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## MEASURING THE FINANCIAL MANAGEMENT PROCESS

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Under the D-M-I methodology, after a process has been defined (as described in Chapter Two), the next step is to measure its current performance. VM calls for measurement along three dimensions: time, quality, and cost. Based on what was learned during the definition stage and data availability, the FM PIT identified three metrics: (1) the quality of price information, (2) the quality of credit information, and (3) the financial wait time (FWT), defined as the time it takes for a supply transaction to be closed out in the financial system. These are three performance metrics for which the current Army information systems provide the data needed to understand current performance and to monitor the effects of improvement efforts (which are discussed in Chapter Four). In the remainder of this chapter, we discuss these metrics and demonstrate some of the diagnostic insights they can provide.

### QUALITY OF PRICE INFORMATION

A customer receives high-quality price information if he knows the price he will be charged at the time the requisition is placed.<sup>1</sup> This is not always the case in the Army's current price policy. Perhaps the best way to understand the problems of the quality of price informa-

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<sup>1</sup>Using current Army systems, it is not technically possible to measure price changes from the ULLS/SAMS request through to actual receipt price. However, the price initially recorded in SARSS (which may be different from the ULLS/SAMS price) is carried on a STARFIARS transaction record. Using STARFIARS, it is possible to count the number of transactions on which the price changes between initial requisition and receipt. The goal for "perfect price quality" in this case is zero price changes.

tion is to look first at the problem from the unit's perspective and then take a more overarching installation perspective.

### **The Unit Perspective**

During the FM PIT's process walks at Army installations, they observed many conscientious clerks manually adjusting their units' records of prices to correspond to the latest computer printouts. At Fort Campbell, the price reconciliation process worked as follows. The units received weekly TUFMIS reports from the battalion supply officer (S4). The TUFMIS report lists transactions in document number sequence and is organized by class of supply. It includes the unit prices obtained from the catalog and sums the cumulative expenditures for the week. The S4 receives the dCAS report monthly. The monthly dCAS report is organized by element of resource and includes more than supply information. It is used to compile a spreadsheet that accounts for temporary duty (TDY), government bills of lading (GBL), credit card charges, military interdepartmental purchase requests (MIPRs), and contract funding, not all of which are captured on TUFMIS. The TUFMIS report is then reconciled against the supply information in the dCAS report. The dCAS report is then reconciled with the S4's spreadsheet.

Figure 3.1 reproduces an actual supply reconciliation sheet from one of the installations visited by the FM PIT. It shows numerous requests by document number in which the request price has been marked out and replaced by the receipt price. Most of the differences between requisition price and receipt price were very small. This reconciliation is typical of what the FM PIT has observed at every installation visited: Forts Campbell, Hood, Bragg, Polk, Lewis, and Sill, and Carlisle Barracks. Many clerks have to review their records for differences between the requisition price and the receipt price, but usually they only examine major differences.

### **The Installation Perspective**

Because of the FM PIT's concern about the workload being generated by this reconciliation process, we sought to identify the fre-

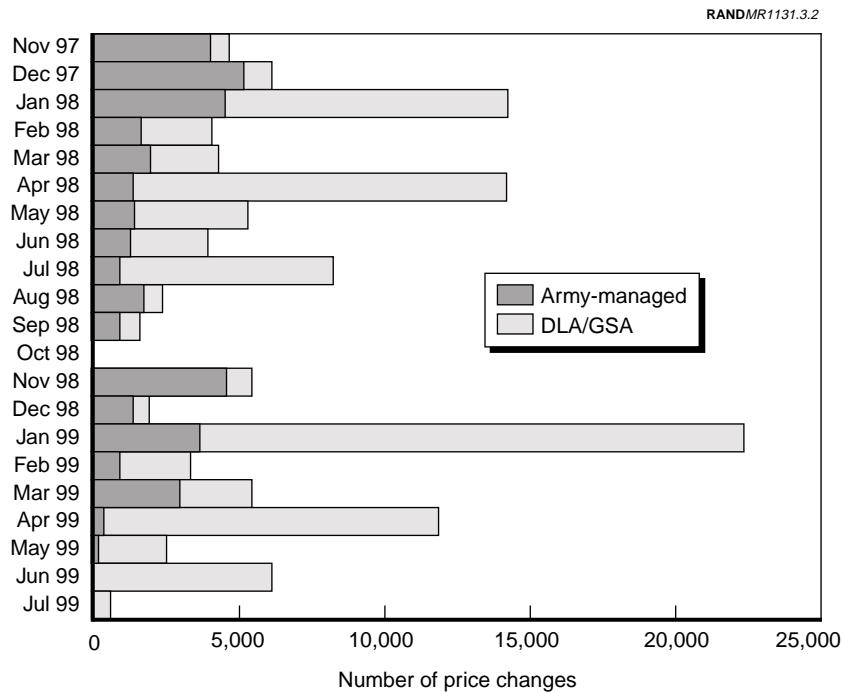
W25BDV-6318-0013		53.19	53.19	53.19	Adj OBG/R
		53.22	53.22		
W25BDV-6318-0017		134.99	134.99	134.99	Adj OBG/R
		135.00	135.00		
W25BDV-6318-0020		229.65	229.65	229.65	Adj OBG/R
		229.66	229.66		
W25BDV-6319-0008		495.80	495.80	495.80	Adj OBG/RE
		495.81	495.81		
W25BDV-6319-0019		201.26	201.26	201.26	Adj OBG/RE
		201.36	201.36		
W25BDV63240011	E	122.84	122.83	122.83	Adj OBG/RI
W25BDV63250027	E	1.100.46	.00	.00	
W25BDV63250033	E	12.88	12.88	12.27	Adj OBG/RE
W25BDV63250035	E	1.44	1.43	1.43	Adj OBG/RE
W25BDV63240015	E	21.70	21.69	21.69	Adj OBG/RE
W25BDV63260026	E	78.00	77.35	77.35	Adj OBG/RE
W25BDV63270035	E	203.23	.00	.00	
W25BDV63310008	E	18.00	18.56	18.56	Adj OBG/REC
W25BDV63310022	E	18.00	17.82	17.82	Adj OBG/REC
W25BDV63310034	E	29.28	29.27	29.27	Adj OBG/REC
W25BDV63380008	E	4.71	4.69	4.69	Adj OBG/REC
W25BDV63380016	E	24.00	23.99	23.99	Adj OBG/REC
W25BDV63400007	E	330.54	330.53	330.53	Adj OBG/REC
W25BDV63410002	E	174.06	174.04	174.04	Adj OBG/REC
W25BDV63440019	E	8.35	8.35	.00	

