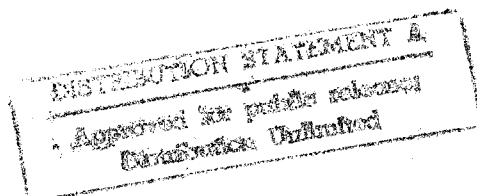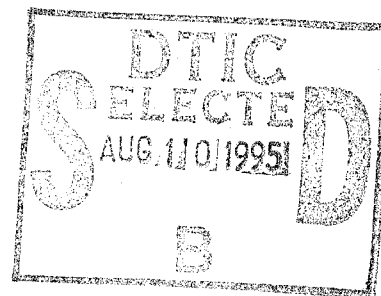DLA-95-P30101

ICP CORPORATE CUSTOMER ASSESSMENT - SAMPLING PLAN

JULY 1995

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FOR
DEPARTMENT OF DEFENSE
DEFENSE LOGISTICS AGENCY
Strategic Programming & Contingency Operations
CAMERON STATION
ALEXANDRIA, VA 22304-6100

INSIGHT THROUGH ANALYSIS

DORO

DLA-95-P30101

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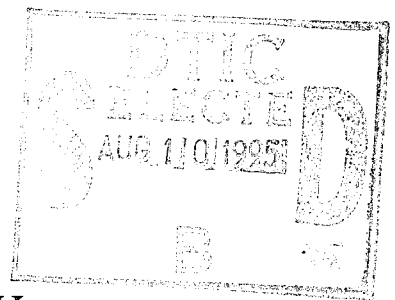
Lead Analyst: Lieutenant Commander William J. Wilkinson, USN
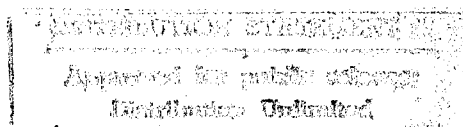Associate Analyst: Mr. Henry J. Kostanski
Administrative Support: Ms. Sharan E. Dockery

DEPARTMENT OF DEFENSE
DEFENSE LOGISTICS AGENCY
Operations Research Office

c/o Defense General Supply Center
8000 Jefferson Davis Highway
Richmond, VA 23297-5082

O'Hare International Airport
P.O. Box 66422
Chicago, IL 60666-0422

IN REPLY
REFER TO

DORO

FOREWORD

This project developed a plan for conducting recurring surveys of Defense Logistics Agency customers, in support of the DLA Corporate Customer Assessment Team. The primary product was a sampling plan, including stratification of customers by Military Service or Federal Agency and by commodity purchased from DLA, and sample size calculations for each stratum. The secondary product was a customer data base, identifying customers by activity name, major Service or Agency, mailing address, and Department of Defense Activity Address Code (DoDAAC). Number of requisitions submitted and the dollar value of those requisitions are included for each customer, for each commodity, using fiscal year 1994 data. While the data base was initially developed to provide required address information for mailing customer satisfaction surveys, it is very useful in examining requisition data on individual customers and groups of specific customer types, both within and across individual Inventory Control Points.

In addition to these two products, the project examined survey instruments, recommended annual update of the customer address base, identified alternative sources of data, and assessed additional customer types to consider in future survey development.

GERALD F. WYNGAARD
Colonel, USAF
Chief, DLA Operations Research Office

INSIGHT THROUGH ANALYSIS

EXECUTIVE SUMMARY

The Defense Logistics Agency (DLA) Quality Council recognized the need to ensure high customer satisfaction with DLA good and services. The Council established the Inventory Control Point Corporate Customer Assessment Team in December 1991, tasked with developing a continuing program to assess and improve customer satisfaction. The first step in this effort is an assessment of current levels of customer satisfaction. The Corporate Customer Assessment Team designed a survey instrument to develop initial customer satisfaction information.

Several challenges had to be met before a successful survey could be initiated. The most basic issue was how to define and identify a DLA customer. Second, a stratification process was required, to assemble individual customers into groups having similar logistics requirements. A statistical sampling plan was then necessary to select representative customers to be surveyed, to determine the customer satisfaction level for each type of customer. Finally, a data base of customer information should provide mailing information for the surveys, and historical data on the volume of business each customer has conducted with DLA.

This project addressed all of these issues, and delivered the following major products:

- a customer stratification plan, identifying customers by military branch or federal agency, and by commodity purchased;
- a statistical sampling plan, allowing recurring surveys to accurately assess customer satisfaction levels;
- a customer information data base, providing customer identification, mailing information, and volume of business in each commodity, both by the number of requisitions submitted and the dollar value of those requisitions.

The report recommends annual customer surveys, and annual updates to the customer information data base. It also identifies alternative sources of data and additional customer types to be included in future surveys.

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REFERENCES

A. Air Force Manual 67-1, Volume 1, Part Two, 10 DEC 90, "Air Force DoD Activity Address Codes (DoDAAC) Stock Record Account Numbers (SRANS), and Station Number"

B. Navy Comptroller Manual, Volume II, Chapter 5

C. Defense Logistics Agency Manual 4140.2, Volume II; Part 3, Appendix A-20, "FEDSTRIP Civil Agency Codes"

D. Army Regulation AR725-50, Chapter 9

E. Marine Corps Order 4420.4H, "Department of Defense Activity Address Directory" (DODAAD)

F. Commandant of the Coast Guard Instruction 4400.13, Chapter 12

SECTION 1

INTRODUCTION

1.1   BACKGROUND

The Inventory Control Point (ICP) Corporate Customer Assessment Team is to conduct surveys of Defense Logistics Agency (DLA) customers in support of the DLA Corporate Customer Assessment Program. A previous DLA Operations Research Office (DORO) project, DLA-93-P20355, describes initial efforts to identify customers for participation in focus groups and to assist in the development of a survey instrument. Based on the recommendations of that study, the Plans Team of the Office of Plans and Policy Integration (CAIC) requested that DORO refine the segmentation of customers into survey groups, and provide a sampling plan and customer address data base to support a CAIC contractor in conducting the initial customer survey.

The project was conducted in two phases. The first phase developed an initial customer group identification methodology, and assessed two survey instruments used to query these customers on their assessment of DLA products and services. The second phase used results from these surveys to develop a final customer identification methodology and recurring sampling plan.

1.2   PURPOSE

The purpose of this project was to further segment the customer groups defined by project DLA-93-P20355, incorporating new data on the fuels and subsistence commodities. The development of a customer sampling plan and customer address information base was also requested to support the ICP Corporate Customer Assessment Team survey of DLA customers.

1.3   OBJECTIVES

The general objectives of this study were to:

(1) Further develop the stratification of customers based on the 1992 customer information files, updated with subsistence data provided by the Defense Personnel Support Center (DPSC) and fuels data provided by the Defense Fuel Supply Center (DFSC). This base would support the initial customer stratification and survey instrument assessment.

(2) Review Department of Defense Activity Address Code (DoDAAC) assignment methods used by the Services, to determine their suitability in identifying customer types.

(3) Define customer groups by combinations of commodity, Service or agency and type of activity (e.g., medical activities, repair facilities, etc.) based on DoDAAC structure.

(4) Establish a sample size and select a sample of customers for each customer group identified, based on a target statistical confidence level.

(7) Provide CAIC a mailing list containing DoDAACs, addresses, annual dollar value of requisitions and control numbers for all customers identified, using FY 1992 data.

(8) Provide CAIC two representative sample sets of 250 customers each, to be used in testing the surveys.

(9) Analyze the sample survey returns to assess required changes to the customer stratification methodology and sampling plan.

(10) Upon final approval of the stratification methodology, provide a final customer information base containing DoDAACs, addresses, annual dollar value of requisitions, and volume of requisitions for all customers identified, using the latest fiscal year data available.

1.4   SCOPE

Only data resident in DORO, DPSC, DFSC and a Defense Automatic Addressing System Center (DAASC) DoDAAC cross reference file were employed.

The mailing list was to be developed for use in dBase III+, to include DoDAACs, addresses, control numbers identifying the customer by commodity, Service or agency, type of activity, requisition volume and dollar volume of customer requisitions.

Internal DLA customers (DLA Depots, Centers, et cetera) identified by the previous DORO project were excluded from final sample plan development at the request of CAIC.

1.5   EXCEPTIONS

DLA Integrated Data Bank (DIDB) information on the fuels and subsistence commodities was not adequate for the project. Fiscal year 1992 and fiscal year 1994 data on these commodities were provided by DFSC and DPSC.

The methods for assignment of DoDAACs by the armed services was inconsistent. This precluded a uniform identification of customers by activity type.

SECTION 2

METHODOLOGY

2.1 PHASE ONE: INITIAL CUSTOMER STRATIFICATION

The first question faced by the Corporate Customer Assessment Team was the appropriate definition of a customer. Options included personnel responsible for ordering DLA items, maintenance personnel relying on equipment and parts from DLA, and "warfighters" who expect the required equipment to be fully operational in order to complete their missions. The team concluded that the logisticians, supply personnel who order from DLA and conduct follow-up shipment status tracking, were the customers most directly affected by DLA. They in turn influenced the perception of others at their commands. Based on this decision, surveys would be mailed to the logisticians at each activity.

The second issue was the matter of identifying individual customers, and establishing customer strata in which customers with similar characteristics were grouped together. The previous DORO study identified customers by commodity and major Service or agency. As recommended in that report, these groups were further segmented to identify the customer by specific activity type. Support for further segmentation came from the Corporate Customer Assessment Team and the contracted survey provider, with the goal of establishing as many identifiable customer groups as possible. The key was to develop customer groups having unique attributes or logistics requirements, such as medical facilities or repair facilities.

As described in the earlier study, the DoDAAC provides the only consistent identification of DLA customers across all ICPs, depots and customer service offices. Reviews were conducted of the DoDAAC assignment methodology employed by the various Services to determine a suitable system of customer segmentation. While not completely successful, stratification based on DoDAAC did prove useful. Because the Services differ in their assignment methods, each Service was segmented differently.

2.1.1 AIR FORCE CUSTOMERS

The Air Force applies a fixed and organized DoDAAC assignment methodology to their units, making this group the most easily stratified by activity type. Air Force customers were segmented using the first two positions of the DoDAAC, in accordance with reference (a), Air Force Manual 67-1. Twenty-five activity types were identified by this method. Contractors identified by the Air Force publication were included in a separate contractor group. The Air Force activity types are listed in Appendix A.

2.1.2 NAVY CUSTOMERS

Navy DoDAAC assignment is not as structured as the Air Force, providing only very broad stratification of units by type of activity. Navy customers were initially segmented by DoDAAC in accordance with reference (b), the Navy Comptroller Manual. Further refinement was

conducted using key word sorts on the unit names, such as "aviation", "supply", or "USS". The fifteen Navy customer activity types are listed in Appendix A.

