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Targeting Best Value in Personal Property Procurement

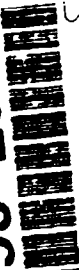
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Executive Summary

TARGETING BEST VALUE IN PERSONAL PROPERTY PROCUREMENT

The Department of Defense is changing its procurement practices. Traditionally focused on low price, it is now striving to obtain the best value.

The Military Traffic Management Command (MTMC) is one of many Defense activities developing a best-value procurement program. As manager of the DoD's Personal Property Shipment and Storage Program, which in FY91 entailed 188,000 domestic shipments involving some 1,100 commercial carriers at a cost of more than \$284 million, MTMC seeks to award personal property shipments to commercial carriers by taking into account both the linehaul transportation rates they bid and the quality of the services they provide.

Building upon successful best-value procurement programs in both the public and private sectors, we recommend that MTMC use indexes to determine the overall value provided by personal property carriers. Two indexing methods are particularly promising. The first, Best Value Rate, keys on four performance measures: on-time pickup, on-time delivery, loss and damage, and carrier turnbacks or DoD pullbacks. Using the statistical technique of principal component analysis, MTMC would assign weights to each of these performance measures and then mathematically apply them against a carrier's bid rate to derive a Best Value Rate. The second indexing method, Best Value Score, is similar to the first but differs in that MTMC would assign a weight to the carrier's bid as well as to each of the four performance factors.

Although the use of either indexing method will satisfy MTMC's requirements for a best-value procurement program, we believe the Best Value Score method has two primary advantages. It is more direct because it requires only one computation, and it does not assume a direct relationship between quality and bid rates which, under some circumstances, may be inequitable to personal property carriers.

Regardless of which indexing method it chooses, MTMC also will need to change its practices for allocating shipments to carriers. The current procurement process

tends to array carriers into rate groups, with MTMC then awarding traffic equitably to all carriers in a particular rate group. The very nature of best-value procurement, however, will eliminate rate groupings. Instead, MTMC will generate a continuum of Best Value Rates or Scores for its carriers. Because it is not practical to award all traffic to the best-value carrier, we propose that MTMC use Best Value Clusters. Under this concept, MTMC would award the most shipments to the top cluster of best-value carriers. The lower clusters of best-value carriers would be awarded smaller shares of shipments. This approach has the principal advantage of providing incentives for all carriers to continue to improve their performance.

To demonstrate the potential of these best-value alternatives, we recommend that MTMC conduct a test at selected personal property shipping offices. The results of this test will enable MTMC to

- Select a best-value indexing method
- Adopt enhanced shipment allocation practices
- Develop an automated systems capability to support best-value procurement in personal property
- Identify cost savings and quality improvements
- Decide whether best value meets its requirements.

The best-value alternative that we recommend is a dramatic departure from how MTMC traditionally procures personal property transportation services. While appearing to hold promise of being the standard-bearer for the procurement of all transportation services in the future, MTMC needs to first demonstrate its practicality, utility, and cost-effectiveness.

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CHAPTER 1

QUALITY MAKES A DIFFERENCE

INTRODUCTION

In 1988, the following statement appeared in an American Society for Quality Control publication:

... quoted price alone is no longer a viable means of source selection because the elements of quality, delivery, and service overshadow the initial low bid. A product that is not delivered on schedule, or that is defective, is not a bargain at any price...¹

Although many organizations subscribe to this position, they have had difficulty incorporating quality considerations into their procurement practices. The Department of Defense is one of those organizations. In the movement and storage of personal property, for example, DoD activities award shipments to commercial carriers on the basis of lowest overall cost (i.e., a combination of the rate bid and quality of service), but their primary emphasis is on the carriers' rates.

The Military Traffic Management Command (MTMC), which manages DoD's Personal Property Shipment and Storage Program, seeks to change that emphasis. According to a 16 July 1992 policy announcement by the Commander, MTMC, it wants to obtain the "best value" for DoD's personal property expenditures.²

... Best value acquisition is preferred and will be used when appropriate. Where regulatory roadblocks to using best value exist, action will be taken to pursue their elimination....

This report describes a methodology and identifies alternative approaches that MTMC could use to award personal property shipments to commercial carriers based upon best value. Before presenting that methodology, we provide an overview of DoD's personal property program. We also examine whether added emphasis on

¹American Society for Quality Control, Vendor-Vendee Technical Committee, *Procurement Quality Control*, 4th edition, ASQC Quality Press, 1988.

²From the Commander, Military Traffic Management Command (MTMC), Subject: *MTMC Policy for Acquisition of Transportation Services*, 16 July 1992.

quality of service in the procurement process could affect personal property shipment awards to individual carriers.

OVERVIEW OF THE PERSONAL PROPERTY PROGRAM

Foundation

The MTMC manages the DoD's Personal Property Shipment and Storage Program on behalf of the Assistant Secretary of Defense (Production and Logistics), under authority of DoD Directive 4500.34, *DoD Personal Property Shipment and Storage Program*, 10 April 1986. That Directive also authorizes publication of DoD 4500.34-R, *Personal Property Traffic Management Regulation (PPTMR)*, October 1991, which prescribes the day-to-day operating procedures.

Every 6 months, MTMC receives more than 1.1 million rate bids for domestic movements from commercial carriers. Carriers submit their rates for specific domestic traffic lanes (routes) in response to semiannual rate solicitations from MTMC. They express their rates as a percent of MTMC's baseline linehaul transportation rate schedule, which is published in *Domestic Personal Property Rate Solicitation D-1*.

Personal Property Operations

Although the DoD's domestic Personal Property Shipment and Storage Program functions under centralized MTMC management, its operations are carried out at 153 Military Service-managed Personal Property Shipping Offices (PPSOs).³ The PPSOs use the services of approximately 1,100 commercial carriers each year to move the household goods, unaccompanied baggage, mobile homes, privately owned vehicles, and personal firearms of military members throughout the United States. In FY91, DoD made over 188,000 domestic, door-to-door, motor van (Code 1) shipments comprising almost one billion pounds of personal property, at a total cost exceeding \$284 million. The program's size and scope are unmatched in either

³The 153 PPSOs in the United States consist of 45 Army, 30 Navy, 69 Air Force, and 9 Marine Corps. The Coast Guard also operates 21 PPSOs.

private industry or other Federal agencies. Table 1-1 presents a summary of the program.⁴

TABLE 1-1
DoD PERSONAL PROPERTY MOVEMENT DATA
(FY91)

Military Service	Shipments (thousands)	Weight (millions of pounds)	Cost (millions of dollars)
Army	62	295	88
Navy	59	291	84
Air Force	53	274	90
Marine Corps	13	65	21
Other DoD	1	4	1
Total	188	929	284

Every domestic PPSO maintains Traffic Distribution Records (TDRs) on which it records shipment awards.⁵ According to the PPTMR, at the end of each year, all carriers in a particular rate group should have received shipments that total within 20,000 pounds of each other.

The TDR lists carriers according to their filed rates, with the lowest rate carriers listed first. In an attempt to incorporate some consideration for quality into the award of personal property shipments, MTMC established the Total Quality Assessment Program (TQAP).

⁴Although we limit our discussion in this report to domestic Code 1 personal property shipments, we believe that our conclusions and recommendations could also apply to DoD's worldwide program. In FY91, that program totaled 0.6 million shipments; more than 1.7 billion pounds; and transportation, storage, loss/damage payments to members, and other related fees of approximately \$2.2 billion.

⁵The PPSOs maintain separate TDRs for each destination state and the District of Columbia in the continental United States. They also establish separate TDRs for each area of operation within a destination PPSO's area of responsibility. Carriers offer rates on the routes they wish to serve, with a route being generally from an origin PPSO's area of responsibility to one of the 48 contiguous states or Alaska. The PPTMR provides a more complete description of the DoD's traffic distribution rules and requirements.