Figure 3.1—Example of Retail Stock Fund Manager’s Attempt to Account for Price Differences

quency and timing of price changes. DoD regulations state that most prices should only change once a year,<sup>2</sup> but we wanted to determine how frequently price changes actually appeared in customer records. First, we analyzed STARFIARS and AMDF data to determine the extent of price changes. We also asked financial managers how the prices are recorded in the financial system. Finally, we combed through Army documents on SARSS and STARFIARS to understand the logic behind the financial systems, and we reviewed Army and DoD price regulations.

Figure 3.2 presents measurements of the quality of price information in terms of the number of price differences that are observable using AMDF catalog data. This analysis clearly showed that price differ-

<sup>2</sup>“A standard price will not be changed during the fiscal year without the prior approval of the Office of the Under Secretary of Defense (Comptroller) except as provided in paragraph I.5.” (DoD Financial Management Regulation, Vol. 11B, December 1994, p. 55-17)



SOURCE: LOGSA.

**Figure 3.2—Frequency of Catalog Price Changes**

ences occur throughout the year, with large spikes in April and January. Previously, many believed that prices only changed at the end of the fiscal year, even though there are some exceptions to the DoD regulations on price changes.<sup>3</sup> Figure 3.2 does not show price changes in October, because most prices change at the end of the fiscal year, when a new surcharge is established and latest acquisition costs are

<sup>3</sup>DoD regulations (*DoD Financial Management Regulation*, Vol. 11B, December 1994, p. 55-21) allow prices to be changed within a given fiscal year for the following: (1) subsistence items sold to commissary, (2) subsistence items for troop issue, (3) clothing items for mandatory clothing bag, (4) unit of issue changes, (5) first-time/follow-on buys, (6) price challenges or breakouts, (7) discount product prices, (8) customer-requested product changes, and (9) seasonal price variations for items on direct vendor delivery (DVD).

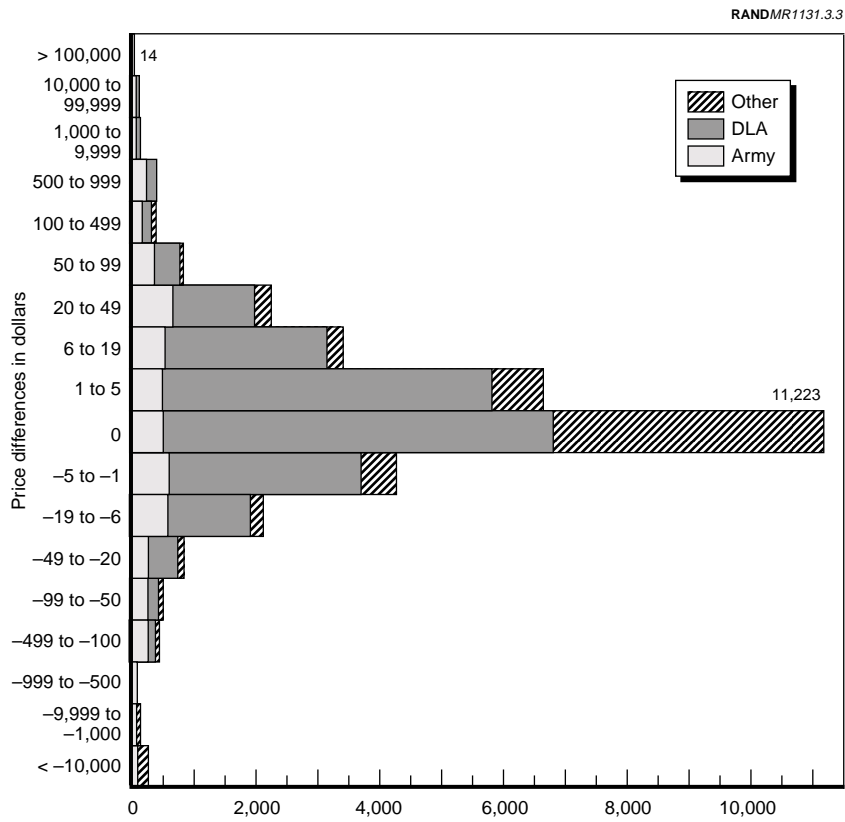
updated. The large spikes in January 1998 and 1999 are the result of corrections to the new prices in the October version of the catalog. The large spikes in April 1998 and 1999 are primarily the result of GSA and DLA price changes.

Figure 3.3 displays the distribution of the price discrepancies at Fort Hood from July to October 1996 based on STARFIARS transactions. We note that the number of requisitions with price increases almost mirrors the number with decreases. The average dollar value transferred per requisition was almost zero—a net increase of 81 cents per requisition. Also, most of the price discrepancies are for small amounts: \$5 or less. However, it is the large price discrepancies—those in the tails of the distribution—that hurt units the most. Commanders always remember the \$10,000 change, since they are responsible for staying within budget. Such a large change occurring at the end of the fiscal year, when budgets are most vulnerable, is of great concern.

The distribution of price differences varied somewhat by the source of supply. For Army-managed items (gray) the number of requisitions with price differences was fairly constant in the range  $-\$20$  to  $+\$50$ . The bulk of DLA-managed items (black) had price changes in the range  $-\$5$  to  $+\$5$ ; this would be expected because in general DLA manages less-expensive items. The other category (cross-hatched) includes GSA items (usually very inexpensive) and items managed by other suppliers.