2.1.3   FEDERAL AGENCY CUSTOMERS

The Federal agencies group was easily stratified into individual agencies using the first two positions of the DoDAAC in accordance with reference (c), DLA Manual 4140.2. Seventy-seven customer activity types were identified, 40 of which requisitioned materiel from DLA in fiscal year 1992. These 40 are listed in Appendix A.

2.1.4   CONTRACTORS AND FOREIGN MILITARY SALES

Both the Contractor group and the Foreign Military Sales (FMS) group were segmented by identifying the sponsoring Service (e.g., Navy contractor, Army FMS). The first position of the DoDAAC was used to make the identifications. This gave each group five activity types, as listed in Appendix A.

2.1.5   NON-SEGMENTED CUSTOMER GROUPS

Army, Marine Corps and Coast Guard customer groups were not segmented by activity type. Extensive review of these Services' instructions (references (d) through (f)) and consultations with representatives at their DoDAAC central service points determined that no systems were in place to assign DoDAACs based on activity type. Attempts to conduct key word sorts on unit names were unsuccessful, as were attempts to cross-reference these DoDAACs to other identification-type files such as the Army's Table of Organization and Equipment.

2.1.6   CUSTOMER ADDRESS INFORMATION

Customer addresses were first developed by matching the DoDAACs to the customer address file resident in the DIDB. DoDAACs which did not have address information in the DIDB were then matched against a customer address file provided by Defense Automatic Addressing System Center.

A dBase III+ data file was created to provide mailing information for the customer surveys. This file, as delivered to CAIC, included DoDAAC, four-line mailing address, customer control code and dollar value of requisitions for each of the 31,991 customers identified. A description of the data fields is included as Appendix B.

2.2   INITIAL SAMPLING PLAN

Statistical sampling plans are designed to allow inferences to be drawn about a population by testing a representative group from that population. A primary requirement for such plans is that the members of the population have similar characteristics. The segmentation of customers as described in Section 2.1 could not meet that requirement. In some cases, the population under consideration was an entire major Service, such as the Army, while in other cases the population was a very specific subset of a Service, such as Navy medical activities. Further, without some

2-2

a priori knowledge of customer satisfaction, the statistics required to objectively compute sample sizes were not available, in that such calculations require knowledge of the expected variance from the average response in each group.

DORO analysts met with the CAIC representative and the contractor developing the customer survey instrument to determine the desired method of sampling the various groups. At the contractor's recommendation, CAIC requested that DORO construct a customer address data base that would support a "baseline" survey, that is, all fiscal year 1992 customers would be surveyed.

The Corporate Customer Assessment Team also required customer responses be linked to specific ICPs, rather than their perception of DLA in general. This information would assist in identifying strengths and problems at individual ICPs, allowing tailored responses at each site to improve customer satisfaction. The survey instrument was therefore planned to be commodity-specific, and a random selection process was used to prevent a customer who had purchased several types of commodities from receiving multiple surveys. A customer who purchased only one type of commodity was placed in the group receiving that commodity's survey. If a customer ordered several commodity types, one of those commodities was randomly selected, and the customer was placed in that survey group. This random selection process was chosen as the most appropriate method to ensure that both high and low-volume customers for each commodity were fairly represented in the survey.

2.3 CUSTOMER CONTROL NUMBERS

Customer control numbers were developed to identify the survey participants by commodity purchased, major Service or agency, and type of activity. A 4-digit code was assigned to each customer. The first digit indicated the commodity on which the customer was surveyed. The second digit indicated major Service or agency. These code positions were defined as follows:

1st Digit	2nd Digit
1 = Construction	1 = Army
2 = Electronics	2 = Air Force
3 = Fuels	3 = Coast Guard
4 = General	4 = Marine Corps
5 = Industrial	5 = Navy
6 = Medical	6 = Foreign Military Sales
7 = Subsistence	7 = Contractors
8 = Textiles	8 = Federal Agencies

Figure 2-1. Commodity and Agency Codes

The 3rd and 4th digits specified the activity types, which can be identified using the listings in Appendix A. An example of the control code:

```
4 2 1 2
     └─ Medical Activity
   └─ Air Force
 └─ General Commodity
```
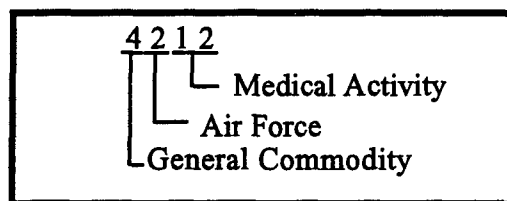
Figure 2-2. Customer Control Code

Based on the eight DLA commodities, eight major services or agencies, and the activity types listed in Appendix A, a total set of 744 survey groups was developed. A total of 31,991 customers were assigned to the 744 cells. An additional 1,582 customers (approximately 1% of the total customer base) did not have addresses available in either the DAASC or DIDB address files, and were not included in the survey groups. These were primarily FMS customers. Appendix C details the number of customers in each survey group.

2.4 SAMPLE SURVEYS

The Corporate Customer Assessment Team was considering two survey instruments, the "Gap model" and the "Attitude model". The Gap model attempts to measure the difference between the level of service the customer expects and the level he receives. In essence, if a customer's expectations are low, then lower quality service may be acceptable. Conversely, high expectations create a challenge to deliver only superior service. The Attitude model measures the customer's perception of performance without regard to expectation. It provides a direct expression of the customer's perception of DLA, as he is free to compare the service to any other experiences he has had. The yardstick may vary from customer to customer, but the overall picture is useful in identifying strong and weak areas in DLA's performance. A small preliminary mailing was planned in which one set of customers would receive the Gap model survey, while another set received the Attitude model survey.

2.4.1 CUSTOMER SELECTION

In order to select the most useful survey, CAIC requested two sample sets, of 250 customers each, to conduct the preliminary survey. Customers were to have had requisitions of at least $1000.00, in order to maximize the information obtained from these small samples. The sample should otherwise be representative of the overall customer population. In selecting the sample customers, the following procedures were applied:

- Each Service or agency received at least eight surveys, in order to test across all commodities. The only exception to this was the Marine Corps, who had no Fuels customers.

- Remaining surveys were distributed proportionately among the Services and agencies. For example, federal agencies represented approximately 7% of DLA's customers, and so received 7% of the surveys.
- Surveys for a given Service were distributed proportionately among the Service's activity types.
- A random number generator was used to select specific customers within each activity type.

The final customer samples were:

```
Army ---------------------- 157
Air Force --------------------- 8
Coast Guard ------------------- 8
Marine Corps ------------------ 7
Navy ------------------------ 27
Contractors ------------------- 8
Federal agencies ------------- 35
                             ───
                             250
```

Figure 2-3. Sample Survey Customers

2.4.2   SAMPLE SURVEY ANALYSIS

Primary analysis on the sample survey returns was conducted by the CAIC contractor, with additional statistical examination performed by DORO. The contractor provided results to CAIC, independent of the DORO analysis. While the contractor's report focused on the validity of individual questions and assessed the customer's perception of DLA, DORO's effort was dedicated to developing the statistics required for sample size computations.

Statistics were developed for the seven "overall opinion" questions of the surveys, items 105 through 111. These questions were selected for in-depth analysis for several reasons. First, the design of these questions lends itself to numerical analysis; that is, the answers range from 1 to 5, with 1 being the most negative and 5 the most positive response in every case. Second, these questions do not rely heavily on detailed or esoteric knowledge. They are well phrased, without confusing language or key words, and they make no assumption about the level of expertise of the respondent. Finally, these questions measure overall satisfaction, attitudes, expectations, and whether or not DLA is seen as a problem source. Complete statistics on the sample surveys are contained in Appendix D. The most important findings were that customer perception of DLA was reasonably favorable, with most respondents reporting average or higher service quality. Individual customer responses varied only slightly from the mean.

2.4.3   SAMPLE SIZE METHODOLOGY

Based on these statistics, sample size calculations were conducted. DORO considered several methods of determining an optimal sampling plan. In most logistics studies, a simple, non-stratified population of items is under consideration, from which a set is drawn for testing or evaluation. A typical example is a delivery of bolts, some portion of which are examined to ensure they meet the standards prescribed for strength, diameter, et cetera. Standard procedures for such quality control efforts are readily available, such as Mil. Std. 105D, *Sampling Procedures and Tables for Inspection by Attributes*. Customer sampling plans, however, involve several issues that are not considered by such procedures.

The initial problem is that presented by stratification. In relatively large and homogeneous populations, a reasonably small sample can adequately represent the overall population. When this population is stratified, however, some strata may be only lightly populated, and a greater proportion of the strata may be required to develop accurate statistics. An extreme example would have an overall population of 1,000 from which a sample of 20 (or 2% of the total group) is drawn, sufficient for accurate analysis. If the population is stratified into 10 groups of 100, and the same proportion applied to sample selection, only 2 members of a stratum would be used to predict the overall behavior of their 98 partners. If by chance one or both of those selected are atypical of the rest of the group, the results of analysis are unusable. In considering this issue, one source suggests that a sample should provide 100 or more units in each major category, with a minimum of 20-50 in minor categories.[1] In our final stratification plan, all customers of a specific ICP may be considered a major category, while members of a single Service or Agency within that group would be a minor category. While a sampling plan cannot rely solely on such generalizations, they are useful when used in conjunction with other methodologies.

A second issue is that of sample bias. If a sample is not truly representative of the overall population, the results of analysis will be unreliable. Bias can result from a poorly designed sampling plan, or poor execution of a sampling plan. In the first case, it is important that the sample drawn be truly random. Many studies apply *systematic sampling* techniques, which can adversely affect the selection process. The simplest process would be starting at the top of a list of members, pulling off names until the desired sample size is reached. A more common type of systematic sampling involves selecting a random number n to use as a starting point (for example, the number 8), and every n^{th} member of the group is drawn (every 8th member, in our case). In a randomly arranged list of candidates, either process can successfully provide the required sample. Now consider a list of all Air Force customers, sorted by DoDAAC, from which we want eight members. As described earlier, the Air Force uses the DoDAAC to identify the type of activity. Using the first method would result in eight Accounting and Disbursing Stations, obviously not representative of the Air Force as a whole. Applying the second method raises the possibility that a small group may be completely unrepresented, if the selection interval is larger than the stratum size.

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[1]   Sudman, Seymour. *"Applied Sampling."* Handbook of Survey Research, 1983 New York: Academic Press.

In random sampling, the probability of selection of any particular member is equal throughout the stratum. If a sample of eight is desired from a group of 50, then eight random numbers between 1 and 50 are generated and corresponding members drawn from the population. Each member then has an equal chance of selection. In our example, while Accounting and Disbursing Stations may be a small subset of Air Force customers, they will not be systematically excluded by the selection process, and will in fact be chosen in proportion to their representation among all Air Force customers. If recurring samples are conducted as planned, each such set of specific customers will be "fairly" represented in the overall analysis. This process was applied in selecting the sample survey participants.