Under the provisions of that program, carriers are sequenced within each rate grouping on a TDR according to their average TQAP score.⁶ That process results in the low-rate carrier with the highest score being awarded traffic first, with other carriers offering the same low rate but having lower TQAP scores awarded traffic in turn. Unless a route has a particularly heavy traffic flow, only those carriers offering the lowest rates are typically awarded shipments, particularly during the low-traffic season (October through April).

Responsibilities

The personal property program requires extensive coordination and cooperation among MTMC, PPSOs, property owners, and commercial carriers. Each has important responsibilities to ensure timely and effective transport of a member's personal property. Those responsibilities are summarized below.

MTMC

The MTMC provides overall technical and management direction for the program in accordance with DoD policy guidance. Its specific responsibilities include approving carriers for, and removing carriers from, program participation; soliciting, negotiating, assessing, and accepting carriers' rates; and establishing performance standards and measuring carrier performance against those standards.

PPSOs

The PPSOs perform a variety of functions in dealing with both military members and carriers on a day-to-day basis. They approve carriers for service, obtain all required transportation and storage services for military members located within designated areas, distribute shipments among eligible carriers, monitor and evaluate carrier performance, and take disciplinary actions against carriers that provide deficient service.

⁶The MTMC has established performance standards for on-time pickup (20 points), on-time delivery (40 points), and absence of loss or damage (40 points). The TQAP score is simply the average of the points earned by a carrier over all shipments serviced. A carrier must attain an average score of at least 90 during a 6-month evaluation period to remain eligible for shipment award in the next cycle.

Property Owners

The owners of the personal property are responsible for notifying their PPSOs upon receipt of movement orders and complying with all guidance provided during the counseling sessions.

Commercial Carriers

The commercial carriers play a pivotal role in ensuring the safe and timely pickup, packing, transport, delivery, and unpacking of the members' personal property. The quality of their service is the major contributor to each member's satisfaction with his or her move.

Supporting Systems

The MTMC and PPSOs use three automated systems in carrying out their personal property responsibilities:

- Transportation Operational Personal Property Standard System (TOPS), which automates the PPSO's operations
- Worldwide Household Goods Information System for Transportation (WHIST), which is MTMC's rate and shipment information database for personal property movements
- TQAP, which MTMC uses to evaluate carrier performance.

Building upon this overview of the DoD's Personal Property Shipment and Storage Program, we now examine whether an expanded consideration of quality in awarding personal property shipments could affect the allocation of shipments among carriers.

POTENTIAL EFFECTS OF QUALITY

To determine the potential effects of quality on personal property transportation service procurements, we analyzed the rate and quality records of 22 randomly selected carriers serving the Joint Personal Property Shipping Office in Massachusetts (JPPSOMA) to five destination states (California, Georgia, Illinois, New York, and Texas). (We used the rates in effect during the current cycle and quality data from the summer 1992 evaluation cycle.) In our analysis, we sought to determine the extent to which carrier rankings could change when their rates were adjusted for quality. Although the methodology we used is general and not what we

advocate later in this report, it did serve to establish whether considering quality might impact procurement.

Methodology

Carriers submit their rates, expressed as a percent of MTMC's "Baseline Linehaul Transportation Rate Schedule," for the specific routes they wish to service. The TQAP scores, however, reflect overall carrier performance from an origin PPSO (the scores are not route specific). To attain some compatibility between the rates and the quality scores, we averaged each carrier's rates for the five routes. For example, if a carrier bid 78 percent to California, 75 percent to Georgia, 80 percent to Illinois, 100 percent to New York, and 78 percent to Texas from JPPSOMA, its average bid rate was 82.2 percent, or .822.

Then we calculated the following:

- The average quality score (93.337) for all carriers serving JPPSOMA
- A normalized quality score for each carrier, by dividing the average quality score into the carrier's TQAP score
- An adjusted quality rate for each carrier, by dividing its normalized quality score into its average bid rate.

The higher a carrier's normalized quality score, the more value in terms of quality it provides the DoD. Higher normalized quality scores also lower the adjusted quality rate, which we used to rank the carriers in terms of both rates and quality. (Now, carriers are ranked and awarded shipments according to the sequence in which they appear on TDRs.)

Results

Table 1-2 presents the details for each of the 22 carriers, while Table 1-3 shows the carrier rankings, both by average bid rate alone and then by average bid rate adjusted for quality. The changes in carrier rankings (Table 1-3) are dramatic. For example, carrier 14 is ranked 3rd by its rates, but drops to 17th when its quality of past performance is considered. Similarly, carrier 17 is rated 16th by rates, but moves to 4th because of its high quality of performance.

We then measured the correlation between the two rankings to determine the overall effect of quality. A correlation of 1 indicates that the rankings are identical,

TABLE 1-2
CARRIER QUALITY-ADJUSTED RATES

Carrier	Average bid rate	Rank by bid rate*	TQAP score	Normalized quality score	Adjusted quality rate	Rank by adjusted quality rate
1	.818	20	99.33	1.064	.769	10
2	.768	7	99.40	1.065	.721	3
3	.768	8	100.00	1.071	.717	2
4	.802	18	92.87	.995	.806	14
5	.768	9	97.48	1.044	.735	5
6	.818	21	72.00	.771	1.060	20
7	.768	10	95.11	1.019	.754	8
8	.768	11	96.44	1.033	.743	6
9	.736	1	91.09	.976	.754	9
10	.768	12	95.50	1.023	.751	7
11	.768	13	91.71	.983	.782	12
12	.768	14	82.00	.879	.874	18
13	.736	2	40.00	.429	1.717	21
14	.736	3	82.00	.879	.838	17
15	.736	4	84.00	.900	.818	15
16	.736	5	98.00	1.050	.701	1
17	.778	16	98.80	1.059	.735	4
18	.802	19	94.88	1.017	.789	13
19	.768	15	93.00	.996	.771	11
20	.824	22	93.71	1.004	.821	16
21	.736	6	82.00	.879	.838	17
22	.786	17	73.33	.786	1.000	19

* Carriers with the same average bid rate are ranked in alphabetic sequence.

while a correlation of 0 (zero) indicates they are entirely different. We found a correlation of less than .02, which indicates that the introduction of quality markedly changed the carrier rankings.

TABLE 1-3
CARRIER RANKING BY RATES AND RATE/QUALITY SCORES

Carrier	Rank by average bid rate	Rank by adjusted quality rate
9	1	9
13	2	21
14	3	17
15	4	15
16	5	1
21	6	17
2	7	3
3	8	2
5	9	5
7	10	8
8	11	6
10	12	7
11	13	12
12	14	18
19	15	11
17	16	4
22	17	19
4	18	14
18	19	13
1	20	10
6	21	20
20	22	16

CONCLUSION

The results of our preliminary analysis demonstrate that quality could have a significant effect on the rankings of personal property carriers. Low-rate carriers with poor-quality performance would lose some of their cost-competitive edge; carriers offering higher rates but also providing high-quality service would become more competitive. Clearly, quality does make a difference.

ORGANIZATION OF REPORT

Building on the preceding results and MTMC's desire to award personal property shipments on the basis of best value, the balance of this report describes an innovative yet practical best-value procurement process. We begin by examining a variety of U.S. Government and private-sector vendor evaluation programs; identify three alternatives that permit MTMC to identify best value when procuring transportation services; present a best-value operating concept for the preferred alternative; and conclude with guidelines for testing and evaluating the recommended concept.

CHAPTER 2

BEST-VALUE CONCEPTS IN INDUSTRY AND GOVERNMENT

BACKGROUND

Assessing vendor performance and awarding business contracts on a best-value basis enjoys considerable precedent in both the private and public sectors. Numerous organizations have designed and implemented performance evaluation systems for vendors (suppliers) of both goods and services. Several, including GTE, Kodak, Motorola, Tennessee Valley Authority (TVA), Xerox, and the General Services Administration, consider carrier performance in awarding contracts to perform employee relocations. In addition, various aerospace companies (e.g., Northrop and Rockwell International) and DoD Components (e.g., Air Force Materiel Command and Defense Logistics Agency) routinely rate the performance of suppliers from whom they purchase parts, materials, and services.