The net dollar value of the changes for Army-managed items was an increase of about \$90,000. For the other sources of supply, the net monetary effect was negligible. Thus, it seems that a lot of financial turmoil is generated over a relatively small amount of money.

Figure 3.4 shows the distribution of AMDF catalog price changes in June and July 1999. The scales on the two graphs are different because there were many more catalogue price changes in June 1999 (6,158) than in July 1999 (651). However, in June 1999 there were more price increases (74 percent of the changes increased the price) than in July 1999 (51 percent of the changes increased the price). Although it is important to look at the price changes in the catalog, operating units are only concerned with the prices of items that they actually order. Thus, the distribution they are most concerned with



SOURCE: STARFIARS, Fort Hood, July–October 1996.

**Figure 3.3—Distribution of Price Changes in Actual Requisitions**

is the “bell-shaped” graph in Figure 3.3. All of the price change distributions clearly show that large price changes in mid-year are less common than small changes. The large price changes affect the unit’s financial well-being, but all price changes contribute to the unit’s financial reconciliation workload.

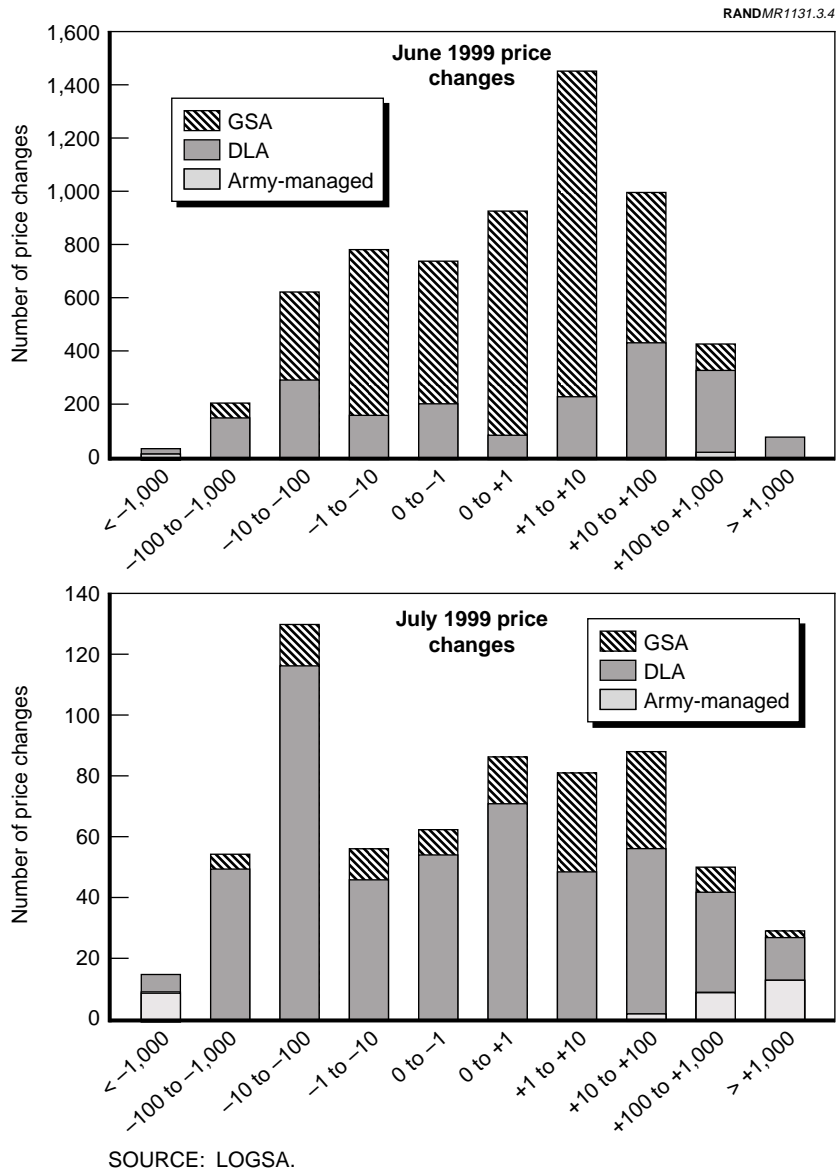


Figure 3.4—Distribution of Catalog Price Changes in June and July 1999

Table 3.1 shows a sample of items from STARFIARS transactions for which the requisition price differed from the receipt price. All these items were ordered and received in the same fiscal year. Each line represents a requisition from an OMA-funded unit at Fort Campbell for an item purchased from the RSF. The table is read as follows:

- The first column identifies the ordered part's NIIN.
- The second column is the Julian date on which the document number was assigned in SARSS: 97045 is the 45th day of 1997 (February 14, 1997).
- The third column is the quantity on the requisition; all of these requisitions had requisition quantity equal to receipt quantity.
- The fourth and fifth columns show the price at the time of the requisition and receipt, respectively. The requisition obligated OMA funds for the amount shown, and the receipt disbursed OMA funds to the RSF.
- The last column shows the effect on the unit's OMA funds. Sometimes, the price difference was in the unit's favor—it paid less than it had expected; sometimes, the reverse occurred—it paid more than it expected. (Negative values are shown in parentheses.)

Table 3.2 is similar to Table 3.1. It compares the amount paid by OMA-funded customers with the interfund bills sent by the wholesale supply system. The customers use OMA funds to pay the RSF for the requisitioned item at the time of receipt, and the RSF pays the interfund bill when it is received from the WSF or other source of supply. These price differences are absorbed by the RSF.

The first five columns are defined in the same way as those in Table 3.1 (although the data are different). The last column shows the amount of money the RSF paid to the wholesale supplier. For each of these requisitions, the dollar amounts in the last three columns are different. That means that the amount of OMA funds obligated was different from the amount of OMA funds disbursed to the RSF, and the amount of funds the RSF disbursed to the wholesale supplier was different from the amount of money received from the OMA customer. Again, this set of actual transactions was chosen for illustrative purposes only.