Finally, bias in survey execution can affect the final analysis. Customers chosen for survey may decline to respond. One result of this is "non-response bias", where the results of the analysis are skewed to represent that part of the sample that chose to respond. In sampling studies, it has been seen that factors such as age, economic background, or educational level affect whether a person will answer a survey. In our case, the Customer Assessment Team selected a very specific type of respondent, the logistics representative at each customer activity. This decision can be expected to reduce non-response bias based on many external factors. Some problems remain, in that customers experiencing the most difficulty with DLA services may be more inclined to respond, seeing an avenue to improve DLA support. Others may regard the survey as unimportant, and simply not take the time to return it. The most important tool in reducing non-response bias is survey follow-up, using second mailings or telephone contact to ensure the maximum number of surveys are completed and returned.

An unfortunate consideration in selecting sample size is the expense of executing the survey. Each observation has an associated cost. If the sample size is too large, time and money are wasted in collecting information. Conversely, if the sample is too small, then the data is inadequate for accurate assessments, and again resources are wasted. While cost cannot be allowed to control the sample size determination, it is a factor to be considered in developing the sampling plan. DLA's baseline survey provided valuable data that will allow future samples to be much smaller and less costly.

Keeping this in mind, the following formula was applied to determine the smallest samples necessary to accurately evaluate DLA's performance as perceived by the Agency's customers[2]:

$$\text{Sample Size} = \frac{N \times s^2}{(N-1) \times \left(\frac{\text{Error}}{\text{Confidence Interval}}\right)^2 + s^2}$$

N represents the total population, used in our calculations as the population in a given strata (for example, Army customers buying General commodities). $N-1$, used in the denominator, has particular consequence when the denominator is small. The factor s^2 is in fact the sample variance from the survey responses. This factor yields a very good estimate of total population variance. The *Error* factor is chosen to achieve a reasonably sized sample while maintaining an accurate estimation of the true population response. DORO used an Error factor of 0.1 throughout the calculations; if the sample population's mean response equals 4.0, we will accept

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[2]   Schaeffer, Richard L. Elementary Survey Sampling, 1990 Boston: PWS-Kent.

that the total population's response is between 3.9 and 4.1. Finally, a confidence interval yielding 95% certainty was applied. We are then 95% certain that the sample population mean is within 0.1 of the total population mean.

This formula addresses many of the issues previously discussed. By using a separate N for each stratum population, we ensure that a sufficient sample is drawn from each stratum. This precludes problems that arise from calculating a sample from the total population and applying it to subordinate strata. The Error factor can be manipulated to reduce sample sizes to cut survey costs, within the constraints of maintaining an accurate assessment. The chosen Error factor of 0.1 achieves both of these goals. Finally, the formula does not rely on some "judgment factor" of how large a sample should be. Given the variance data of the earlier surveys, sample sizes can be calculated objectively for each stratum. Future surveys will provide additional data for the calculation of variance, from which new sample sizes may be generated.

2.4.4   SAMPLE SURVEY CONCLUSIONS

The similarity of responses across customer groups indicated that the number of strata could be significantly reduced. DORO recommended a total of 15 customer groups. Six Inventory Control Points were consolidated, leaving only the Fuel and Medical ICPs individually identified. This resulted from the statistical agreement among customers of the six "hardware" ICPs, and the practical issue that Fuels and Medical commodities have significantly different customer bases, procedures and logistics requirements than the other commodities. Military Services were also restructured into a single group, as no significant differences in their responses were detected during analysis. The same was true for the individual Federal Agencies who responded. Table 2-4 identifies the proposed groups as well the number of customers in each group, based on the FY 1992 customer data.

Strata	Hardware	Fuel	Medical
Contractor	499	26	53
DoD	731	0	24
Federal Agencies	3,071	26	1,056
FMS	1,468	0	209
Military Services	26,003	733	8,282
Total	31,772	785	9,624

Figure 2-4. Proposed Customer Segmentation: Number of Customers in Each Strata

The greatest advantage to this segmentation plan was that the number of surveys required to develop an accurate assessment of customer satisfaction was very small. By applying the sample size formula previously described, it was determined that only 1636 responses would be necessary, greatly reducing the cost of conducting future surveys.

Strata	Hardware	Fuel	Medical
Contractor	146	23	42
DoD	161	0	22
Federal Agencies	194	23	173
FMS	181	0	104
Military Services	205	161	201
Total	887	207	542

*Figure 2-5. Proposed Customer Sampling Plan: Number of
Surveys in Each Strata*

The proposed customer segmentation plan was briefed to CAIC on 4 August 1994. An alternative scheme maintaining the military Service identity of customers was also provided. While recognizing the advantages of each plan, CAIC had a requirement to track customer responses to specific Inventory Control Points, as well as maintain the separate identity of each service. DORO agreed to develop a sampling plan based on these requirements, using results from the baseline survey. It was expected that the additional information from those customer responses would allow more accurate sample size computations.

The low response rate to the sample survey precluded an objective selection regarding which model to use in future surveys. As previously described, 250 customers received surveys based on the Attitude model, while 250 received surveys based on the Gap model. A total of 58 responses were received from the Attitude model surveys, while 36 were received from the Gap model surveys. Greater statistical validity accrued to the Attitude model results, based solely on having more responses to evaluate.

Finally, DORO recommended a shortened questionnaire to encourage responses by customers. Both the Gap model and Attitude model questionnaires were quite lengthy. It is likely that some customers declined to respond based solely on the amount of information they were being asked to provide. Research in the customer sampling field has shown that short, easily answered surveys have a higher response rate than comprehensive questionnaires.

2.5   PHASE TWO: FINAL CUSTOMER STRATIFICATION

The baseline survey entailed mailings to 26,920 DLA customers, of which 5,531 were returned. Again, primary analysis was conducted by the CAIC contractor, with additional statistical examination performed by DORO. The response rate, while only slightly above 20%, did provide additional data which enabled DORO to more precisely calculate sample sizes for future surveys. Additionally, this survey would provide greater information on the variability of responses between the customer groups, ensuring that the final customer stratification plan properly identified all uniquely identifiable groups.

2.5.1 BASELINE SURVEY ANALYSIS

Overall, analysis of the responses to the baseline survey indicated that customers maintain a very positive view of DLA. The survey instrument was revised based on the results of the sample survey, leaving five "overall opinion" questions for analysis (items 76-80). In every case 90% of respondents answered with 3 (Average Performance) or higher. More important to the DORO effort, individual customers responses again varied only slightly from the average response in each group, indicating that small samples from a few well-defined customer strata would provide an accurate assessment of customer satisfaction. Baseline survey statistics are provided at Appendix E.

2.5.2 BASELINE SURVEY CONCLUSIONS

Based on the baseline survey responses, the requirements for individual ICP and military Service visibility, and the constraints of the Services' DoDAAC assignment methodology, the final customer stratification scheme was developed. A total of 72 customer strata allow a comprehensive view of DLA performance while providing individual analysis for specific ICPs and military Services. Figure 2-6 presents the final strata development:

Customer Types	Commodity Groups
Army	Construction
Air Force	Electronics
Navy	Fuels
Marine Corps	General
Coast Guard	Industrial
Federal Agencies	Medical
Contractors	Subsistence
Foreign Military Sales	Textiles
DLA	

Figure 2-6. Final Customer Groups

Sample size calculations were conducted on these new strata, applying the formula from Section 2.4.3 and the statistical variance developed from the baseline survey. DLA activities were not included in the final calculations, as they represent internal Agency transfers rather than true customers. This reduced the number of strata from 72 to 64. The resulting sample consisted of 9,720 customers from the overall population of 32,415 non-DLA activities. The final sampling plan is presented in Section 3, Results.

2.5.3 CUSTOMER INFORMATION BASE UPDATE

The customer information base for both the sample and baseline survey was based on requisitions from fiscal year 1992. Discussions regarding updates to the information base centered on frequency of update, alternative sources of data, responsibility for continuing maintenance, and additional customer identification methodology.

In discussions with CAIC, it was decided that the update should be conducted after final analysis of the baseline survey, when the final customer stratification strategy would be developed. Any update prior to that determination would not add any useful information to the effort, and would require modification later to fit the final stratification scheme.

An additional issue regarding customer identification arose during the course of the project. There are activities which receive shipments from DLA depots, while not requisitioning directly from DLA. Because the customer information base was developed from requisition history files, these "distribution customers" were not included. While DORO did investigate methods of identifying these customers, they were not included in the updated customer information base. Further examination by the Corporate Customer Assessment Team should be conducted before including these activities in future data bases.

Finally, CAIC requested additional fields in the information base to identify the state in which the activity resides, and the dollar value of the requisitions submitted during the fiscal year. State information was drawn from the "mail state" field of the requisition history files. Dollar value calculations were conducted in developing the original information base, and were now added to the final data file.

The final customer information base was developed using fiscal year 1994 requisition history files, the latest complete fiscal year for which data was available. The new stratification methodology obviated the need for identification by type of activity within each service, greatly reducing processing time. The customer control numbers discussed in Section 2.3 were no longer required, and were replaced with simpler identification by Service (USAF, USMC, etc.). Customer addresses were drawn from the DIDB customer address file; due to the marginal value of running a second match against the DAASC address file, the step was omitted for the update. The updated customer information base was delivered to CAIC as a dBase III+ file.

SECTION 3

RESULTS

3.1   CUSTOMER INFORMATION BASE

The updated customer information base identified 32,943 customers, submitting 19,342,064 requisitions having a total value of $14,982,749,210. The fuel commodity, while having the fewest requisitions of any ICP (only 1/2 of one percent of total requisitions submitted), accounted for almost 43% of sales volume. This results from a small number of fuel sites purchasing the relatively expensive fuel commodities in great volume. The medical commodity had the lowest dollar sales, totaling only $539,232,963. Overall, these totals do not significantly differ from those found in the fiscal year 1992 data.
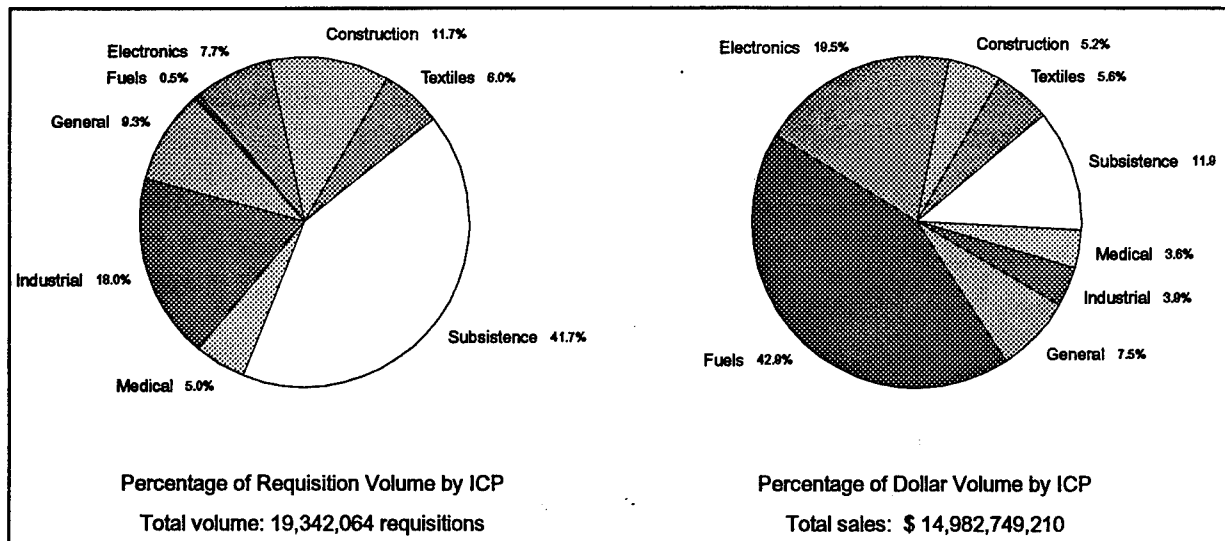
Figure 3-1. Comparison of Sales by Inventory Control Points

The inclusion of the Mail State field provided only marginal return. Almost without exception, customers with APO or FPO addresses did not provide data in this field. Many other customers entered State information in the free-format address fields, using the full state name or a variety of abbreviations, precluding successful text searches within those fields. Accordingly, the ZIP code provides the most reliable method of geographic data on the customers.