Even though those programs focus on a wide variety of goods and services, they share a number of common objectives and characteristics, which we examine in the next two sections.

PROGRAM OBJECTIVES

Many of the private corporations and Federal agencies that evaluate their vendors do so to obtain the greatest overall value in the goods or services they procure. Recognizing that poor quality is expensive and destructive, and customers are increasingly demanding satisfaction, they seek to

- Identify the best vendors
- Improve the quality of the goods and services
- Reduce the costs of those goods and services
- Expand the lines of communication with vendors.

The ultimate objective of most evaluation programs, regardless of their structure or design, is to award business to vendors that provide the best value. A secondary objective is to recognize and reward the higher value vendors while

eliminating those unable or unwilling to meet the organization's standards. (Appendices A through F summarize the vendor evaluation programs of several organizations.)

PROGRAM CHARACTERISTICS

Despite the variety of evaluation programs, they are generally

- *Simple to administer*; they avoid the use of complex hardware, software, and procedures.
- *Easy to understand*; they employ self-explanatory measures and reports.
- *Automated*; they build upon existing automation capabilities to capture and process data.
- *Based on available information*; they use data that are routinely collected on carrier performance.
- *Timely in their analysis*; they use recent data, process them promptly, and provide timely feedback to carriers.
- *Oriented toward decisions*; they are integrated into day-to-day operations rather than serving as separate, off-line information sources.
- *Designed to foster continuing improvement*; they identify and share performance trends with carriers to stimulate improved performance.
- *Credible and legally defensible*; they employ documented and supportable data.

In addition to these characteristics, various changes in procurement practices generally accompany the more successful vendor evaluation programs. They include having fewer carriers under contract, imposing more stringent quality standards on carriers, and using longer contract periods.

POTENTIAL METHODS

This blend of diverse applications and common characteristics suggests that MTMC could select one of several methods for determining the best value in

procuring personal property transportation services. Nonetheless, the method ultimately adopted should enable MTMC to

- Identify carriers that provide the best value
- Award shipments according to best value
- Measure carrier performance on a continuing basis
- Use a common technical methodology that is applicable to all situations.

In the balance of this section, we examine three different alternatives – cost assessment, member survey, and indexing – that MTMC could use to satisfy these objectives.

Cost Assessment

Synopsis

Determine the cost of carriers not satisfying selected performance factors to obtain best value.

Description

In this method, MTMC would determine the cost of various performance factors, such as late pickup, late delivery, shipment turnback, and loss or damage. Then, for each incident of inadequate performance during a specified period, it would assign those costs to the associated personal property carriers. The total of those nonperformance costs and the carriers' rates for specific routes would be the best-value rate, the basis for awarding shipments.

Assessment

Although this method translates all evaluation factors into dollar terms and is conceptually simple, determining the cost of each evaluation factor (such as the cost of a late pickup) would be difficult. The MTMC could determine some of the costs conducting time and motion studies and others by subjective assessments. In addition, carriers currently submit their bid rates as a percent of MTMC's standard baseline linehaul transportation rate schedule. The actual shipment linehaul costs are not known until a carrier submits an invoice after delivering a shipment. The complexities associated with determining the cost of various quality performance

factors and translating bid rates into dollars would make this method very difficult for MTMC to implement and maintain.

Member Survey

Synopsis

Use member responses to survey questions to establish the level of carrier performance.

Description

In this method, MTMC would request that every member complete a personal property carrier performance survey form and submit it to a PPSO following shipment delivery. Although MTMC could structure and score the responses to such a survey in many different ways, one alternative would be to assign a numerical value to a particular level of satisfaction for every evaluation factor. For example, in response to a question regarding the cleanliness of the moving van's interior, it could offer four levels of satisfaction: excellent = 4; satisfactory = 3; fair = 2; and unsatisfactory = 1.

Assessment

Private-sector companies use this technique extensively, but they relocate relatively few employees. The major advantage of this technique is that it uses the customers (i.e., the individuals moved) rather than a third party to evaluate the carriers. In the DoD environment, however, customer feedback may not be received in a timely manner, if at all. In addition, the evaluations would be subjective, the process would be administratively burdensome because of the program's size, and the translations of the members' quality evaluations into rate adjustments would be difficult.

Indexing

Synopsis

Develop either an adjusted rate or performance score for each carrier based upon bid rates and demonstrated levels of quality performance.

Description

In this method, MTMC would use a mathematical formula to compute an index, expressed as either a Best Value Rate or Best Value Score. It would then use that index to rank the carriers on the appropriate TDRs. The formula would include the carrier's bid rate and selected quality performance factors.

Assessment

These types of evaluation processes are well-tested, objective, and adaptable to personal property transportation services. Because the proposed application would take into account both a carrier's bid rate and selected quality performance factors to define overall performance, MTMC should apply the formula using a standard unit of measure for the factors (such as percentages).

Use of either a Best Value Rate or a Best Value Score would enable MTMC to rank each personal property carrier according to the overall value it offers the DoD.

CONCLUSION

We believe that using indexing methods will enable MTMC to effectively link carriers' quality performance to their bid rates in order to determine best value. Although MTMC could use various ways to structure and apply an index, two – Best Value Rate and Best Value Score – show particular promise. Both identify best value, are easy to use and administer, and provide the flexibility necessary to change and upgrade MTMC's personal property transportation service procurement process.

In the next chapter, we present alternative technical approaches that MTMC could use to guide its application of these two indexing methods.

CHAPTER 3

APPLYING BEST-VALUE TECHNIQUES TO PERSONAL PROPERTY PROCUREMENT

Both of the proposed indexing methods described in the previous chapter are designed to identify carriers that provide the greatest overall value to the DoD. The Best Value Rate identifies a relative level of carrier quality performance, while the Best Value Score provides a composite of the carrier's rate and quality performance. Regardless of the indexing method selected, MTMC should compute a quality index semiannually for each carrier. To compute either index, MTMC needs to

- Select the most important quality performance factors
- Develop the relative degree of importance (weight) of those performance factors
- Use a standard methodology or formula to compute indexes.

We describe each of these steps in more detail below.

SELECTING QUALITY PERFORMANCE FACTORS

A normal shipment cycle encompasses a series of many events, including the award of a shipment to a carrier, delivery of the shipment to final destination, and payment for the services provided. Although MTMC could determine the quality of performance of each of those events and many more, we believe that is unnecessary. Drawing upon the experience of both public- and private-sector applications of vendor evaluation programs, MTMC should focus on the rate a carrier bids and just four performance factors – timeliness of pickup, timeliness of delivery, number of loss or damage claims, and number of turnbacks or pullbacks. It should develop measures for those five factors using the carrier's performance during the most recently completed 6-month rate cycle. Furthermore, it should normalize those measures by expressing them in terms of the percentage of the total number of shipments that were

- Picked-up on time
- Delivered on time (met the required delivery date)

- Free of loss and/or damage
- Free of turnback (by the carrier) or pullback (by the PPSO).

The data for each of these five factors are currently available from MTMC's automated personal property systems.

DEVELOPING WEIGHTS

A critical element of any index is ensuring that each factor comprising the index is fairly and appropriately weighted. The MTMC could use a variety of techniques for determining those weights, but three are particularly applicable:

- Statistical – assign weights through the use of principal component analysis¹
- Subjective – use some type of “expert choice” technique²
- Subjective – use the opinion of one or more recognized experts.

Table 3-1 summarizes the advantages and disadvantages of each of the three techniques.