**Table 3.1**  
**Examples of Mid-Year Price Changes: OMA to RSF**

NIIN	Document Date	Quantity	Requisition Amount	OMA to RSF Amount	Impact on OMA Funds
010281687	97045	2	\$4,633.79	\$4,998.88	(\$365.09)
012479542	97125	1	\$3,399.47	\$872.02	\$2,527.45
010876840	97006	3	\$2,061.93	\$1,468.61	\$593.32
005961510	97029	1	\$1,597.04	\$1,191.82	\$405.22
011934773	97055	3	\$214.00	\$117.44	\$96.55
013924969	97078	30	\$183.25	\$203.00	(\$19.75)
012146441	97107	15	\$130.00	\$83.73	\$46.27
011856236	97027	25	\$65.20	\$96.50	(\$31.30)
008526597	97041	10	\$60.08	\$30.46	\$29.62
010363495	97055	54	\$52.28	\$63.70	(\$11.42)
013467811	97134	20	\$50.43	\$1.78	\$48.65
005303770	97051	14	\$46.66	\$96.65	(\$49.99)
013913193	97016	45	\$24.83	\$46.66	(\$21.83)
008000996	97006	200	\$21.96	\$19.60	\$2.36
011884522	97104	20	\$2.00	\$38.87	(\$36.87)
001419080	97070	100	\$0.20	\$7.80	(\$7.60)

SOURCE: STARFIARS, Fort Campbell, April–August 1997.

**Table 3.2**  
**Examples of Mid-Year Price Changes: OMA to RSF, RSF to WSF**

NIIN	Document Date	Quantity	Requisition Amount	OMA to RSF Amount	RSF to WSF Amount
008000996	97006	200	\$4,392.00	\$3,920.00	\$4,312.00
002908036	97083	1800	\$2,448.00	\$2,520.00	\$2,358.00
001817174	97066	52	\$1,295.84	\$1,138.28	\$1,039.48
002125325	97135	4	\$752.72	\$838.56	\$828.00
004231596	97044	1	\$592.39	\$629.52	\$651.63
013352623	97066	7	\$174.09	\$152.88	\$139.58
013758662	97114	4	\$91.52	\$370.80	\$140.24
007350732	97051	15	\$83.85	\$120.90	\$120.15
007350732	97056	5	\$27.95	\$40.30	\$40.05
002223525	97071	10	\$27.80	\$21.10	\$21.50
002050371	97094	6	\$2.04	\$3.24	\$3.54
001800727	97009	1	\$1.16	\$2.90	\$0.87

SOURCE: STARFIARS, Fort Campbell, April–August 1997.

## Diagnosing One Source of Poor Quality

These measurements of the quality of price information led to an attempt to diagnose one source of poor quality: Price is not part of the requisition information that is passed through the logistics and financial processes. The Army's logistics and financial systems allow prices to change at the time of obligation, receipt, and interfund billing.<sup>4</sup> Each time a supply action occurs, the price is reassigned by SARSS-2AC or the wholesale source of supply, based on the catalog that is effective at that time and in that system. Figure 3.5 is a stylized chart showing how supply actions are recorded in STARFIARS, the installation's RSF accounting system. In the normal case, the price (shown here as \$100) stays the same on each order and receipt financial transaction. However, there are several different points between the requisition and the receipt at which price changes could occur. We discuss three cases below.

### **Price differences between the STARFIARS obligation and receipt.**

When a customer places an order, an obligation is recorded in STARFIARS at the price in the SARSS-2AC catalog at that time (shown in Figure 3.5 surrounded by a rectangle).<sup>5</sup> However, the unit is not charged for the item until it is received. As discussed in Chapter Two, LOGSA sends each SARSS-2B activity a monthly tape of all catalog add, change, and delete transactions (Document Identifier Codes CPA, CPC, CPD, and CQD)<sup>6</sup> that have occurred since the last Catalog Master File update. The SARSS-2B activity must then run a monthly catalog update process to update its internal files. If a catalog update occurs between the time of the requisition and the receipt and then STARFIARS runs its monthly reconciliation process, the obligation

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<sup>4</sup>DoD policy states that "the dollar amount of unfilled customer orders accepted at the previous fiscal year's standard price shall be adjusted (upon notification to the customer) to reflect the latest standard price when notice of the price change is received." *DoD Financial Management Regulation*, DoD 7000.14-R, Vol. 11B, p. 55-17. The effect of this policy is that the customer pays the price at the time the item is received, not the price in effect at the time of requisition.

<sup>5</sup>Note that the price the unit has in its FEDLOG is not passed forward to the SARSS-2AC.

<sup>6</sup>See Army Publications and Printing Command, *Requisitioning, Receipt, and Issue System*, AR 725-50, November 1995, for the definition of these DIC codes.

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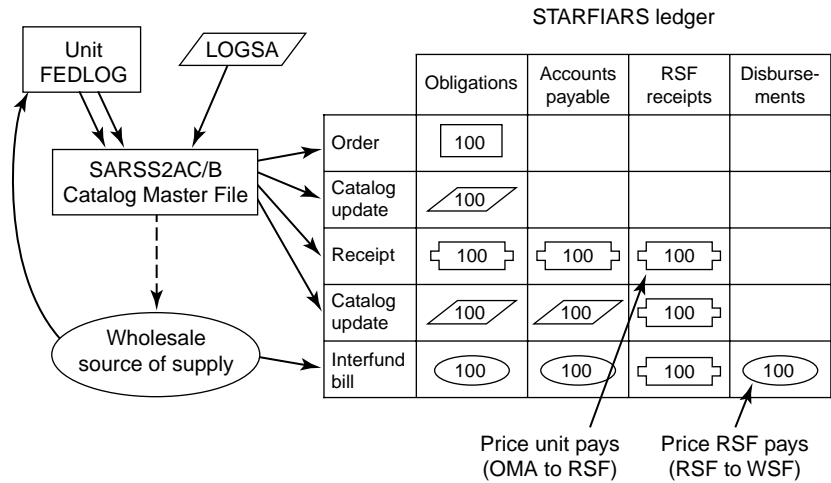