The final file layout was a 305-column flat file, sorted by DoDAAC, providing customer DoDAAC, Service, mail state, ZIP code, address, and requisition volume and dollar value for each separate commodity. The final customer information base file layout is provided at Appendix F.

3.2   CUSTOMER STRATIFICATION

Figure 3-2 presents the number of customers by Service for fiscal year 1994. One customer DoDAAC could not be associated to a specific service, as the Service identifier may be used by all Services (DoDAAC YDFSPM, a Fuels customer). DLA customers are included for information only; as previously discussed, these are primarily inter-depot transfers to maintain stock levels, and should not be included in customer satisfaction surveys.

Federal 14.0%
Contractor 1.6%
FMS 4.8%
Coast Guard 2.6%
Marine 3.2%
DLA 0.2%
Air Force 2.8%
Navy 10.7%
Army 60.0%

32,943 Individual Customers
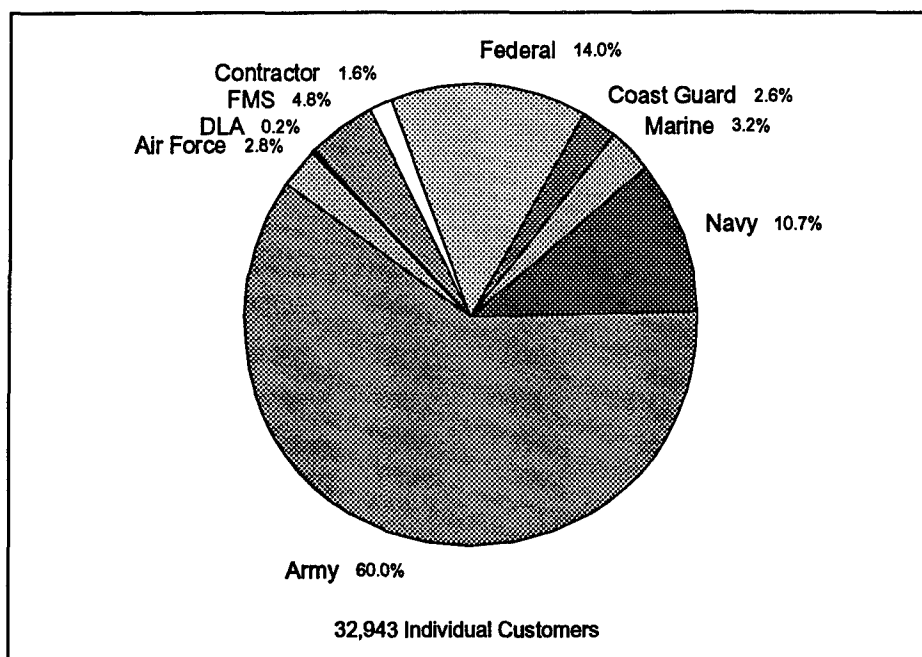
Figure 3-2. Customers by Service or Agency

As the chart indicates, Army units account for great majority of individual customers. This is in consonance with other DORO studies, and results from the Army's system of assigning DoDAACs to relatively small units. This allows flexibility in reorganizing units to various larger commands without interrupting their logistics support. Conversely, the relatively small number of Air Force customers reflects the Air Force practice of consolidating requisitions from smaller units before forwarding them to DLA.

Figure 3-3 presents the number of customers in each strata. This stratification table is the basis for customer sampling plan calculations. It should be noted that a customer requisitioning more than one commodity in 1994 will appear in more than one cell in the stratification table.

	Cons	Elex	Fuel	Genl	Indl	Medl	Subs	Text	Total by Service
Army	13,577	10,758	166	15,495	11,887	4,867	356	10,244	67,350
Contractor	215	312	101	282	307	54	6	56	1,333
DLA	19	27	2	53	23	12	362	30	528
Federal	961	1,499	40	2,778	1,119	856	786	1,173	9,212
FMS	988	1,081	3	1,085	1,089	176	18	290	4,730
NAVY	2,077	2,255	889	2,681	2,122	1,951	825	2,521	15,321
USAF	559	577	220	637	369	443	171	586	3,562
USCG	665	607	132	788	714	597	118	767	4,388
USMC	663	530	13	728	578	478	80	759	3,829
Total by ICP	19,724	17,646	1,566	24,527	18,208	9,434	2,722	16,426	

Figure 3-3. Customer Stratification Table

3.3 CUSTOMER SAMPLING PLAN

The sampling plan methodology discussed in Section 2.4.3 was applied to the customer strata of table 3-3. Sample sizes were calculated using the prescribed formula and statistics developed from the baseline survey. DLA activities were excluded, resulting in 64 customer strata. The final sample sizes are presented in figure 3-4.

	Cons	Elex	Fuel	Genl	Indl	Medl	Subs	Text	Total by Service
Army	191	190	90	191	191	186	126	190	1,355
Contractor	115	138	72	132	137	44	6	46	690
Federal	196	211	35	226	202	191	187	203	1,451
FMS	197	200	3	201	201	103	17	133	1,055
NAVY	215	217	189	220	216	214	186	219	1,676
USAF	177	179	119	184	152	163	103	179	1,256
USCG	144	141	77	149	146	140	72	148	1,017
USMC	196	182	12	201	188	176	62	203	1,220
Total by ICP	1,431	1,458	597	1,504	1,433	1,217	759	1,321	9,720

Figure 3-4. Sample Size by Customer Strata

3-3

These sample sizes provide the smallest number of responses required to develop an assessment of customer satisfaction with a 95% confidence level. The number of surveys actually mailed is dependent on the expected response rate of the customers.

3.4 ADDITIONAL CUSTOMER IDENTIFICATION

As previously, mentioned, CAIC requested a feasibility assessment of including "distribution customers" in the customer information base. These customers can be identified using the DIDB MRO files, which show shipments from DLA depots. These records, then, identify all activities served by DLA depots, regardless of the agency to which the requisition was made. This file appears suitable for identifying DLA's "distribution customers".

Two considerations arise in application of these files. First, the Corporate Customer Assessment Team defined a DLA customer as the activity submitting the original requisition to DLA, which led to the use of the DIDB requisition history files to identify customers. Some activities identified by MRO files do not meet this definition. Shipments from DLA depots may be in response to requisitions for items managed by non-DLA agencies, using DLA storage assets for purposes of economy or advantageous location. Second, an important feature of the customer information base is the ability to rank customers by the number of requisitions submitted, and the dollar value of requisitions submitted. This information for distribution customers actually accrues to the agency managing the items ordered; if not carefully manipulated, quantity and cost information on these activities will inflate the calculation of DLA sales volume.

Neither of these issues preclude inclusion of distribution customers in the customer data base. The Corporate Customer Assessment Team does need to weigh these considerations in determining the desirability of redefining the term "customer" as it applies to the Agency.

SECTION 4

RECOMMENDATIONS

4.1   SURVEY RECOMMENDATIONS

Analysis of the sample survey and baseline survey indicate several issues to consider in conducting recurring surveys.

4.1.1   SAMPLING PLAN

DORO recommends implementation of the sampling plan provided by Figure 3-4. Again, these values indicate the minimum number of *returned surveys* required to achieve an accurate assessment of customer satisfaction. Calculations for the number of actual mailings must reflect the expected response rate to the survey. For example, if the 20% response rate seen in the initial surveys persists in future surveys, 48,600 mailings would be required to achieve the 9,720 required returns shown by Figure 3-4. With only 32,943 customers available, this response rate obviously cannot provide the required returns to calculate customer satisfaction to the levels desired. Improving the response rate to 40% would reduce the required mailings to 24,300.

Samples should be taken without replacement, that is, once a customer has been selected to receive a survey, he cannot be chosen again. The customer counts in Figure 3-3 show customer totals by commodity; a single customer requisitioning multiple commodities will appear in more than one cell. This method ensures visibility of customers to management at each ICP, as requested by CAIC. Sampling without replacement will ensure no customers receive more than one survey; given the large customer base, each strata is sufficiently populated to provide random selection using this method.

4.1.2   SURVEY FOLLOW-UP

The response rates of both the sample survey and baseline survey were very low, approximately 20% for the larger survey. While the contracted survey developer states that this is normal for a single-mailing survey with no follow-up[1], it must nevertheless be considered when deciding how many surveys to be mailed. Actions to increase the response rate should be considered in order to minimize the costs of conducting future surveys.

DORO recommends initial mailings be carefully tracked for response by the requested deadline date. Follow-up mailings or telephone contact on unreturned surveys should be considered, both to improve response rate and to ensure customers of DLA's commitment to meeting their needs. A 50% response rate seems an achievable goal that will reduce the number of mailings required without creating an undue administrative burden dedicated to tracing all non-responses.

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[1]   John T. Mentzer, University of Tennessee, Knoxville

Finally, alternative survey methods should be considered, including electronic surveys, telephonic surveys, and questionnaires shipped with deliveries. Any of these methods may increase survey response, and in some cases target specific customer groups that may have particular issues requiring resolution.

4.1.3 SURVEY CONTENT

The complexity of the initial surveys may have contributed to the low response rate. DORO recommends that the questionnaire be modified to contain fewer questions, with less detailed information requested. A few well-worded questions can provide an assessment of customer satisfaction, and identify any important trends which may deserve further investigation.

4.2 CUSTOMER INFORMATION BASE RECOMMENDATIONS

CAIC requested specific recommendations on maintenance of the customer information base, including frequency of update and alternative sources of data.

4.2.1 UPDATE FREQUENCY

The customer information base should be updated annually, on a fiscal year basis. This periodicity provides reasonable visibility of new customers, lost customers, and changes to unit addresses (particularly for military customers with shifting APOs), while minimizing data collection and processing costs.