TABLE 3-1
ALTERNATIVE WEIGHTING TECHNIQUES

Technique	Advantage	Disadvantage
Statistical	Objective, supportable	Requires statistical expertise
Subjective (Expert choice)	Consistent, logical	Somewhat subjective
Subjective (Expert opinion)	Quick, easy to use	Highly subjective

¹Principal component analysis is particularly useful for developing indexes that are based on the interdependence of the variables. For the mathematical treatment of principal components, see M. G. Kendall and A. Stuart, *The Advanced Theory of Statistics*, Volume 3, London: Griffin, 1966.

²Expert choice is an automated decision support process that provides a systematic approach to organizing problems in order to reach informed, logical decisions. It portrays the relationships among all facets of a complex problem and uses quantitative and qualitative information, to include experience and intuition.

Although MTMC could determine the weights using expert choice or expert opinion, we believe determining the weights statistically is the most objective method.

To determine the best-value index statistically (by principal component analysis), MTMC needs to

- Transform the different best-value factors – e.g., on-time pickup, on-time delivery, and damage-free movement – into standard, normal variables by first expressing them as deviations from their means and then dividing by their respective standard deviations. These steps convert each of the best-value factors into a pure number with a mean of zero and variance equal to 1.
- Assign weights to the standard, normal variables so that their inherent variances are reflected as much as possible in the resultant composite best-value index. To obtain a solution, constrain the square of the weights in the composite measure so that they sum to unity.

These steps can be readily accomplished on a personal computer with commercial software.

COMPUTING INDEXES

This section presents a technical approach for each of the two indexing methods and then compares some of the characteristics of the two methods.

Best Value Rates

The Best Value Rate method adjusts each carrier's bid rate based upon the carrier's performance in the four quality areas described previously. Once MTMC has determined the weight for each of the quality performance factors (bid rates are not a weighted evaluation factor in this method), it then computes a Best Value Rate for each carrier, by route, at each origin PPSO.

This method employs an index to determine a carrier's Quality Performance Score and to compute a carrier's Relative Quality Score.³

The MTMC would use the Relative Quality Score to adjust the carrier's bid rate up or down – up if the Relative Quality Score is low, and down if it is high. If the

³The term "relative" in this expression means the carrier's performance in relation to the average performance of all other carriers serving the PPSO.

quality performance of the carrier being evaluated is equal to the average performance of all carriers serving the PPSO, then its Relative Quality Score would be unity (1), and the carrier's bid rate would remain unchanged.

Simple arithmetic can then be used to convert each carrier's bid rate to a Best Value Rate. The process consists of four steps.

- Step 1: Compute a Quality Performance Score using the four weighted quality performance factors.

Quality Performance Score = $W_1(\text{On-Time Pickup Percent}) + W_2(\text{On-Time Delivery Percent}) + W_3(\text{Loss-/Damage-Free Percent}) + W_4(\text{Turnback-/Pullback-Free Percent})$, where the W_i are the relative weights.

- Step 2: Compute a Carrier Average Performance Score using the Quality Performance Scores of all carriers serving the origin PPSO.
- Step 3: Divide the carrier's Quality Performance Score by the Carrier Average Performance Score to produce a Relative Quality Score.

Relative Quality Score = $\text{Quality Performance Score} \div \text{Carrier Average Performance Score}$

- Step 4: Divide the carrier's bid rate by the Relative Quality Score to produce a Best Value Rate (the bid rate adjusted for quality).

Best Value Rate = $\text{Bid Rate} \div \text{Relative Quality Score}$.

The Best Value Rates would then permit MTMC to realign carriers on each TDR.

Best Value Scores

Although this indexing method also uses simple arithmetic, it differs from the above computation in one important aspect: it assigns a weight to the carrier's bid rate in the formula.

Once MTMC has determined the weights for the five evaluation factors, it is ready to compute a Best Value Score for each carrier, by route, at each origin PPSO, using the following formula:

Best Value Score = $W_1(\text{Rate Bid Percent}) + W_2(\text{On-Time Pickup Percent}) + W_3(\text{On-Time Delivery Percent}) + W_4(\text{Loss-/Damage-Free Percent}) + W_5(\text{Turnback-/Pullback-Free Percent})$, where the W_i are the relative weights.

In addition to expressing all units of measure as a percentage, two additional rules for ensuring consistency in the Best Value Score formula are as follows:

- Rule 1 – Each of the five factors comprising the formula (the carrier's rate and four quality factors) is based on a 100 percent maximum.
- Rule 2 – Higher is better.

The four quality factors in the formula are straightforward. For example, if a carrier picks up 97 percent of its shipments on time, then MTMC should use 97 percent in the formula. However, the rate factor is shown in one of three ways:

- A positive percentage, when the bid is less than the MTMC rate schedule
- A zero, when the bid is equal to the MTMC rate schedule
- A negative percentage, when the bid is greater than the MTMC rate schedule.

The Best Value Scores would then enable MTMC to realign carriers on each TDR accordingly.

Comparing the Indexing Methods

Both of the proposed indexing methods link a carrier's rate to the quality of its performance. The Best Value Score, however, has two primary advantages:

- It is more direct; it requires only one computation as opposed to four for Best Value Rate.
- It does not assume a direct relationship between quality costs and bid rates; the Best Value Rate imputes different quality costs to carriers with the same quality record. The result is that carriers may not be treated equally when adjusting bid rates for quality by the Best Value Rate procedure.⁴

⁴This phenomenon is illustrated in the following table:

Carrier	Bid rate (% of MTMC standard)	Relative carrier quality (%)	Best-value rate	Implied quality cost (best-value rate minus bid rate)
A	70	70	100	30
B	98	70	140	42

Note: Carriers A and B have the same quality record, which is 70 percent as good as the industry. Yet, when applied against the bid rate, that same quality record is treated differently: higher for Carrier B (42 percentage points) and lower for Carrier A (30 percentage points). In general, the cost of a late delivery should be the same for both carriers and not higher for Carrier B simply because it bid higher (98 percent) than Carrier A (70 percent).

We believe these advantages provide a strong incentive for MTMC to use the Best Value Score method. Table 3-2 shows how a hypothetical application of the Best Value Score impacts the ranking of carriers for procurement purposes. The example is hypothetical because we have estimated the weights against which the five evaluation factors are applied. (The actual weights will have to be derived if MTMC chooses to test or adopt the Best Value Score concept.) Calculating Best Value Scores for Carriers A, B, and C is shown below (other carriers are calculated similarly):

$$\text{Best Value Score A} = .39(41) + .07(73) + .18(79) + .26(60) + .10(99) = 60.82.$$

$$\text{Best Value Score B} = .39(41) + .07(91) + .18(70) + .26(48) + .10(93) = 56.74.$$

$$\text{Best Value Score C} = .39(41) + .07(54) + .18(73) + .26(63) + .10(100) = 59.29.$$

In these calculations, the sequence of formula factors is bid-rate percent, on-time pickup percent, on-time delivery percent, loss-/damage-free percent, and turnback-/pullback-free percent. Carrier bid rates are stated in terms of a percent above or below the MTMC baseline linehaul standard (100 percent). Therefore, a bid is recorded as the percent of difference between 100 and the bid (in the above example, each of the three carriers bid 59 percent, which is entered into the formula as 41 percent). A bid above the standard is recorded as a negative percent (for example, a carrier bid of 130 percent is shown as - 30 percent).

It can be seen from Table 3-2 that the Best Value Score method does result in a reordering of carriers. Those that perform better move up in rank. That reordering, however, presents a challenge in allocating traffic among the best-value carriers. That challenge is discussed next.

ALLOCATING TRAFFIC TO CARRIERS

Our focus thus far has been on identifying and describing a best-value methodology. However, the procedures MTMC uses to allocate traffic among best-value carriers are as important as the techniques used to determine best value.