Figure 3.5—How Prices Are Recorded in STARFIARS

recorded in STARFIARS could be updated (shown surrounded by a parallelogram) and the requisitioner notified of any changes.<sup>7</sup>

When the SSA receives the item, the receipt is recorded in SARSS; the SARSS-2AC box assigns the price that is effective in the Catalog Master File on that date and then sends the information to STARFIARS (shown surrounded by a cross-box). STARFIARS records this price as a receipt from the unit and an account payable to the source of supply. It also updates the obligation if the price differs from the original obligation. The receipt price is the actual price the unit pays. Its money is transferred from OMA to the RSF, and the receipt price is recorded in its financial reports. The price changes shown in Tables 3.1 and 3.2 (columns 4 and 5) include this type.

<sup>7</sup>Because the catalog updates and the monthly reconciliation process do not occur at the same time each month or at the same time across the Army, units do not always receive price change notices.

**Price differences between the receipt and the interfund bill.** Another catalog update (shown surrounded by a parallelogram) could potentially occur between the time the receipt is recorded and the time the RSF receives an interfund bill, if the requisition was sent to a wholesale source of supply. (If the requisition was satisfied locally, the RSF pays the sending unit the same amount it received from the ordering unit.) If a catalog update occurs between the receipt and the interfund bill, the RSF's obligation and account payable are changed, but not the receipt, because the RSF has already received this amount from the unit. The price changes shown in Table 3.2 (columns 4, 5, and 6) include this type.

The interfund bill could also differ from the receipt if there is a discrepancy between the SARSS catalog and the catalog at the wholesale source of supply. When an interfund bill is sent from a wholesale source of supply to the installation's RSF, it attaches the price that is effective in its own catalog at that time (shown in an ellipse in Figure 3.5). Each wholesale source of supply (AMC's MSCs, DLA, GSA, other services) has its own catalog. This price is recorded in STARFIARS as a disbursement from the RSF to the WSF for Army-managed items, or to other stock funds for non-Army-managed items. If the price on the interfund bill differs from the previously recorded price, the RSF's obligation and account payable are updated, but not the receipt from the unit.

The interfund bill is sometimes received before the item is receipted. In this case, STARFIARS records a disbursement and automatically generates an equal account payable, creating an "inventory in-transit (paid)" condition. It also adjusts the obligation if necessary. The RSF pays the price on the interfund bill to the WSF or other source of supply. The unit then pays the price that is effective in the SARSS-2AC Catalog Master File when the receipt is recorded. In Chapter Four we suggest a pricing policy that could help eliminate these price differences and thus their negative effects.

**Price differences between the document register and the STARFIARS obligation.** In addition, price differences can arise between the unit's document register and the STARFIARS obligation. These differences cannot be observed in the STARFIARS data. When a unit places a request, ULLS records the price in the unit's document register based on the FEDLOG (or ARMYLOG) catalog, a CD-ROM

that is updated monthly. When the requisition passes into SARSS, the price is reassigned based on the Catalog Master File in SARSS-2AC/B before the obligation is recorded in STARFIARS. Under several conditions, there can be differences between the price recorded in the unit's document register and the obligation recorded in STARFIARS:

- If there are discrepancies between FEDLOG and the Catalog Master File,
- If the unit does not receive its new FEDLOG CD-ROM on time,
- If it fails to upload the new CD-ROM at the right time.

Price differences that arise from these conditions are not included in Tables 3.1 or 3.2, because we could not observe this type of price difference in the current data samples from STARFIARS. In STARFIARS, we only see the obligation that is recorded based on the SARSS catalog. We cannot observe any additional price differences that may emerge when the unit performs its manual reconciliation between its document register and its financial reports from dCAS or TUFMIS.

## **QUALITY OF CREDIT INFORMATION**

A customer receives high-quality credit information if he knows the credit he will receive at the time he returns an item and if the credit is granted consistently time after time for similar items. This is not the case in the Army's current credit policy. In examining the quality of credit information, we discovered two problems, one having to do with the variability in funds received for turn-ins and one having to do with the nature—or demographics—of what is being turned in for credit. We discuss both in turn.

### **Variability in Funds Received for Turn-ins**

Walkthroughs of the financial management process at Fort Campbell indicated that the amount of credit received for returned items (turn-ins) is very important to the financial well-being of all units. As at other installations, the budgeting process generally allocates about half the funds a unit needs for logistics support and assumes that the

remaining funds will flow to the units through credits received as items are returned.<sup>8</sup>

These turn-ins are big business for the installations, as shown in Table 3.3, which is based on STARFIARS data for Fort Campbell and Fort Hood. The data show that hundreds of thousands of items were returned at both installations over four-month periods. Most of the items returned were serviceable and most were consumable. The table also shows a wide variation in the percentage of returns receiving 100 percent credit. At Fort Campbell, more items (28 percent) received 100 percent credit than at Fort Hood (1 percent). The bottom line is that Fort Campbell OMA customers received 72 percent of the purchase price of the items as credit (on average), whereas Fort Hood OMA customers only received around 46 percent.

There are several reasons for this difference. Fort Campbell has special repair programs for Target Acquisition and Designation System/Pilot Night Vision Sensor (TADS/PNVS) items and aircraft engines, fast repair cycle times, and very low washout rates. To encourage units to return broken items, Fort Campbell made a local decision to grant 100 percent credit for TADS/PNVS and aircraft engine re-

**Table 3.3**  
**Turn-Ins at Fort Campbell and Fort Hood**

	Fort Campbell	Fort Hood
Number of items returned	237,045	357,369
Percent serviceable	93%	80%
Percent consumable	93%	84%
Percent receiving 100% credit	28%	1%
Purchase price of items	\$121,000,000	\$160,000,000
Credit received	\$87,000,000	\$73,000,000

SOURCE: STARFIARS, Fort Campbell (October 1996–January 1997); Fort Hood (July 1996–October 1996).