4.2.2 DATA SOURCES

While DORO maintains the capability to update the customer information base, we recommend that recurring updates be provided by the Defense Automatic Addressing System Center (DAASC). As described in Section 2.1.6, the initial customer information base was supported by a customer address file provided by DAASC. DAASC has visibility of supply transactions for all customers ordering from the Defense Logistics Agency, thereby establishing the capability to provide requisition counts, dollar value and address information for every DoDAAC doing business with the Agency. This sole source of information can replace the multiple sources DORO utilized in developing the original files. This also precludes the need for data calls to DPSC and DFSC to supplement the DIDB requisition history data, and ensures that data format and content is consistent across all commodities.

Alternatively, data can be provided individually by each ICP. While this would require Headquarters DLA to manage file format and content, it provides the benefit of ensuring agreement between Headquarters and each ICP. In efforts of this type, discrepancies frequently arise when separate offices include different record types in their data manipulation. By setting a prescribed format, DLA Headquarters would ensure consistency while keeping the ICPs involved in the overall effort.

4.2.3   DISTRIBUTION CUSTOMERS

DORO recommends maintaining a separate data file on distribution customers, primarily due to the different nature of their requirements. Because they do not order directly from DLA, it can be expected that their perception of logistics support is influenced primarily by their supporting organizations, rather than DLA. Further, the measure of interaction for this group is likely the total number of shipments made, rather than requisitions submitted or dollar value of sales. A separate survey instrument may also be appropriate to ensure that management receives an accurate assessment of customer satisfaction from this group.

APPENDIX A

ACTIVITY CODES BY SERVICE

Activity Codes By Service

Discussion

Section 2.3 describes the assignment of customer control numbers to identify the survey participants by commodity purchased, major Service or Agency, and type of activity. A 4-digit code was assigned to each customer in the original FY92 customer information base.. The 3rd and 4th digits identify the activity types.

```
4 2 1 2
      └── Activity Type
    └── Service or Agency
└─ Commodity
```
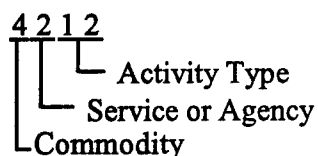
Air Force Activity Codes

Activity Code	Activity Type
00	Accounting and Disbursing Station Number
01	Administrative Reporting
02	Base Supply
03	Civil Engineer
04	ALC Depot
05	Base Equipment
06	Morale, Welfare and Recreation - MWR
07	Satellite
08	Engineering Data
09	Engine Management
10	Munitions (Nuclear and nonnuclear munitions)
11	Library
12	Medical Supply
13	Specialty
14	Fuel Supply
15	AFSC Purchase
16	Reclamation and Demilitarization
17	Troop Issue Commissary
18	Resale Commissary
19	Computer Systems, communications and Data Processing Centers
20	Munitions (Nuclear Ordnance Commodity management items)
21	Weapon System
22	Miscellaneous
23	Ship-to-address
24	Ground Fuel

Contractor Activity Codes

Activity Code	Activity Type
01	Army Sponsor
02	Air Force Sponsor
03	Marine Corps Sponsor
04	Navy Sponsor
05	Defense Logistics Agency Sponsor

Activity Codes By Service

Navy Activity Codes

Activity Code	Activity Type
01	Major Claimants
02	Major Shore Activities
03	Ships
04	Supply and Support Activities
05	Repair Facilities
06	Construction Activities and Commands
07	Weapons Activities and Facilities
08	Aviation
09	Communications and Electronics
10	Medical
11	Security Activities
12	Detachments
13	Reserve Units
14	Marine Corps Units
15	Miscellaneous

Army Activity Codes

Activity Code	Activity Type
01	Army Units

Marine Corps Activity Codes

Activity Code	Activity Type
01	Marine Corps Units

Coast Guard Activity Codes

Activity Code	Activity Type
01	Coast Guard Units

Foreign Military Sales Activity Codes

Activity Code	Activity Type
01	Army Sponsor
02	Air Force Sponsor
03	Marine Corps Sponsor
04	Navy Sponsor
05	Defense Logistics Agency Sponsor

Federal Agency Activity Codes

Activity Code	Activity Type
00	Congress and Miscellaneous Organizations
03	Library of Congress
04	Government Printing Office
10	Judiciary
11	Executive Office of the President
12	Department of Agriculture
13	Department of Commerce
14	Department of the Interior
15	Department of Justice
16	Department of Labor
18	US Postal service
19	Department of State
20	Department of the treasury
24	Office of Personnel Management
33	Smithsonian Institution
36	Veterans Administration
44	ACTION
45	Equal Employment Opportunity Commission
47	General Services Administration
49	National Science Foundation
50	Securities and Exchange Commission
56	Central Intelligence Agency
58	FEMA
60	Railroad Retirement Board
61	Consumer Product Safety Commission
64	Tennessee Valley Authority
67	US Information Agency
68	Environmental Protection Agency
69	Department of Transportation
71	Overseas Private Investment Corporation
72	Agency for International Development
73	Small Business Administration
75	Department of Health and Human Services
80	NASA
86	Department of Housing and Urban Development
89	Department of Energy
90	Selective Service System
95	Independent US Government Agencies
96	Corps of Engineers, Civil
99	District of Columbia

APPENDIX B

FY 92 CUSTOMER INFORMATION FILE LAYOUT

FY 92 Customer Information File Layout.
Sorted By DoDAAC. Dollar value in thousands of dollars.

Start column	End column	Item description
1	18	Title of Commanding Officer
20	54	TAC Line 1 (Address Line 1)
56	90	TAC Line 2 (Address Line 2)
92	126	TAC Line 3 (Address Line 3)
128	162	TAC Line 4 (Address Line 4)
164	167	Customer Control Code
169	174	DoDAAC
176	180	Dollar value of requisitions FY92 in thousands ($/1000). Reflects sales only for the commodity for which the customer is being surveyed.

APPENDIX C

NUMBER OF CUSTOMERS IN SURVEY GROUPS, PHASE I

Federal Agency Customer Survey Groups

Type		Const	Elex	Fuels	Gen	Indl	Med	Subs	Text	Total
00	Congress and Misc Orgs	4	37		64	12	12	454	590	1173
03	Library of Congress		1							1
04	Gvt Printing Office				1					1
10	Judiciary		2		4					6
11	Exec Office of President		1				1			2
12	Dept of Agriculture	13	24	1	91	17	10	1	106	263
13	Dept of Commerce	6	19	6	17	3	3	1	3	58
14	Dept of the Interior	25	11	7	100	20	9	3	37	212
15	Dept of Justice	9	19	3	31	9	20	16	19	126
16	Dept of Labor	1			18	1	1	14	2	37
18	US Postal Service	46	70		175	47	21		5	364
19	Dept of State	6	1	1	53	33	1	2	2	99
20	Dept of Treasury	3	9		15	5	2		5	39
24	Office of Personnel Mgt				1				1	2
33	Smithsonian Inst	1			1					2
36	Veterans Administration	21	10	18	18	18	58	55	23	221
44	ACTION		1							1
45	Equal Empl Opp Comm		1							1
47	GSA	16	22		121	8	2		3	172
49	Natl Science Foundation						1			1
50	Securities & Exch Comm		1							1
56	Central Intelligence Agcy		1							1
58	FEMA	1	5		5		1		1	13
60	Railroad Retirement Bd		1							1
61	Consumer Prod Safety					1				1
64	TVA				1				2	3
67	US Information Agency		9		3	2				14
68	EPA	1	1		3					5
69	Dept of Transportation	143	377		462	175	258	1	15	1431
71	Overseas Private Invest		1							1
72	AID						3			3
73	Small Business Admin				2		1			3
75	Dept Health & HS	5	7		74		13	3	1	103
80	NASA	4	9	1	8	4	5		2	33
86	Dept of Housing & U D				1	1				2
89	Dept of Energy	5	5	2	8	2	4	1	5	32
90	Selective Service System				1					1
95	Ind US Govt Agencies		1		1					2
96	Corps of Engineers, Civil	12	5		36	7	2		15	77
99	District of Columbia							1		1
Total by Commodity		322	651	39	1315	365	428	552	837	4509

C-3

Numbers of Customers in Survey Groups

Air Force Customer Survey Groups

Type	Const	Elex	Fuels	Gen	Ind	Med	Subs	Text	Total
00 Acctg & Disb St Nr		1							1
01 Admin Rptg	1				3			1	5
02 Base Supply	60	61		59	57	42	6	42	327
03 Civil Engr									
04 ALC Depot		2		1	2	1		1	7
05 Base Equipt	49	43		54	4	21		58	229
06 MWR			1	1					2
07 Satellite	1		1						2
08 Engr Data									
09 Engine Mgt									
10 Munitions									
11 Library									
12 Medical	16	17		9	15	43	1	22	123
13 Specialty		3							3
14 Fuel Supply			229		1				230
15 AFSC Purchase									
16 Reclam/Demil									
17 Commissary (troop)							65		65
18 Commissary (retail)							42		42
19 Computer systems									
20 Munitions					1				1
21 Weapon		1							1
22 Misc	2	3		1	3	1		6	16
23 Ship–to–address	1	1	1	2	2	1	1	1	10
24 Ground fuel									
Total by Commodity	130	132	232	128	87	109	115	131	1064

Navy Customer Survey Groups

Type	Const	Elex	Fuels	Gen	Ind	Med	Subs	Text	Total
01 Major Claimants	57	49	14	54	41	39		139	393
02 Major Shore	16	18		15	15	3	3	23	93
03 Ships	13	10	1	9	16	13		6	68
04 Supply/Support	5	8	1	13	5	5		24	61
05 Repair Faciities	3	2		4	3	2		6	20
06 Construction	9	9	2	7	16	8	3	67	121
07 Weapons Activities	8	13		10	11	45	2	27	116
08 Aviation	33	40	3	25	50	24	3	58	236
09 Communications	5	9	2	9	13	10	1	9	58
10 Medical	38	30	1	40	45	68	3	140	365
11 Security	5	3	1	8	6	3		6	32
12 Detachments	147	172	9	179	188	150	62	170	1077
13 Reserve Units	58	94	22	133	75	51	12	160	605
14 Marine Corps	6	19	5	44	17	14	16	59	180
15 Miscellaneous	9	8		6	10	3	2	10	48
Total by Commodity	412	484	61	556	511	438	107	904	3473

Numbers of Customers in Survey Groups

Contractor Survey Groups

Type	Const	Elex	Fuels	Gen	Ind	Med	Subs	Text	Total
01 USA Sponsor	28	32		25	58	2	1	9	155
02 USAF Sponsor	26	102	15	36	67	2		3	251
03 USMC Sponsor									
04 USN Sponsor	22	35		21	20	4		4	106
05 DLA Sponsor									
Total by Commodity	76	169	15	82	145	8	1	16	512

