouchers (payments) processed because some payment types are rather complex and require more time to process. Theoretically, two centers could process the same number of payments, but because one has a workload of rather complex payments while the other processes routine ones, their rates of production might vary widely. The center processing the routine payment would appear to be much more efficient than the other, while in fact, the actual efficiency rates may be just the opposite.

To neutralize the various levels of difficulty and make efficiency rates comparable, a weighting factor was applied. The factor (payment documents) is based on the fact that the more documentation required to validate a payment, the longer it takes to process.

To illustrate, a voucher examiner will need more time to process a payment against a contract than to pay a utility bill. The contract must be checked against the invoice to ensure compliance by the vendor. The receiving report or receipt of service must be compared with the invoice to make sure that what was billed has been delivered. Three payment documents were required and used in auditing this contract payment. On the other hand, utility bills usually arrive at the payment center directly from the vendor, and those bills are then sent out to user activities for their concurrence (certification). The bill is returned with the certification and the center receives it and schedules payment. This process would count as two payment documents which, when compared with the contract payment process, reflects less payment center effort as well as an easier overall audit process.

While the number and type of payment varies from site to site, the payment document required to make most types of payments is relatively uniform. Based on a study of the payment documents required at a number of sites, a standard document count was developed for use in weighting output.

For each payment the Government makes, an authorization, a charge, and a receipt are required. For example, a purchase order is an authorization to make a purchase, a vendor invoice is a charge for goods or services, and a receiving report verifies receipt of goods or services. At each center, the payment types were studied to see how each of these three requirements were met. This approach enabled us to see how payment documents flow through the system for each payment type.

Input is defined as the staff-hours required to process payment documents. Two problems were apparent in measuring staff-hours within the payment process:

--Indirect supervision had to be factored out to the extent that it represents time not considered to be part of direct operations. Some supervisors are part of the productive work force while others are strictly full-time management. We refer to these as "nonworking" supervisors.

--Direct time of employees in the process had to be allocated if their duties covered more than commercial voucher processing. Some payment center examiners process both commercial bills and travel vouchers. Some examiners perform "other duties," such as backup imprest fund cashiers, or accounting, etc.

Once the individuals were isolated and the percentage of their time dedicated to commercial voucher processing was established, the annual staff-hours could be calculated. In most cases, the percentage was applied against a 1,750-hour productive staff-year. Direct hours were used when provided by the payment center.

MAJOR FACTORS AFFECTING

PROCESSING RATES

To evaluate the differences in processing rates among the 22 payment centers we visited, we identified six key factors that affect productivity at each center. As shown in the following table, productivity is higher where operations are centralized and automated and where management emphasizes and measures productivity. Higher productivity is observed at those organizations which process high volume workloads which, to some extent, are a result of centralized operations.

We also examined the degree to which statistical sampling could be used to reduce voucher examination. Payments under $500 can be examined on a sampling rather than 100-percent basis, and centers with a high percentage of payments under $500 would require lower amounts of work per payment.

(910440)

Major Factors Affecting Processing Rates

Payment center (note a)	Processing rate	Organizational alignment (note b)	Use of automation (note c)	Emphasis on efficiency (note d)	Productivity measurement (note e)	Document volume	Potential for using statistical sampling of vouchers (note f)
FAADCLANT	(g)	2	2	3	3	3,786,950	68
NFC	17.9	3	3	3	3	4,192,895	89
VA-DPC	17.5	3	2	3	3	1,493,388	75
SSA	10.1	3	2	3	3	624,046	48
DGSC	10.1	2	2	2	2	600,804	76
GSA-III	9.7	2	2	1	1	538,826	78
IRS-IV	9.1	2	2	1	1	117,376	87
EPA-NC	8.5	2	1	2	2	101,754	60
DOI-III	8.2	2	1	1	-	78,687	87
NWS	7.0	1	1	1	-	30,704	76
Ft. MAC	6.5	1	1	1	1	120,946	89
CG	6.4	2	1	1	-	79,100	51
EUSTIS	5.6	1	1	1	1	116,150	61
HUD-III	5.3	2	1	1	-	47,913	73
HEW-IV	5.3	2	1	1	1	15,111	70
EPA-IV	5.1	2	1	1	-	13,573	70
NOAA	5.0	2	1	1	1	87,436	-
DPSC	4.4	2	2	3	3	368,874	38
LAFB	4.3	1	1	1	1	71,605	67
LARC	3.2	1	1	1	-	81,934	58
CE	3.1	1	1	1	-	15,887	88
HEW-IV	2.7	2	1	1	-	9,272	65

a/Identified on pp. 27-28.
b/For organization alignment: 1 - Decentralized, 2 - Geographical, 3 - Centralized.
c/For use of automation: 1 - none, 2 - some, 3 - full.
d/For emphasis on efficiency: 1 - very little, 2 - moderate, 3 - Great.
e/For productivity measurement: 0 - none, 1 - some, 2 - moderate, 3 - Great.
f/Percent of vouchers less than the $500 maximum amount allowable for statistical sampling.
g/The FAADCLANT processing rate computes to 25.2 documents per hour. However, payment documents are matched at the receiving activities. Therefore, the processing rate at FAADCLANT is overstated. While we were not able to factor the matching process into its rate, we believe that with proper adjustment, its rate would remain in the top three.

APPENDIX V