<sup>8</sup>In this respect, the Army differs from its sister services. For example, the Air Force WCF sells to customers at net price (i.e., standard price minus credit) unless the customer does not turn in a carcass within 60 days, at which time a penalty equal to the credit is charged.

turns.<sup>9</sup> Another reason for this difference is that during the period of the analysis, Fort Hood had an abundance of stock; because retail credits are based on the installation's net asset position (NAP), few returns at Fort Hood received 100 percent credit. The policy of basing credit for returns on the installation's NAP raises considerable uncertainty about the amount of credit a return will generate: when the return causes the number of assets to exceed the installation's retention limit for that particular NSN, the amount of credit drops dramatically.

The net asset position is a count of the number of items of each type in the installation's SARSS inventories, both OMA and AWCF funded. It is compared with the sum of the requisitioning objectives (the desired levels of inventory) plus the allowed retention quantities for that item at each inventory location to determine whether a returned item might be needed elsewhere on the installation. The rationale for giving a higher credit when the NAP is below the retention limit is that the RSF is very likely to be able to resell the item to another user on the installation. When the NAP is above the retention limit, the RSF is taking more risk that it will not be able to resell the item or return it to the wholesale source of supply for credit, so it gives less credit to retail customers. This credit variation shifts the risk that the item cannot be resold locally from the RSF to the retail customer.

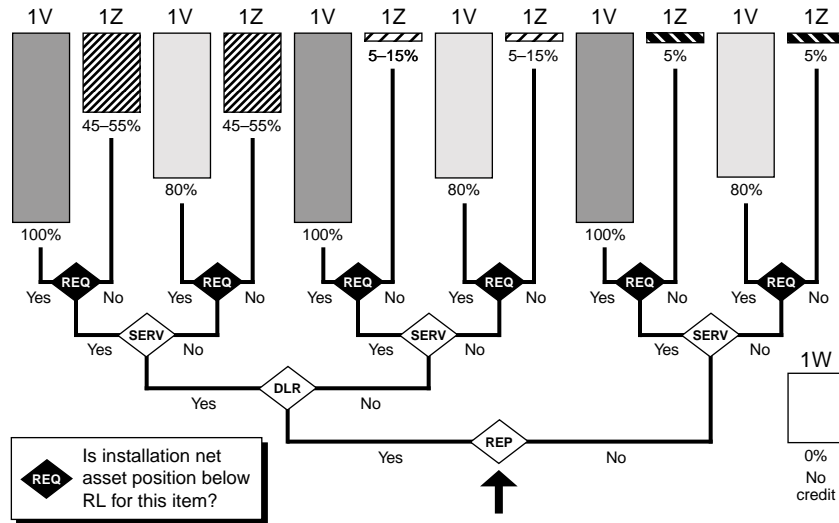
In an effort to understand the source of units' uncertainty about the credit they would receive for returns, we worked with the Fort Campbell Combat Service Support Automation Management Office (CSSAMO) and installation financial managers to create the decision tree shown in Figure 3.6. This chart is drawn from a company's perspective, and it shows the factors that affect the credit received for an item. Begin at the arrow at the bottom of the flow chart. When a unit has an item to return, it knows if the item is a reparable (REP) or con-

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<sup>9</sup>For these items, a unit receives 100 percent credit from the RSF, and the item is repaired using OMA funds and returned to stock in the RSF. It is sold back to the unit for 100 percent—a wash to the RSF, except when an item cannot be fixed. In that case, the division comptroller charges the unit 42 percent, which is the net price the unit pays when an item is sent back to the depot and a replacement is purchased. This policy has recently been modified so that the expected cost of washouts is deducted from the credit rate.

sumable. It also knows if the item is a DLR or FLR and if it is serviceable (SERV) or unserviceable. What the unit does not know is the

RANDMR1131.3.6



NOTE: The codes at the top of the rectangles (1V, 1Z, and 1W) are called return advice codes. They indicate if the installation NAP is below the RL (1V) or above the RL (1Z) for the item being returned. 1W indicates that no credit will be granted.

Figure 3.6—Decision Tree of Army Retail Credit Policies

installation’s NAP (shown as REQ on the figure)—that is, if the installation’s NAP is below the retention limit (RL) for this item. As the figure shows, credit for returns to the RSF depends more on the installation’s NAP than on the type of item (DLR, FLR, or consumable) or its condition (serviceable or unserviceable).

Note the difference between a “yes” or a “no” answer to the REQ question. For a serviceable non-DLR that is below the RL (“yes”), the credit is 100 percent, but if the installation is above the RL (“no”), the credit is only 5 to 15 percent. If the same asset is unserviceable, the item is repaired in the installation’s RX or ISM program, and if the installation is below its RL, the credit is 80 percent. Thus, a broken



item for which the installation is below its RL returns 65 to 75 percent more than a usable item for which the installation is above its RL. The same situation exists for nonreparable returns.

In general, DLRs garner more credit: 100 percent credit for serviceable DLR returns when the installation is below its RL and 45 to 55 percent credit when the installation is above its RL. However, DLRs are usually the most expensive category of stock, and such a large difference in credit has a big impact on the unit's budget (frequently, thousands of dollars). If the installation is above its RL, serviceable and unserviceable DLRs are granted the same credit.