Foreign Military Sales Survey Groups

Type	Const	Elex	Fuels	Gen	Ind	Med	Subs	Text	Total
01 USA Sponsor						2			2
02 USAF Sponsor									
03 USMC Sponsor									
04 USN Sponsor									
05 DLA Sponsor									
Total by Commodity									2

Non−segmented Customer Survey Groups

Type	Const	Elex	Fuels	Gen	Ind	Med	Subs	Text	Total
01 Army	3553	2850	72	4359	3472	1430	181	4564	20481

Type	Const	Elex	Fuels	Gen	Ind	Med	Subs	Text	Total
01 Marine Corps	151	152		184	138	110	11	304	1050

Type	Const	Elex	Fuels	Gen	Ind	Med	Subs	Text	Total
01 Coast Guard	133	139	15	164	134	122	6	187	900

APPENDIX D

SAMPLE SURVEY STATISTICS

Q105 What is your general impression of the service DLA provides?
    1. Terrible 2. Poor 3. Average 4. Good 5. Excellent

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	2.00	1	2.8	3.0	3.0
	3.00	19	52.8	57.6	60.6
	4.00	12	33.3	36.4	97.0
	5.00	1	2.8	3.0	100.0
	.	3	8.3	Missing	
	Total	36	100.0	100.0	

Mean	3.394	Std err	.106	Median	3.000
Mode	3.000	Std dev	.609	Variance	.371
Range	3.000	Minimum	2.000	Maximum	5.000
Sum	112.000				

Valid cases   33   Missing cases   3

- -

Q106 Which word(s) best describe your feelings toward DLA?
    1. Very Dissatisfied 2. Dissatisfied 3. Somewhat Satisfied 4. Satisfied
    5. Very Satisfied

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1.00	1	2.8	3.0	3.0
	3.00	15	41.7	45.5	48.5
	4.00	16	44.4	48.5	97.0
	5.00	1	2.8	3.0	100.0
	.	3	8.3	Missing	
	Total	36	100.0	100.0	

Mean	3.485	Std err	.124	Median	4.000
Mode	4.000	Std dev	.712	Variance	.508
Range	4.000	Minimum	1.000	Maximum	5.000
Sum	115.000				

Valid cases   33   Missing cases   3

Q107   In discussing DLA with someone in your organization, are your statements regarding DLA likely to be favorable or unfavorable?
1. Very Unfavorable   2. Unfavorable   3. Somewhat Favorable   4. Favorable
5. Very Favorable

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1.00	1	2.8	3.0	3.0
	2.00	1	2.8	3.0	6.1
	3.00	15	41.7	45.5	51.5
	4.00	15	41.7	45.5	97.0
	5.00	1	2.8	3.0	100.0
	.	3	8.3	Missing	
	Total	36	100.0	100.0	

Mean	3.424	Std err	.131	Median	3.000
Mode	3.000	Std dev	.751	Variance	.564
Range	4.000	Minimum	1.000	Maximum	5.000
Sum	113.000				

* Multiple modes exist. The smallest value is shown.

Valid cases   33   Missing cases   3

- -

Q108   How likely are you to recommend to someone in an organization similar to yours that they use DLA?
1. Very Unlikely   2. Unlikely   3. Somewhat Unlikely   4. Likely   5. Very Likely

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1.00	2	5.6	6.1	6.1
	2.00	2	5.6	6.1	12.1
	3.00	4	11.1	12.1	24.2
	4.00	24	66.7	72.7	97.0
	5.00	1	2.8	3.0	100.0
	.	3	8.3	Missing	
	Total	36	100.0	100.0	

Mean	3.606	Std err	.157	Median	4.000
Mode	4.000	Std dev	.899	Variance	.809
Range	4.000	Minimum	1.000	Maximum	5.000
Sum	119.000				

Valid cases   33   Missing cases   3

Q109 What is the likelihood that your activity would purchase from DLA if it were not required to?
1. Very Unlikely 2. Unlikely 3. Somewhat Unlikely 4. Likely 5. Very Likely

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	.00	1	2.8	3.0	3.0
	1.00	2	5.6	6.1	9.1
	2.00	1	2.8	3.0	12.1
	3.00	3	8.3	9.1	21.2
	4.00	24	66.7	72.7	93.9
	5.00	2	5.6	6.1	100.0
	.	3	8.3	Missing	
	Total	36	100.0	100.0	

Mean	3.606	Std err	.189	Median	4.000
Mode	4.000	Std dev	1.088	Variance	1.184
Range	5.000	Minimum	.000	Maximum	5.000
Sum	119.000				

Valid cases   33   Missing cases   3

- -

Q110 What statement below generally describes your preference for purchasing items from sources other than DLA?
1. Very much prefer other sources 2. Somewhat prefer other sources 3. Have no preference 4. Somewhat prefer DLA 5. Very much prefer DLA

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	.00	1	2.8	3.0	3.0
	1.00	4	11.1	12.1	15.2
	2.00	4	11.1	12.1	27.3
	3.00	13	36.1	39.4	66.7
	4.00	9	25.0	27.3	93.9
	5.00	2	5.6	6.1	100.0
	.	3	8.3	Missing	
	Total	36	100.0	100.0	

Mean	2.939	Std err	.208	Median	3.000
Mode	3.000	Std dev	1.197	Variance	1.434
Range	5.000	Minimum	.000	Maximum	5.000
Sum	97.000				

Valid cases   33   Missing cases   3

Q111   How satisfied are you with the service that DLA provides?
        1. Very Dissatisfied 2. Dissatisfied 3. Somewhat Satisfied 4. Satisfied
        5. Very Satisfied

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1.00	1	2.8	3.0	3.0
	2.00	1	2.8	3.0	6.1
	3.00	13	36.1	39.4	45.5
	4.00	18	50.0	54.5	100.0
	.	3	8.3	Missing	
	Total	36	100.0	100.0	

Mean	3.455	Std err	.124	Median	4.000
Mode	4.000	Std dev	.711	Variance	.506
Range	3.000	Minimum	1.000	Maximum	4.000
Sum	114.000				

Valid cases   33   Missing cases   3

APPENDIX E

BASELINE SURVEY STATISTICS

Statistics for Question 76

Q76	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	42	0.8	42	0.8
2	311	6.0	353	6.8
3	2025	38.8	2378	45.6
4	2492	47.8	4870	93.4
5	343	6.6	5213	100.0

N	5213	Sum Wgts	5213
Mean	3.533858	Sum	18422
Std Dev	0.740413	Variance	0.548211
Skewness	-0.36898	Kurtosis	0.398424
USS	67958	CSS	2857.274
CV	20.95196	Std Mean	0.010255
T:Mean=0	344.6031	Pr>|T|	0.0001
Num ~= 0	5213	Num > 0	5213
M(Sign)	2606.5	Pr>=|M|	0.0001
Sgn Rank	6795146	Pr>=|S|	0.0001

Table of Serv by Question 76

Frequency Percent Row Pct Col Pct	1	2	3	4	5	Total
AIRF	0	26	101	138	31	296
	0.00	0.50	1.94	2.65	0.59	5.68
	0.00	8.78	34.12	46.62	10.47	
	0.00	8.36	4.99	5.54	9.04	
ARMY	19	117	1070	1360	160	2726
	0.36	2.24	20.53	26.09	3.07	52.29
	0.70	4.29	39.25	49.89	5.87	
	45.24	37.62	52.84	54.57	46.65	
CTGD	1	8	61	75	4	149
	0.02	0.15	1.17	1.44	0.08	2.86
	0.67	5.37	40.94	50.34	2.68	
	2.38	2.57	3.01	3.01	1.17	
MARI	2	10	64	81	20	177
	0.04	0.19	1.23	1.55	0.38	3.40
	1.13	5.65	36.16	45.76	11.30	
	4.76	3.22	3.16	3.25	5.83	
NAVY	3	48	210	296	47	604
	0.06	0.92	4.03	5.68	0.90	11.59
	0.50	7.95	34.77	49.01	7.78	
	7.14	15.43	10.37	11.88	13.70	
OTH1	1	6	92	102	19	220
	0.02	0.12	1.76	1.96	0.36	4.22
	0.45	2.73	41.82	46.36	8.64	
	2.38	1.93	4.54	4.09	5.54	
OTH2	0	5	51	57	11	124
	0.00	0.10	0.98	1.09	0.21	2.38
	0.00	4.03	41.13	45.97	8.87	
	0.00	1.61	2.52	2.29	3.21	
OTH3	16	91	376	383	51	917
	0.31	1.75	7.21	7.35	0.98	17.59
	1.74	9.92	41.00	41.77	5.56	
	38.10	29.26	18.57	15.37	14.87	
Total	42	311	2025	2492	343	5213
	0.81	5.97	38.85	47.80	6.58	100.00

----------------- SERV=AIRF ----------------

N	296	Sum Wgts	296
Mean	3.587838	Sum	1062
Std Dev	0.79344	Variance	0.629546
Skewness	-0.18885	Kurtosis	-0.37199
USS	3996	CSS	185.7162
CV	22.1147	Std Mean	0.046118
T:Mean=0	77.79734	Pr>|T|	0.0001
Num ~= 0	296	Num > 0	296
M(Sign)	148	Pr>=|M|	0.0001
Sgn Rank	21978	Pr>=|S|	0.0001

--------------- SERV=ARMY -----------------

N	2726	Sum Wgts	2726
Mean	3.559428	Sum	9703
Std Dev	0.701211	Variance	0.491696
Skewness	-0.37807	Kurtosis	0.575127
USS	35877	CSS	1339.873
CV	19.7001	Std Mean	0.01343
T:Mean=0	265.0297	Pr>|T|	0.0001
Num ~= 0	2726	Num > 0	2726
M(Sign)	1363	Pr>=|M|	0.0001
Sgn Rank	1858451	Pr>=|S|	0.0001

---------------- SERV=CTGD----------------

N	149	Sum Wgts	149
Mean	3.489933	Sum	520
Std Dev	0.67401	Variance	0.45429
Skewness	-0.56688	Kurtosis	0.594847
USS	1882	CSS	67.2349
CV	19.31299	Std Mean	0.055217
T:Mean=0	63.20387	Pr>|T|	0.0001
Num ~= 0	149	Num > 0	149
M(Sign)	74.5	Pr>=|M|	0.0001
Sgn Rank	5587.5	Pr>=|S|	0.0001

-------------- SERV=MARI -------------------

N	177	Sum Wgts	177
Mean	3.60452	Sum	638
Std Dev	0.805931	Variance	0.649525
Skewness	-0.34496	Kurtosis	0.357825
USS	2414	CSS	114.3164
CV	22.3589	Std Mean	0.060577
T:Mean=0	59.50263	Pr>|T|	0.0001
Num ~= 0	177	Num > 0	177
M(Sign)	88.5	Pr>=|M|	0.0001
Sgn Rank	7876.5	Pr>=|S|	0.0001