Under the PPTMR's current shipment allocation procedures, MTMC awards shipments equitably, by weight, to carriers within each rate group. However, indexing methods result in a revised TDR that lists carriers based on the highest to

TABLE 3-2

CARRIER RANKING BY BID RATE AND BEST VALUE SCORE

Carrier	Bid rate (weight .39%)	Bid rate rank	OTP (weight .07%)	OTD (weight .18%)	L/DF (weight .26%)	T/PF (weight .10%)	BVS	BVS rank
A	59 (41)	1	73	79	60	99	60.82	2
B	59 (41)	2	91	70	48	93	56.74	6
C	59 (41)	3	54	73	63	100	59.29	4
D	65 (35)	4	99	82	70	100	63.54	1
E	65 (35)	5	100	89	58	88	60.55	3
F	83 (17)	6	58	75	75	95	53.19	11
G	88 (12)	7	75	100	63	94	53.71	10
H	90 (10)	8	43	90	87	89	54.63	8
I	90 (10)	9	100	83	91	79	57.40	5
J	90 (10)	10	81	100	55	99	51.77	13
K	100 (0)	11	92	82	88	100	54.08	9
L	100 (0)	12	64	88	90	93	53.02	12
M	100 (0)	13	87	93	87	97	55.21	7
N	110 (-10)	14	100	94	83	96	51.20	14
O	120 (-20)	15	83	91	100	95	49.89	15
P	120 (-20)	16	56	82	90	92	43.48	16

Notes: OTP=on-time pickup; OTD=on-time delivery; L/DF=loss/damage free; T/PF=turnback/pullback free; and BVS = Best Value Score.

lowest best-value rates or scores – effectively doing away with rate groups. Thus, a new scheme for allocating shipments needs to be devised. We see three alternatives.

The first option is to award all traffic to the single best-value carrier. In our judgment this is not practical because, in most situations, a single carrier is not capable of absorbing this volume of traffic. Further, performance data for excluded carriers would quickly become dated, making it difficult to determine their Best Value Rates or Scores.

Under the second option, MTMC would recognize the rate groups and continue to award shipments evenly within them. Consequently, the Best Value Rates or Scores would be used only to determine which carrier gets the first shipment. This

option would be easy to implement and administer, for it continues current practices. However, the practice of awarding approximately equal shipment weights to all carriers within the same rate group tends to defeat the best-value concept and fails to provide the necessary incentives for quality performance.

The third option, Best Value Clusters, would call for MTMC to award shipments to carriers clustered by Best Value Rates or Best Value Scores. This practice would give all carriers an incentive. It also would maintain a degree of equitable distribution and may therefore be easier for carriers to accept. To illustrate how MTMC might cluster its carriers according to Best Value Scores, Table 3-3 shows a proposed clustering for a route serviced by 50 carriers. The carrier identification numbers correspond to the Best Value Scores arranged from highest to lowest (i.e., Carrier 1 has the highest Best Value Score and Carrier 50 has the lowest). Each group of carriers is considered a cluster. In this scheme, MTMC would allocate 50 percent of the shipments to the top 10 carriers, 30 percent to the next 10 carriers, etc. Each cluster should contain an equal number of carriers except for the last cluster, which should contain all of the remaining carriers. This ensures that no carrier in a lower cluster gets more traffic than any carrier in a higher cluster.

TABLE 3-3
POTENTIAL APPLICATION OF BEST VALUE CLUSTERS

Cluster	Carrier identification number	Allocation (%)
1	1 - 10	50
2	11 - 20	30
3	21 - 30	15
4 ^a	31 - 50	5

^a All remaining carriers.

Under this cluster concept, MTMC could award shipments equally (by weight) among all carriers in a cluster or, alternatively, a disproportionate share to the top carriers (e.g., the top carrier in the top cluster would receive 50 percent of the traffic set aside for that cluster).

Either way, we believe how MTMC allocates traffic among its best-value carriers is as important as how it calculates best value. Because of the variety of alternatives in both calculating best value and allocating traffic, we believe it is in MTMC's best interest to test, on a small scale, the various options at one or more sites. Those combinations of alternative approaches that prove to be most effective can then be expanded throughout the DoD.

OTHER CONCERNS

A best-value indexing method, like any new and untested procedure, raises some concerns that MTMC needs to resolve before it moves forward with implementation. We present three of those concerns in this section, along with some possible solutions.

One concern is how MTMC would integrate new carriers into the process. Any new carrier accepted for shipment award during the evaluation period will not have a shipment record that MTMC could use to compute either a Best Value Rate or Best Value Score. For those carriers, MTMC could assign an average Best Value Rate or Score, with the average computed from either historical data or the previous evaluation cycle data. New carriers would still need to submit low bids to receive any shipments, however.

A second concern is how MTMC would treat carriers that were assigned to a shipment allocation cluster but received no shipments during the evaluation period (resulting in MTMC being unable to compute a Best Value Rate or Score based on demonstrated quality performance). This is a common occurrence today. Again, for these carriers, MTMC could use the average of their Best Value Rates or Scores over all the other routes for which shipment awards were made during that period.

The third concern is how MTMC would treat high- and low-volume carriers. The MTMC can expect to be challenged by any carrier awarded only a few shipments if that carrier is clustered with others that received many shipments. To avoid such challenges, MTMC could designate volume ranges (for example, low, medium, and high) and categorize carriers accordingly when computing each carrier's Best Value Rate or Score. That solution would also force MTMC to develop a separate weighting scheme for each range.

SUMMARY

In this chapter, we examined various DoD personal property transportation program practices that are key for structuring a best-value concept. We also described two alternative indexing approaches for determining best-value carriers, proposed alternative methods for allocating shipments to those carriers, and identified some concerns and potential solutions. Because of the complexities of initiating and sustaining a best-value procurement program, we believe it is in MTMC's best interest to test, on a small scale, those techniques and alternative approaches outlined in this report. The next chapter provides details on such a test.

CHAPTER 4

TESTING BEST-VALUE PROCUREMENT PRACTICES

Both the Best Value Rate and Best Value Score methods should permit PPSOs to award personal property shipments to carriers based upon the highest overall value considering both linehaul rates and performance quality. Nonetheless, MTMC should exercise caution as it moves forward with the concept of best value in personal property transportation service procurement. It already receives some increase in "value" through TQAP, which requires carriers to attain a minimum quality score to remain eligible for shipment award. As a consequence, any best-value method that MTMC adopts must result in a substantial improvement over current practices. To demonstrate the potential of best value, we recommend that MTMC test it in an operating environment. In this chapter, we propose a plan for such a test.

OVERVIEW

In keeping with MTMC's desire to develop a best-value concept using only Code 1 (door-to-door motor van) transportation services, we propose that it conduct the test using actual shipment data. The specific objectives of the test should include the following:

- Select a best-value indexing method
- Develop a user-friendly computer program to support best-value procurement
- Adopt enhanced shipment allocation practices
- Decide whether best-value procurement satisfies DoD's requirements.

At a minimum, we further propose that MTMC structure its test to accommodate the procedures described below.

- Test alternative indexing methods by computing both a Best Value Rate and a Best Value Score for all carriers serving selected test routes, at two or more PPSOs. These PPSOs should encompass more than one Military Service, represent varied workloads, and have TOPS capability. We further suggest that MTMC coordinate with the Military Services to identify appropriate test sites and that it prepare and publish a test plan that lays out the

objectives of the test and the responsibilities and requirements of the test participants.

- Test alternative carrier selection and traffic allocation practices at each of the test sites.
- Apply the recommended carrier selection and shipment allocation procedures to the Best Value Rates and Best Value Scores to determine which combination of alternatives is most practical and worthwhile.

We estimate that 8 months should be a sufficient period to conduct a thorough test. Figure 4-1 presents the major milestones and proposed timelines for such a test.