An example of credit fluctuation is shown in Table 3.4 for the receiver transmitter on the AN/ASN-86 inertial navigation set. The price for a new receiver transmitter is \$2,340. In October 1996, two transmitters were returned for full credit. However, on a single day at Fort Campbell in November 1996 (as shown by the shading), four transmitters were returned for full credit and one was returned for 52 percent credit. The unit that turned in the last transmitter received \$1,123.20 less than expected based on the past credit rate, and it had no way of knowing in advance that the credit rate had dropped.<sup>10</sup>

**Table 3.4**  
**Credit Fluctuation on the AN/ASN-86 Inertial Navigation Set**

Date	Quantity	Percent Credit
October 16, 1996	2	100
November 22, 1996	4	100
November 22, 1996	1	52
December 20, 1996	4	52

<sup>10</sup>Although one would expect a serviceable turn-in to have a higher value to the Army than an unserviceable turn-in of the same item, the data show that the average credit (as a percentage of the prices) given for unserviceable items at most Army installations (including Fort Campbell) exceeded that given for serviceable returns.

The average credit received depends more on the installation's NAP than on any other criterion. If "need" is an Army criterion for granting credit, then perhaps "need" should be established Army-wide and be published periodically, rather than allowed to change daily.

February 4, 1997

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SOURCE: STARFIARS, Fort Campbell, October 1996–January 1997.

### Value of Items Being Returned

When reviewing the demographics of returns, we were surprised at the number of serviceable consumable items being returned. As Table 3.3 showed, of the 237,045 items Fort Campbell returned, 93 percent were serviceable and 93 percent were consumable, meaning that more than 200,000 serviceable consumables were returned in the four-month period of the data. If the same level of returns continued throughout the fiscal year, more than 600,000 serviceable consumables would have been returned to the RSF at Fort Campbell.<sup>11</sup> The average purchase price of these items was \$15 each, and the average credit received from the supply system was \$4. (The numbers at Fort Hood are similar: the average purchase price of serviceable consumables returned was \$27, and the average credit was \$5.)

Figure 3.7 shows the price distributions for serviceable consumable turn-ins at both Fort Campbell and Fort Hood. As the figure shows, some serviceable consumable turn-ins that received credit originally cost more than \$5,000. However, the bulk of serviceable consumable returns had a purchase price of less than \$50. At Fort Campbell, 90 percent of serviceable consumable turn-ins receiving credit cost less than \$50; at Fort Hood, the statistic is 84 percent. Such statistics raise many questions about the labor, transportation, warehousing, and administrative cost of managing so many consumable turn-ins. The value of these items to the Army may be less than the value of the time spent on turning them in.

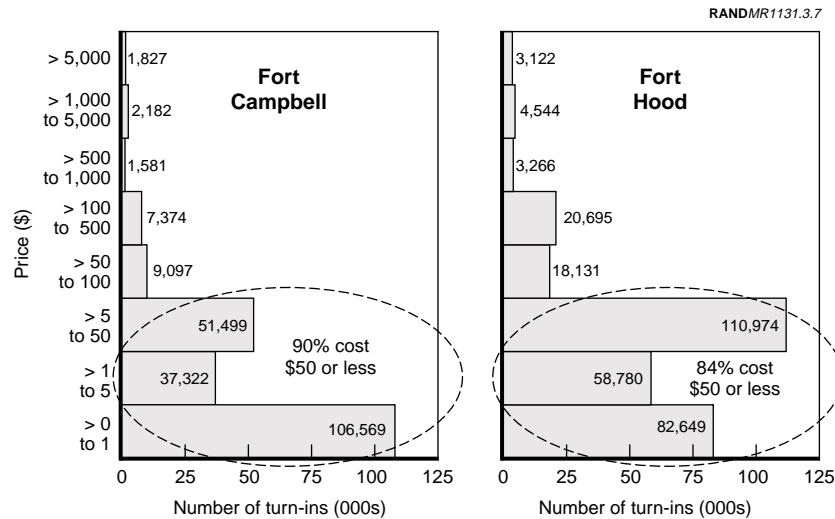
### FINANCIAL WAIT TIME (FWT)

The discussions of the quality of price and credit information have shown that the company commander is uncertain about both price and credit information. As a result, the commander can never be certain how much money is left in the unit's account and may delay

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<sup>11</sup>The numbers reported here exclude a small number of returns of condemned items and items in litigation.

critical logistics processes until the uncertainty is resolved. The next logical question to address is how long the commander is uncertain: How long does it take a unit to see the effect of a supply transaction



SOURCE: STARFIARS, Fort Hood, July–October 1996; Fort Campbell, October 1996–January 1997.

Figure 3.7—Many Returns Receiving Credit Had Low Dollar Value

on its ledger? This period of uncertainty is called financial wait time (FWT).

FWT begins when a company initiates an order or turn-in transaction. It ends when the unit sees the final effect of that transaction on its ledger. Using the order and ship process as a case in point, since the final financial transactions do not occur until after the unit receives an item, FWT is the sum of customer wait time (CWT)<sup>12</sup> and financial

<sup>12</sup>CWT is defined as the time from when a requisition is placed until the customer receives it, whether the requisition is satisfied locally or through the wholesale supply system. FWT includes CWT because the customer is not billed until the item is received.

processing time (FPT).<sup>13</sup> While the VG has established goals for CWT, it has not yet established goals for reducing FPT. It is not desirable at this point for installations to attempt to measure and track FPT. Analysis of Logistics Intelligence File (LIF) data indicated that CWT is the major component of FWT. FPT does not add much additional time to FWT. Therefore, efforts are focused on reducing CWT.

Management reviews (recall the discussion of them in Chapter Two) are likely to have an impact on CWT. Requests can be held at the company for the commander's approval or at the division for financial approval. At the end of the fiscal year or when budgets are low, more requisitions are subjected to financial reviews. (For example, at Fort Campbell all requisitions for the 101st Airborne Division were reviewed in early December 1996 and again in March 1997 because division spending had exceeded planned spending.) These financial checks are in part a response to the uncertainty in the quality of price and credit information and can slow CWT.

We analyzed FY96 dCAS data from Fort Campbell to measure FWT.<sup>14</sup> Figures 3.8 and 3.9 show total FWT for all types of transactions for two units.