---------------- SERV=NAVY -----------------

N	604	Sum Wgts	604
Mean	3.556291	Sum	2148
Std Dev	0.769534	Variance	0.592183
Skewness	-0.3648	Kurtosis	0.067894
USS	7996	CSS	357.0861
CV	21.63867	Std Mean	0.031312
T:Mean=0	113.5764	Pr>|T|	0.0001
Num ~= 0	604	Num > 0	604
M(Sign)	302	Pr>=|M|	0.0001
Sgn Rank	91355	Pr>=|S|	0.0001

---------------- SERV=OTH1 -----------------

N	220	Sum Wgts	220
Mean	3.6	Sum	792
Std Dev	0.704843	Variance	0.496804
Skewness	-0.04422	Kurtosis	0.239301
USS	2960	CSS	108.8
CV	19.57897	Std Mean	0.047521
T:Mean=0	75.75677	Pr>|T|	0.0001
Num ~= 0	220	Num > 0	220
M(Sign)	110	Pr>=|M|	0.0001
Sgn Rank	12155	Pr>=|S|	0.0001

------------- SERV=OTH2 -------------------

N	124	Sum Wgts	124
Mean	3.596774	Sum	446
Std Dev	0.709051	Variance	0.502754
Skewness	0.068022	Kurtosis	-0.26708
USS	1666	CSS	61.83871
CV	19.71353	Std Mean	0.063675
T:Mean=0	56.48672	Pr>|T|	0.0001
Num ~= 0	124	Num > 0	124
M(Sign)	62	Pr>=|M|	0.0001
Sgn Rank	3875	Pr>=|S|	0.0001

------------- SERV=OTH3 --------------------

N	917	Sum Wgts	917
Mean	3.394766	Sum	3113
Std Dev	0.808724	Variance	0.654034
Skewness	-0.40112	Kurtosis	0.252061
USS	11167	CSS	599.0949
CV	23.82266	Std Mean	0.026706
T:Mean=0	127.1143	Pr>|T|	0.0001
Num ~= 0	917	Num > 0	917
M(Sign)	458.5	Pr>=|M|	0.0001
Sgn Rank	210451.5	Pr>=|S|	0.0001

Statistics for Question 77

Q77	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	59	1.1	59	1.1
2	315	6.0	374	7.2
3	1655	31.8	2029	38.9
4	2837	54.4	4866	93.4
5	346	6.6	5212	100.0

N	5212	Sum Wgts	5212
Mean	3.594014	Sum	18732
Std Dev	0.750223	Variance	0.562835
Skewness	-0.68244	Kurtosis	0.843527
USS	70256	CSS	2932.933
CV	20.87425	Std Mean	0.010392
T:Mean=0	345.8529	Pr>|T|	0.0001
Num ~= 0	5212	Num > 0	5212
M(Sign)	2606	Pr>=|M|	0.0001
Sgn Rank	6792539	Pr>=|S|	0.0001

Table of Serv by Question 77

Frequency Percent Row Pct Col Pct	1	2	3	4	5	Total
AIRF	3	25	99	139	31	297
	0.06	0.48	1.90	2.67	0.59	5.70
	1.01	8.42	33.33	46.80	10.44	
	5.08	7.94	5.98	4.90	8.96	
ARMY	24	121	856	1550	176	2727
	0.46	2.32	16.42	29.74	3.38	52.32
	0.88	4.44	31.39	56.84	6.45	
	40.68	38.41	51.72	54.64	50.87	
CTGD	1	8	55	83	2	149
	0.02	0.15	1.06	1.59	0.04	2.86
	0.67	5.37	36.91	55.70	1.34	
	1.69	2.54	3.32	2.93	0.58	
MARI	2	11	59	86	19	177
	0.04	0.21	1.13	1.65	0.36	3.40
	1.13	6.21	33.33	48.59	10.73	
	3.39	3.49	3.56	3.03	5.49	
NAVY	6	45	173	340	40	604
	0.12	0.86	3.32	6.52	0.77	11.59
	0.99	7.45	28.64	56.29	6.62	
	10.17	14.29	10.45	11.98	11.56	
OTH1	2	8	75	122	12	219
	0.04	0.15	1.44	2.34	0.23	4.20
	0.91	3.65	34.25	55.71	5.48	
	3.39	2.54	4.53	4.30	3.47	
OTH2	0	8	40	65	11	124
	0.00	0.15	0.77	1.25	0.21	2.38
	0.00	6.45	32.26	52.42	8.87	
	0.00	2.54	2.42	2.29	3.18	
OTH3	21	89	298	452	55	915
	0.40	1.71	5.72	8.67	1.06	17.56
	2.30	9.73	32.57	49.40	6.01	
	35.59	28.25	18.01	15.93	15.90	
Total	59	315	1655	2837	346	5212
	1.13	6.04	31.75	54.43	6.64	100.00

--------------- SERV=AIRF ----------------

N	297	Sum Wgts	297
Mean	3.572391	Sum	1061
Std Dev	0.827512	Variance	0.684776
Skewness	-0.3947	Kurtosis	0.11771
USS	3993	CSS	202.6936
CV	23.16409	Std Mean	0.048017
T:Mean=0	74.3983	Pr>|T|	0.0001
Num -= 0	297	Num > 0	297
M(Sign)	148.5	Pr>=|M|	0.0001
Sgn Rank	22126.5	Pr>=|S|	0.0001

--------------- SERV=ARMY ----------------

N	2727	Sum Wgts	2727
Mean	3.635497	Sum	9914
Std Dev	0.708838	Variance	0.502452
Skewness	-0.68665	Kurtosis	1.075257
USS	37412	CSS	1369.684
CV	19.4977	Std Mean	0.013574
T:Mean=0	267.8299	Pr>|T|	0.0001
Num -= 0	2727	Num > 0	2727
M(Sign)	1363.5	Pr>=|M|	0.0001
Sgn Rank	1859814	Pr>=|S|	0.0001

----------------- SERV=CTGD ---------------

N	149	Sum Wgts	149
Mean	3.516779	Sum	524
Std Dev	0.653515	Variance	0.427081
Skewness	-0.87251	Kurtosis	0.818721
USS	1906	CSS	63.20805
CV	18.58276	Std Mean	0.053538
T:Mean=0	65.68751	Pr>|T|	0.0001
Num -= 0	149	Num > 0	149
M(Sign)	74.5	Pr>=|M|	0.0001
Sgn Rank	5587.5	Pr>=|S|	0.0001

----------------- SERV=MARI ---------------

N	177	Sum Wgts	177
Mean	3.615819	Sum	640
Std Dev	0.804376	Variance	0.647021
Skewness	-0.44959	Kurtosis	0.441046
USS	2428	CSS	113.8757
CV	22.24603	Std Mean	0.060461
T:Mean=0	59.80454	Pr>|T|	0.0001
Num -= 0	177	Num > 0	177
M(Sign)	88.5	Pr>=|M|	0.0001
Sgn Rank	7876.5	Pr>=|S|	0.0001

--------------- SERV=NAVY ----------------

N	604	Sum Wgts	604
Mean	3.600993	Sum	2175
Std Dev	0.762773	Variance	0.581823
Skewness	-0.73735	Kurtosis	0.719036
USS	8183	CSS	350.8394
CV	21.1823	Std Mean	0.031037
T:Mean=0	116.0233	Pr>|T|	0.0001
Num -= 0	604	Num > 0	604
M(Sign)	302	Pr>=|M|	0.0001
Sgn Rank	91355	Pr>=|S|	0.0001

----------------- SERV=OTH1 --------------

N	219	Sum Wgts	219
Mean	3.611872	Sum	791
Std Dev	0.690729	Variance	0.477106
Skewness	-0.66149	Kurtosis	1.202899
USS	2961	CSS	104.0091
CV	19.12384	Std Mean	0.046675
T:Mean=0	77.38324	Pr>|T|	0.0001
Num -= 0	219	Num > 0	219
M(Sign)	109.5	Pr>=|M|	0.0001
Sgn Rank	12045	Pr>=|S|	0.0001

------------------ SERV=OTH2 -------------

N	124	Sum Wgts	124
Mean	3.637097	Sum	451
Std Dev	0.736225	Variance	0.542027
Skewness	-0.30005	Kurtosis	-0.07791
USS	1707	CSS	66.66935
CV	20.24211	Std Mean	0.066115
T:Mean=0	55.01171	Pr>|T|	0.0001
Num -= 0	124	Num > 0	124
M(Sign)	62	Pr>=|M|	0.0001
Sgn Rank	3875	Pr>=|S|	0.0001

----------------- SERV=OTH3 ---------------

N	915	Sum Wgts	915
Mean	3.471038	Sum	3176
Std Dev	0.838086	Variance	0.702388
Skewness	-0.68514	Kurtosis	0.450948
USS	11666	CSS	641.9825
CV	24.14511	Std Mean	0.027706
T:Mean=0	125.2799	Pr>|T|	0.0001
Num -= 0	915	Num > 0	915
M(Sign)	457.5	Pr>=|M|	0.0001
Sgn Rank	209535	Pr>=|S|	0.0001

Statictics for Question 78

Q78	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	52	1.0	52	1.0
2	373	7.2	425	8.2
3	1893	36.4	2318	44.6
4	2578	49.6	4896	94.2
5	304	5.8	5200	100.0

N	5200	Sum Wgts	5200
Mean	3.520962	Sum	18309
Std Dev	0.75502	Variance	0.570055
Skewness	-0.51241	Kurtosis	0.450818
USS	67429	CSS	2963.715
CV	21.44357	Std Mean	0.01047
T:Mean=0	336.2828	Pr>|T|	0.0001
Num ~= 0	5200	Num > 0	5200
M(Sign)	2600	Pr>=|M|	0.0001
Sgn Rank	6761300	Pr>=|S|	0.0001