Milestone	Month							
	1	2	3	4	5	6	7	8
Coordinate test plan with Military Services								
Select PPSOs to serve as test sites								
Select the start/end dates of the carrier performance evaluation period								
Collect carrier rate and quality performance data								
Determine weighting scheme for each indexing method								
Calculate a Best Value Rate and Score for each carrier								
Paper-test traffic award and allocation alternatives								
Conduct test								
Analyze test results								
Recommend a best-value process								
Detail a best value implementation plan and resource requirements								

FIG. 4-1. BEST VALUE TEST MILESTONES AND SCHEDULE

SUMMARY

Industry is using various techniques to assure best value in transportation procurement. Many of those techniques hold promise for the DoD. However, faced with alternative indexing and traffic allocation options, MTMC needs to demonstrate

which combinations offer the most practicality, utility, and cost-effectiveness. We believe the product of that demonstration test is likely to be a model for the procurement of all transportation services in the future.

APPENDIX A
GTE SERVICE CORPORATION

TITLE

Household Goods Quality Evaluation Program

PROGRAM DESCRIPTION

In response to the financial cost and emotional nature of moving employees' household goods, GTE developed in 1987 a program to measure and enhance the quality of service provided by its contracted household goods carriers. GTE relocates 3,500 personnel annually, at a total cost of approximately \$12 million, under 3-year contracts with four household goods carriers.

The primary features of GTE's household goods movement program include the following:

- Centralized bids from carriers with decentralized (by region) booking of shipments with carriers
- No tonnage or shipment guarantees to carriers
- Carriers selected by a committee.

That program makes extensive use of quality standards and supporting systems to measure the level of service provided by its household goods carriers. It currently calls for

- Six-month evaluation cycles
- Completion of a quality rating form by each relocating employee
- Stringent quality standards¹
 - ▶ On-time pickup, 99 percent
 - ▶ On-time delivery, 99 percent

¹GTE *Household Goods Quality Evaluation*, 28 April 28 1992.

- ▶ Frequency of loss or damage, 12 percent or less
- ▶ Amount of loss or damage, \$300 or less
- ▶ Pre-move survey performed, 100 percent
- ▶ Overall service rating, 90 percent "excellent/good"
- ▶ Overall service rating, 2 percent or less "poor"
- ▶ GTE personnel rating, 95 percent "would use again."

The core of GTE's program is the shipment evaluations provided by relocating employees. Those evaluations determine the share of GTE's business that each carrier receives and how much it is paid for each shipment. In early 1989, GTE began an incentive pay system under which it pays carriers a percentage above or below the contracted rate depending upon the results of the employee evaluations: shipments rated excellent are paid at 108 percent; good at 105 percent; and poor at 90 percent. In addition, carriers that meet or exceed specified quality standards receive annual rate adjustments.

PROGRAM RESULTS

The first household goods carrier evaluations in 1987 revealed a variety of quality problems: 92 percent on-time pickup, 89 percent on-time delivery, and 35 percent frequency of loss and damage claims. In addition, only 76 percent of GTE employees noted they would use the same carrier in a subsequent move.²

When the evaluation results and relative carrier rankings were provided to relocating employees, who have the option of selecting a carrier from GTE's approved list, the carrier with the highest quality rating immediately doubled its share of GTE's business. Similarly, the carrier with the lowest quality rating saw a significant decrease in its share of GTE business.

Although the program quickly led to an increase in the quality of carrier performance, the carriers were still not routinely meeting GTE's standards 18 months later. That triggered the 1989 incentive pay program. The associated

²Information in this paragraph was taken primarily from *DISTRIBUTION* magazine, "Pay for Performance Boosts HHG Service," pages 64-68, November 1990.

18 percent spread (from 90 percent to 108 percent) in revenue provided the necessary incentive for the carriers to make further improvements in performance.

- Overall service quality and ratings of "would use again" jumped to 90 percent.
- Damage frequency dropped to 11 percent, exceeding the GTE standard.

This emphasis on quality clearly changed the focus of GTE's household goods movement program from lowest transportation cost to quality service at lowest overall cost. The results are manifested both in more satisfied employees and improved financial benefits to GTE and the carriers.

APPENDIX B
EASTMAN KODAK COMPANY

TITLE

Performance Measurements/Excellence Award Program

PROGRAM DESCRIPTION

The Eastman Kodak Company measures the performance of carriers that it uses to relocate employees to recognize excellent service and to grant national and regional awards to the best carriers. In 1992, Kodak contracted with four carriers and two agents to relocate approximately 2,300 employees.

Kodak makes shipment awards to carriers only on the basis of quality, primarily because the carriers' rates are very similar. In assessing the quality of carrier performance, Kodak considers three operational factors, two administrative factors, and customer surveys. Table B-1 shows the relationships among those factors.

TABLE B-1
KODAK'S CARRIER PERFORMANCE MEASURES

Performance categories					
Operational performance (50%)		Administrative performance (30%)		Customer survey (20%)	
Factor	Maximum point value	Factor	Maximum point value	Factor	Maximum point value
On-time service	25	Shipment registration	15	Customer rating	20
Claims incidents	15	Document scanning	15		
Claims value	10				

Operational Performance

Kodak evaluates on-time service using a basis of 25 points, with 100 percent on-time service earning 25 points and performance at less than 95 percent earning 0 points. It also monitors the number of claims filed as a percentage of total shipments (claims incidents), awarding carriers 15 points for no claims and 0 points for performance at 1.51 percent or greater. The dollar value of claims as a percentage of revenue (claims value) is another important factor. Kodak awards carriers 10 points for no claims and 0 points for a claims value percentage of 1.51 or greater.

Administrative Performance

Accurate shipment registration reflects the number of registration errors as a percentage of the total number of shipments registered. Kodak measures the carrier's performance in registering shipments using a scale that ranges from 15 points for 100 percent performance to 0 points for performance below 95 percent. Kodak is also concerned with the carrier's accuracy in submitting documents for automated scanning. Measuring the carrier's accuracy as a percentage of the total number of product movements, Kodak awards 15 points for 100 percent performance and 0 points for performance below 95 percent.

Customer Survey

The third major component of Kodak's program is customer surveys. Those surveys measure how relocating employees perceive the quality of the services that they received from carriers. The annex is a copy of Kodak's customer survey form for rating carrier performance. The point values for the ratings shown on the form are as follows:

- Excellent/very satisfied 4
- Very good/satisfied 3
- Good/neither satisfied/dissatisfied 2
- Fair/somewhat dissatisfied 1
- Poor/very dissatisfied 0

PROGRAM RESULTS

During the second quarter of 1992, Kodak awarded 520 shipments to its four carriers and two agents. All 520 shipments were packed, loaded, and delivered on time, for 100 percent scores. Those same shipments resulted in the claims experience shown in Table B-2. (Kodak's 1991 experience is also shown for reference.)

TABLE B-2
KODAK CLAIM EXPERIENCE
 (2nd Quarter, 1992)

Carrier ^a	Claims ratio (%) ^b		Value of average claim (\$)	
	2nd Quarter 1992	1991	2nd Quarter 1992	1991
1	2.7	4.5	42	300
2	12.5	14.9	446	658
3	9.9	7.4	316	355
4	18.1	23.1	302	283
5	8.7	13.6	624	368
6	10.5	-	254	-
Average	11.0	10.7	361	412

^a Includes four carriers and two agents.

^b The ratio of shipments with claims against total shipments, expressed as a percent.

ANNEX TO APPENDIX B



Kodak Transportation Quality Survey

Dear Customer,

We at Kodak are dedicated to achieving excellence in every service provided to our customers. Your input is essential for helping us to constantly improve. You recently experienced our equipment carrier service. Will you please take a moment and fill out the carrier evaluation questionnaire below.

Thank you in advance for sharing your valued opinion with us.

T.M. Golomb
Manager Domestic General Transportation
Eastman Kodak Company

Please rate the following by checking the appropriate box!