Figure 3.8 shows FWT<sup>15</sup> for an aviation company at Fort Campbell (W34AE6). This unit was chosen for analysis because it had large numbers of both requisitions and turn-ins. For requisitions, the unit waited 33 days at the 75th percentile and 16 days at the median (50th percentile). The FWT was much shorter for turn-ins: 22 days at the

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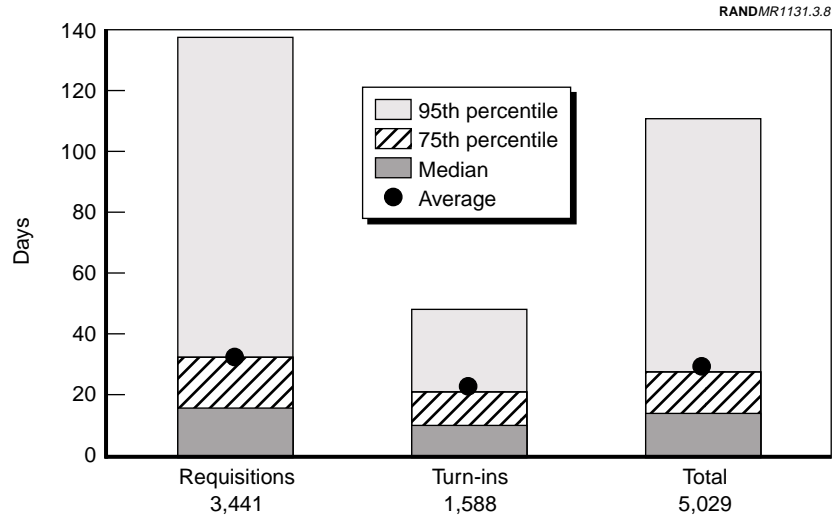
<sup>13</sup>Elements of financial processing occur when the order is being processed and shipped, but at this stage in metric development, we are only calculating the additional time (beyond CWT) consumed by financial processes. For this analysis, FPT begins when an order is received and ends with the final debit or credit to the unit's account in the financial system.

<sup>14</sup>The Fort Campbell dCAS data have not been matched with LIF data. The dCAS data include all types of transactions, but we were not able to segment FWT into CWT and FPT.

There are advantages and disadvantages to matching financial data with LIF data. The LIF data allow us to segment FWT into CWT and FPT, but they only include requisitions to the wholesale system. Thus, the matched data show CWT and FPT but do not include turn-ins or requisitions satisfied on the installation; in contrast, the unmatched data only show total FWT but include all transactions.

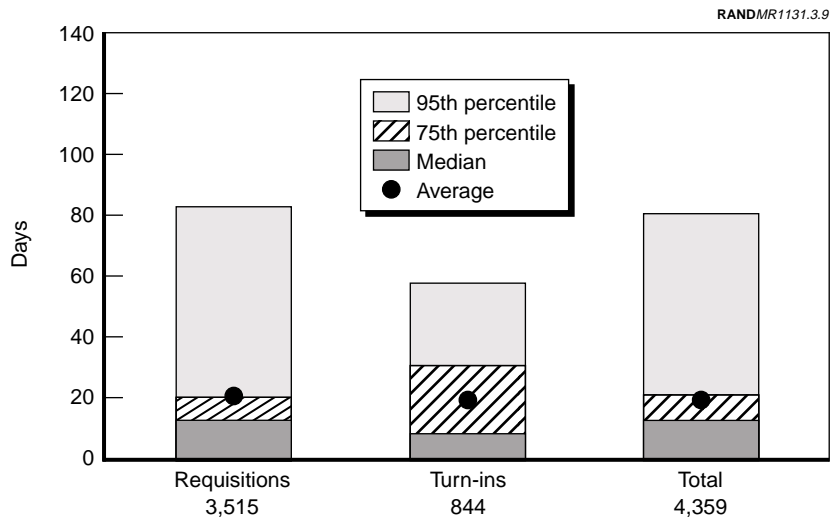
<sup>15</sup>We measured the time for each transaction from the date it was entered into the supply system (document number date) to the date of the last record in dCAS.

75th percentile and 11 days at the 50th. For requisitions and turn-ins combined, this unit waited 111 days at the 95th percentile and 14 days at the 50th percentile for the financial information to appear on the unit ledger. Such variability makes accurate tracking of ledger



SOURCE: dCAS data, FY 96, backorders included.

Figure 3.8—FWT for Aviation Company at Fort Campbell



SOURCE: dCAS data, FY 96, backorders included.

**Figure 3.9—FWT for DS Maintenance, B Company of 526th Forward Support Battalion at Fort Campbell**

balances very difficult. The variance for turn-ins is far less than for requisitions because requisitions include backorders.

The data shown in Figure 3.9 come from an SSA, B Company of the 526th Forward Support Battalion (W34QV3). Again, this unit was chosen to illustrate the length of FWT because it had large numbers of both requisitions and turn-ins. For this unit, there was less variability in FWT at the 95th percentile, but turn-ins showed more variability in FWT than was seen for the aviation company on the previous figure.<sup>16</sup>

<sup>16</sup>It should be noted that by the end of FY99, the CWT performance for requisitions at Fort Campbell had continued to improve: 8.7 days average, 6 days median, 7 days 75th percentile, and 13 days 95th percentile. Source: <http://www.cascom.lee.army.mil/vm/rand.htm>

This would imply that FWT at Fort Campbell has also declined, since CWT is a major component of FWT. We have no indication that FPT has declined, and there has been no initiative to target this portion of FWT.

## **CONCLUSION**

The metrics developed and analyzed by the FM PIT have helped to diagnose the causes of problems in the Army's logistics financial management processes and to identify areas for possible improvement, which we discuss in Chapter Four. Unfortunately, it is not currently possible to measure performance using existing data systems in some key areas, such as the amount of time and the cost of manual reconciliation efforts at the unit level. Metrics such as the quality of price and credit information are indirect indicators of these reconciliation efforts.