	EXCELLENT	VERY GOOD	GOOD	FAIR	POOR
Equipment delivered/picked up when expected:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> (19)
Professionalism of delivery/pickup crew:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> (32)
Efficiency of delivery/pickup crew:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> (45)
Courtesy of delivery/pickup crew:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> (58)
	VERY SATISFIED	SATISFIED	NEITHER SATISFIED/DISSATISFIED	SOMEWHAT DISSATISFIED	VERY DISSATISFIED
Your level of satisfaction with delivery/pickup service:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> (71)

Remarks: _____

If you are dissatisfied with any of the above, would you like a Kodak representative to contact you? Yes No (72)

Please refold with the Business Reply Mail panel facing out, seal and mail.

APPENDIX C
MOTOROLA, INC.

TITLE

Total Cost Measurement System

PROGRAM DESCRIPTION

Motorola has an equivalent of a "best-value" system to evaluate the quality of the products and services provided by its suppliers. In operation since 1989, the Total Cost Measurement System (TCMS) is an automated program for tabulating carrier performance data.

The TCMS identifies the suppliers that provide the highest quality goods and services, which serves as an incentive for them to provide even better goods and services. It also identifies the suppliers unwilling or unable to meet Motorola's quality standards. Those suppliers are subsequently denied additional business from Motorola.

Motorola currently uses three van carriers to relocate employees' household goods and to move sensitive electronic components. A Transportation Council, including transportation managers from each of Motorola's 10 major business areas, negotiates 3-year contracts with the carriers, which may use any local agent they choose.

QUALITY PROGRAM

The TCMS considers several performance factors and assigns weights (i.e., the relative degree of importance, as judged by the "expert opinion" of Transportation Council members) to each. The weight and the composition of each factor are shown below.

- Cost (10 percent)
 - ▶ The number of loss or damage claims filed, expressed as a percentage of the number of bills generated.

- ▶ The number of claims paid expressed as a percentage of the number of bills generated.
- **Quality (10 percent)**
The percentage of bills that contained errors processed through invoice payment companies.
- **Service (15 percent)**
Transportation Council members subjectively rate each carrier on a variety of service factors, such as proof of delivery, customer service, and carrier representation.
- **Delivery (65 percent)**
The percentage of on-time delivery.

Each quarter, Motorola discusses the performance scores with each carrier. Carriers with scores below 1.2 (1.0 is excellent and 2.0 is assigned to carriers that provide unacceptable performance) are eligible to compete for traffic and receive a quality performance award.

PROGRAM RESULTS

Motorola credits TCMS with

- Reducing the number of its suppliers, including carriers
- Providing an incentive for good suppliers to improve their service
- Enhancing its internal quality program.

APPENDIX D

XEROX CORPORATION

TITLE

Carrier Selection and Measurement System

PROGRAM DESCRIPTION

The Xerox Corporation provides management and logistics services to its business elements through Via Xerox, a wholly owned subsidiary. Via Xerox manages and oversees the relocation of approximately 1,000 to 1,500 employees annually, at a total cost exceeding \$7 million. It currently uses 10 agents representing 8 carriers.

Via Xerox prescribes stringent quality standards for its contract carriers. Those standards include full replacement of lost/damaged items, guaranteed pickup and delivery dates, and storage-in-transit. The carriers must also designate a dedicated coordinator for Xerox shipments, ensure no seasonal rate increases, offer corporate discounts and frozen tariffs, and demonstrate geographic strength.

The Carrier Selection and Measurement System (CSMS) – Via Xerox's automated carrier selection, evaluation, and measurement program – evaluates carrier performance on the basis of

- Customer satisfaction, measured by the results of surveys completed by relocating employees. (The annex provides a copy of the survey form.)
- Claims ratio, measured in terms of the number of claims against the number of moves, number of claims settled, and claims dollars paid.
- Billing quality, measured in terms of the number of billing errors.

Via Xerox evaluates each of these factors independently; it does not "roll-up" the results. That process functions as follows:

- Upon delivery of a relocating employee's household goods to destination, the employee completes the survey form; the current return rate is 46 percent.

- When Via Xerox receives a completed survey, it date-stamps the form, reviews the contents, and files the results with other surveys received that month.
- At the beginning of the following month, Via Xerox enters the results of each survey into the CSMS database and creates three reports:
 - ▶ A carrier report that shows carrier rankings for either the most recent month or year-to-date
 - ▶ A Via Xerox report that is used to compute the internal CSMS ratings
 - ▶ A claims report that provides information on the ratio of claims.
- Via Xerox uses the reports to compute an agent's "stack rank" (rating in relation to the others) and the percent of "Excellent/Very Good" ratings.

The CSMS requires completed surveys on at least 33 percent of an agent's moves to qualify for ranking. Via Xerox sends the CSMS results, accompanied by a letter of issues or reinforcement, to all agents monthly. It also reviews all scores and issues with the agents quarterly.

Despite the three CSMS evaluation areas, customer evaluations, as documented on the survey form, comprise the core of the CSMS system. The company's emphasis on customer satisfaction stems from its conviction that a satisfied customer is the key to business and profit growth.

PROGRAM RESULTS

The CSMS is a new initiative. Although it has accumulated little historical data, Via Xerox has already realized improvements in agent performance and expects further improvement. Through the first 8 months of 1992, agent ratings have averaged between 2.59 and 3.15 (the target is 3.30) and their Excellent/Very Good ratings have averaged between 59 and 83 (Via Xerox's target is 85).

ANNEX TO APPENDIX D

CUSTOMER: _____
 MOVE ORIGIN: _____
 DESTINATION: _____
 Survey Mailed to Customer on: _____
 Van Line/Agent: _____

FOR VIA XEROX USE ONLY	
Delivery Date:	_____
B/A:	_____
O/A:	_____
D/A:	_____
C.O.D.:	_____
Driver:	_____

CARRIER COMMITMENTS:

1) Was packing, loading, delivery and unpacking (if requested) completed within the agreed spread dates?
 Yes No

IF NOT, PLEASE EXPLAIN: _____

2) Approximately what percent of the boxes, supplied and packed by the Carrier, did the Carrier also unpack, if any?
 _____ % Unpacked

CARRIER COMMUNICATIONS:

1) How many work days after you first spoke with Michele Cavaliere from Via Xerox, were you first contacted by the Carrier?
 _____ Work days

2) Please check indicating each period below during which the Carrier contacted you.
 Pre-Packing/Re-Confirm Dates Packing Loading Delivery Post Delivery

3) If you gave the driver, or the Carrier, your destination telephone number, did either contact you the day prior to your actual delivery?
 Yes No

4) Please evaluate the overall quality of communications from the Carrier. (Consider frequency, helpfulness, responsiveness, professionalism, knowledge, etc.)
 EXCELLENT VERY GOOD GOOD FAIR POOR

Comments: _____

CARRIER SUPPORT PERSONNEL:

(Consider each's quality, efficiency, professionalism, responsiveness, etc.)

1) ESTIMATOR
 EXCELLENT VERY GOOD GOOD FAIR POOR

Comments: _____

2) PACKERS
 EXCELLENT VERY GOOD GOOD FAIR POOR

Comments: _____

3) LOADERS
 EXCELLENT VERY GOOD GOOD FAIR POOR

Comments: _____

4) DRIVER
 EXCELLENT VERY GOOD GOOD FAIR POOR

Comments: _____

5) UNLOADERS
 EXCELLENT VERY GOOD GOOD FAIR POOR

Comments: _____

6) UNPACKERS
 EXCELLENT VERY GOOD GOOD FAIR POOR

Comments: _____

CARRIER'S CLAIM SETTLEMENT PROCESS:

1) If you experienced any loss or damage, what would you estimate the repair costs (replacement cost if item is not repairable) to be? \$ _____

2) Are you filing a claim for this loss/damage? Yes No
 - IF YES, have you filed your claim yet? Yes No
 - IF YES, has your claim been settled yet? Yes No

3) Please evaluate the overall quality of the Carrier's claims settlement process. (Consider responsiveness, professionalism, filing ease, reasonableness.)

EXCELLENT VERY GOOD GOOD FAIR POOR

Comments: _____

CARRIER'S OVERALL PERFORMANCE EVALUATION: (Considering all of the above.)

EXCELLENT VERY GOOD GOOD FAIR POOR

VIA XEROX MOVING SERVICES' PERFORMANCE EVALUATION:

Coordinator: Michele Cavalieri

1) Please check each period below during which you were contacted by Via Xerox.
INITIALLY POST ESTIMATE/PRE-PACKING POST DELIVERY

2) Please evaluate the helpfulness of any support material/advice you were given.
EXCELLENT VERY GOOD GOOD FAIR POOR

3) Did you require Via Xerox' assistance to resolve an issue(s) with the Carrier (or one of its support personnel)?

YES NO

- ISSUE(S): _____

- Please evaluate Via Xerox' effectiveness in helping resolve this issue(s).

EXCELLENT VERY GOOD GOOD FAIR POOR

4) Please evaluate the overall quality of the support you received from Via Xerox. (Consider responsiveness, professionalism, knowledge, follow up, etc.)

EXCELLENT VERY GOOD GOOD FAIR POOR

WE WOULD APPRECIATE ANY ADDITIONAL COMMENTS REGARDING YOUR MOVE AND/OR ANY SUGGESTIONS FOR FUTURE "VIA XEROX" IMPROVEMENTS OR NEW SERVICE OFFERINGS.

APPENDIX E
TENNESSEE VALLEY AUTHORITY

TITLE

None

PROGRAM DESCRIPTION

The Tennessee Valley Authority (TVA) relocates approximately 300 employees annually, with most moves occurring within Tennessee or to contiguous states. As a result, TVA uses only a few intrastate carriers, one interstate/regional carrier, and one national carrier.

The TVA, which is not subject to the Federal Acquisition Regulation, uses 5-year contracts with annual renewal options. Its primary emphasis is to offer shipments to minority carriers, with awards to women-owned, small business, and large carriers, following in that order.

The TVA's carrier evaluation program depends entirely on carrier performance surveys completed by relocating employees. It uses a carrier performance rating, computed semiannually from the employees' survey forms, as a multiplier of the rates offered by carriers during contract negotiations. Those ratings are based upon employees' survey responses to four performance factors, which TVA weights subjectively using expert opinion. The TVA's current weighting scheme is communications, 20 percent; service, 40 percent; appearance, 20 percent, and loss/damage, 20 percent.

All carriers must show continuing improvement in all four of performance in order for TVA to retain them.

PROGRAM RESULTS

Not available.

APPENDIX F
GENERAL SERVICES ADMINISTRATION

TITLE

Household Goods Carrier Evaluation

PROGRAM DESCRIPTION

The General Services Administration (GSA) relocates approximately 20,000 Federal employees annually using 266 approved carriers over 254 domestic routes.¹

Initiated in 1989, GSA's program uses survey data to compute a carrier "Performance Index." Based upon input from relocating employees, which comprise 70 percent of the index, and Government bill of lading (GBL) issuing offices (the other 30 percent), the Performance Index in turn feeds into a carrier's overall "Value Index," which GSA computes for each carrier over each route it serves. The Value Index consists of the Performance Index (70 percent) and the carrier's offered "Discount Index" (30 percent), which GSA computes by dividing the carrier's bid rate by the average carrier bid rate.

The GSA program has several unique features:

- Its evaluations cannot be argued or appealed by carriers because the responses are subjective.
- It requests information on some factors that many carrier evaluation programs do not consider, such as workers' courtesy and responsiveness to problems. (See the annex for a copy of the form that GSA uses to collect carrier performance information.)
- It uses expert opinion to determine the weights of the various evaluation factors, subject to negotiation with carrier representatives.
- It does not provide for any formal or equitable tonnage distribution to carriers.

¹According to GSA procedures, each of the 266 carriers must be a principal operating company.

- It operates on an annual evaluation cycle.
- It sets high minimum Performance Index standards – 95 percent in 1992, 97 percent in 1993, and 100 percent in 1994.

In addition, GSA does not compute a Performance Index for carriers that serviced only one shipment or generated only one survey form during the evaluation period; it requires a minimum of two in each case.

PROGRAM RESULTS

Not available.

ANNEX TO APPENDIX F

HOUSEHOLD GOODS CARRIER EVALUATION

PRIVACY ACT NOTICE: The information on this form is solicited under Title 38, United States Code, and will be used to monitor and control the household goods carrier's performance. The information may be furnished to the carrier involved for his evaluation. Your disclosure of this information is voluntary and will aid in our overall mission of making certain transferees receive satisfactory performance in the shipment of their household goods.

INSTRUCTIONS: Complete this form upon delivery of household goods to new duty stations. Then send to your GBL Issuing Officer for their evaluation and submittal to GSA, ATTENTION GBL ISSUING OFFICER. Once you have completed your evaluation of the carrier, mail to General Services Administration-6FEX, 1500 East Bannister Road, Kansas City, MO 64131.

NAME AND PRESENT ADDRESS OF EMPLOYEE		OLD DUTY STATION	
		NEW DUTY STATION (include ZIP Code)	
CURRENT BUSINESS TELEPHONE NO.	HOME TELEPHONE NUMBER	PICKUP DATE	DELIVERY DATE
CARRIER NAME ON GBL		GBL NUMBER	GSA CONTROL NUMBER
			ESTIMATE OF ANY LOSS OR DAMAGE \$

RELOCATING EMPLOYEE'S RESPONSE: How would you rate your satisfaction with the carrier? (Circle response)

	Very Unsatisfied	Somewhat Unsatisfied	Neither Unsatisfied Nor Satisfied	Somewhat Satisfied	Very Satisfied
Quality of packing	1	2	3	4	5
Delivering items with little or no damage	1	2	3	4	5
Having workers who show personal courtesy	1	2	3	4	5
Delivering within the scheduled time frame	1	2	3	4	5
Clearly communicating the services to be provided	1	2	3	4	5
Being responsive in resolving problems	1	2	3	4	5
How would you rate the overall quality of service	1	2	3	4	5

GBL ISSUING OFFICER'S RESPONSE: How would you rate your satisfaction with the carrier? (Circle response)

Having courteous persons help you when tracing a shipment	1	2	3	4	5
Keeping you informed of any changes occurring during the move	1	2	3	4	5
Being flexible in meeting special employee or agency needs	1	2	3	4	5
How would you rate the overall quality of the service	1	2	3	4	5

COMMENTS: Use additional sheets, if necessary.

SIGNATURE OF EMPLOYEE	DATE	
SIGNATURE OF GBL ISSUING OFFICER	DATE	TELEPHONE NUMBER

GENERAL SERVICES ADMINISTRATION

GSA FORM 3000 (REV. 8-80)

REPORT DOCUMENTATION PAGE

Form Approved
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13. ABSTRACT (Maximum 200 words)

This report builds on public- and private-sector vendor evaluation programs to identify how the Military Traffic Management Command (MTMC) can obtain best value when buying transportation services from personal property carriers. The report describes a best-value concept and makes two primary recommendations: (1) That MTMC adopt an indexing methodology to compute either a Best Value Rate or a Best Value Score for each carrier by incorporating both carriers' linehaul transportation rates and quality of performance. The rate or score is used to rank carriers on the Traffic Distribution Records maintained by each Personal Property Shipping Office. (2) That MTMC enhance its personal property traffic allocation and shipment distribution procedures to make them compatible with the proposed best-value method. The report also describes a test process for the proposed concept, recommends a test schedule, and identifies major test milestones.

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