Table of Serv by Question 78

Frequency Percent Row Pct Col Pct	1	2	3	4	5	Total
AIRF	2 0.04 0.67 3.85	35 0.67 11.78 9.38	113 2.17 38.05 5.97	123 2.37 41.41 4.77	24 0.46 8.08 7.89	297 5.71
ARMY	18 0.35 0.66 34.62	148 2.85 5.45 39.68	956 18.38 35.17 50.50	1439 27.67 52.94 55.82	157 3.02 5.78 51.64	2718 52.27
CTGD	1 0.02 0.68 1.92	9 0.17 6.08 2.41	67 1.29 45.27 3.54	66 1.27 44.59 2.56	5 0.10 3.38 1.64	148 2.85
MARI	5 0.10 2.82 9.62	9 0.17 5.08 2.41	69 1.33 38.98 3.65	77 1.48 43.50 2.99	17 0.33 9.60 5.59	177 3.40
NAVY	7 0.13 1.16 13.46	49 0.94 8.10 13.14	211 4.06 34.88 11.15	305 5.87 50.41 11.83	33 0.63 5.45 10.86	605 11.63
OTH1	2 0.04 0.92 3.85	9 0.17 4.13 2.41	86 1.65 39.45 4.54	108 2.08 49.54 4.19	13 0.25 5.96 4.28	218 4.19
OTH2	0 0.00 0.00 0.00	8 0.15 6.45 2.14	55 1.06 44.35 2.91	51 0.98 41.13 1.98	10 0.19 8.06 3.29	124 2.38
OTH3	17 0.33 1.86 32.69	106 2.04 11.61 28.42	336 6.46 36.80 17.75	409 7.87 44.80 15.87	45 0.87 4.93 14.80	913 17.56
Total	52 1.00	373 7.17	1893 36.40	2578 49.58	304 5.85	5200 100.00

```
--------------- SERV=AIRF ---------------          --------------- SERV=ARMY ---------------

N              297   Sum Wgts        297            N             2718   Sum Wgts       2718
Mean       3.444444   Sum            1023           Mean      3.577263   Sum            9723
Std Dev    0.828817   Variance    0.686937          Std Dev   0.713009   Variance    0.508382
Skewness   -0.19825   Kurtosis    -0.25131          Skewness  -0.52017   Kurtosis    0.572583
USS            3727   CSS          203.3333          USS          36163   CSS         1381.275
CV         24.06242   Std Mean    0.048093           CV        19.9317   Std Mean    0.013676
T:Mean=0   71.62077   Pr>|T|        0.0001           T:Mean=0  261.5654   Pr>|T|        0.0001
Num ~= 0        297   Num > 0         297            Num ~= 0       2718   Num > 0        2718
M(Sign)       148.5   Pr>=|M|       0.0001           M(Sign)        1359   Pr>=|M|       0.0001
Sgn Rank    22126.5   Pr>=|S|       0.0001           Sgn Rank    1847561   Pr>=|S|       0.0001


--------------- SERV=CTGD ---------------          --------------- SERV=MARI ---------------

N              148   Sum Wgts        148            N              177   Sum Wgts        177
Mean       3.439189   Sum             509           Mean      3.519774   Sum             623
Std Dev    0.692293   Variance     0.47927          Std Dev   0.846721   Variance    0.716936
Skewness    -0.3401   Kurtosis    0.414672          Skewness   -0.5454   Kurtosis    0.840634
USS            1821   CSS          70.4527          USS            2319   CSS          126.1808
CV         20.12955   Std Mean    0.056906          CV        24.05612   Std Mean    0.063643
T:Mean=0   60.43615   Pr>|T|        0.0001          T:Mean=0   55.30458   Pr>|T|        0.0001
Num ~= 0        148   Num > 0         148           Num ~= 0        177   Num > 0         177
M(Sign)          74   Pr>=|M|       0.0001          M(Sign)        88.5   Pr>=|M|       0.0001
Sgn Rank       5513   Pr>=|S|       0.0001          Sgn Rank     7876.5   Pr>=|S|       0.0001


--------------- SERV=NAVY ---------------          --------------- SERV=OTH1 ---------------

N              605   Sum Wgts        605            N              218   Sum Wgts        218
Mean       3.509091   Sum            2123           Mean      3.555046   Sum             775
Std Dev    0.769019   Variance    0.591391          Std Dev   0.711458   Variance    0.506173
Skewness   -0.58939   Kurtosis    0.45853           Skewness  -0.42846   Kurtosis    0.784351
USS            7807   CSS           357.2           USS            2865   CSS          109.8394
CV         21.91506   Std Mean    0.031265          CV        20.01263   Std Mean    0.048186
T:Mean=0   112.2367   Pr>|T|        0.0001          T:Mean=0   73.77754   Pr>|T|        0.0001
Num ~= 0        605   Num > 0         605           Num ~= 0        218   Num > 0         218
M(Sign)       302.5   Pr>=|M|       0.0001          M(Sign)         109   Pr>=|M|       0.0001
Sgn Rank    91657.5   Pr>=|S|       0.0001          Sgn Rank    11935.5   Pr>=|S|       0.0001


--------------- SERV=OTH2 ---------------          --------------- SERV=OTH3 ---------------

N              124   Sum Wgts        124            N              913   Sum Wgts        913
Mean       3.508065   Sum             435           Mean      3.393209   Sum            3098
Std Dev    0.738004   Variance     0.54465          Std Dev   0.825736   Variance     0.68184
Skewness   0.095166   Kurtosis    -0.26667          Skewness  -0.51145   Kurtosis    0.124998
USS            1593   CSS          66.99194         USS           11134   CSS          621.8379
CV         21.03735   Std Mean    0.066275          CV        24.33495   Std Mean    0.027328
T:Mean=0   52.93217   Pr>|T|        0.0001          T:Mean=0   124.1666   Pr>|T|        0.0001
Num ~= 0        124   Num > 0         124           Num ~= 0        913   Num > 0         913
M(Sign)          62   Pr>=|M|       0.0001          M(Sign)       456.5   Pr>=|M|       0.0001
Sgn Rank       3875   Pr>=|S|       0.0001          Sgn Rank    208620.5   Pr>=|S|       0.0001
```

Statistics for Question 80

Q80	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	63	1.2	63	1.2
2	327	6.3	390	7.5
3	1662	32.0	2052	39.5
4	2769	53.2	4821	92.7
5	380	7.3	5201	100.0

N	5201	Sum Wgts	5201
Mean	3.591425	Sum	18679
Std Dev	0.765704	Variance	0.586303
Skewness	-0.64592	Kurtosis	0.759241
USS	70133	CSS	3048.778
CV	21.32035	Std Mean	0.010617
T:Mean=0	338.2587	Pr>$|T|$	0.0001
Num $\neq$ 0	5201	Num > 0	5201
M(Sign)	2600.5	Pr>=$|M|$	0.0001
Sgn Rank	6763901	Pr>=$|S|$	0.0001

Table of Serv by Question 80

Frequency / Percent / Row Pct / Col Pct	1	2	3	4	5	Total
AIRF	1 0.02 0.34 1.59	30 0.58 10.14 9.17	96 1.85 32.43 5.78	137 2.63 46.28 4.95	32 0.62 10.81 8.42	296 5.69
ARMY	25 0.48 0.92 39.68	122 2.35 4.48 37.31	854 16.42 31.39 51.38	1526 29.34 56.08 55.11	194 3.73 7.13 51.05	2721 52.32
CTGD	1 0.02 0.68 1.59	7 0.13 4.73 2.14	52 1.00 35.14 3.13	85 1.63 57.43 3.07	3 0.06 2.03 0.79	148 2.85
MARI	5 0.10 2.82 7.94	10 0.19 5.65 3.06	64 1.23 36.16 3.85	80 1.54 45.20 2.89	18 0.35 10.17 4.74	177 3.40
NAVY	6 0.12 1.00 9.52	48 0.92 7.97 14.68	175 3.36 29.07 10.53	319 6.13 52.99 11.52	54 1.04 8.97 14.21	602 11.57
OTH1	2 0.04 0.91 3.17	8 0.15 3.65 2.45	80 1.54 36.53 4.81	112 2.15 51.14 4.04	17 0.33 7.76 4.47	219 4.21
OTH2	1 0.02 0.81 1.59	7 0.13 5.69 2.14	40 0.77 32.52 2.41	63 1.21 51.22 2.28	12 0.23 9.76 3.16	123 2.36
OTH3	22 0.42 2.40 34.92	95 1.83 10.38 29.05	301 5.79 32.90 18.11	447 8.59 48.85 16.14	50 0.96 5.46 13.16	915 17.59
Total	63 1.21	327 6.29	1662 31.96	2769 53.24	380 7.31	5201 100.00

E-9

Statistics for Question 79

Q79	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	83	1.6	83	1.6
2	314	6.0	397	7.6
3	995	19.2	1392	26.8
4	3288	63.3	4680	90.2
5	511	9.8	5191	100.0

N	5191	Sum Wgts	5191
Mean	3.737815	Sum	19403
Std Dev	0.779329	Variance	0.607354
Skewness	-1.08489	Kurtosis	1.775019
USS	75677	CSS	3152.167
CV	20.84986	Std Mean	0.010817
T:Mean=0	345.5592	Pr>|T|	0.0001
Num ¬= 0	5191	Num > 0	5191
M(Sign)	2595.5	Pr>=|M|	0.0001
Sgn Rank	6737918	Pr>=|S|	0.0001

Table of Serv by Question 79

Frequency Percent Row Pct Col Pct	1	2	3	4	5	Total
AIRF	4 0.08 1.36 4.82	33 0.64 11.22 10.51	56 1.08 19.05 5.63	168 3.24 57.14 5.11	33 0.64 11.22 6.46	294 5.66
ARMY	33 0.64 1.22 39.76	134 2.58 4.94 42.68	497 9.57 18.31 49.95	1797 34.62 66.21 54.65	253 4.87 9.32 49.51	2714 52.28
CTGD	1 0.02 0.68 1.20	4 0.08 2.72 1.27	29 0.56 19.73 2.91	102 1.96 69.39 3.10	11 0.21 7.48 2.15	147 2.83
MARI	7 0.13 3.95 8.43	6 0.12 3.39 1.91	27 0.52 15.25 2.71	107 2.06 60.45 3.25	30 0.58 16.95 5.87	177 3.41
NAVY	12 0.23 2.00 14.46	29 0.56 4.83 9.24	107 2.06 17.80 10.75	382 7.36 63.56 11.62	71 1.37 11.81 13.89	601 11.58
OTH1	2 0.04 0.91 2.41	12 0.23 5.45 3.82	46 0.89 20.91 4.62	140 2.70 63.64 4.26	20 0.39 9.09 3.91	220 4.24
OTH2	1 0.02 0.81 1.20	10 0.19 8.13 3.18	26 0.50 21.14 2.61	72 1.39 58.54 2.19	14 0.27 11.38 2.74	123 2.37
OTH3	23 0.44 2.51 27.71	86 1.66 9.40 27.39	207 3.99 22.62 20.80	520 10.02 56.83 15.82	79 1.52 8.63 15.46	915 17.63
Total	83 1.60	314 6.05	995 19.17	3288 63.34	511 9.84	5191 100.00

```
-------------- SERV=AIRF ------------------        -------------- SERV=ARMY ------------------

N                 294   Sum Wgts        294          N                2714   Sum Wgts       2714
Mean         3.656463   Sum            1075          Mean         3.774871   Sum           10245
Std Dev      0.871041   Variance   0.758712          Std Dev      0.729921   Variance   0.532785
Skewness     -0.80061   Kurtosis   0.405811          Skewness     -1.13802   Kurtosis   2.254327
USS              4153   CSS        222.3027          USS             40119   CSS        1445.446
CV           23.82196   Std Mean     0.0508          CV           19.33633   Std Mean   0.014011
T:Mean=0     71.97741   Pr>|T|       0.0001          T:Mean=0     269.4207   Pr>|T|       0.0001
Num ~= 0          294   Num > 0         294          Num ~= 0         2714   Num > 0        2714
M(Sign)           147   Pr>=|M|      0.0001          M(Sign)          1357   Pr>=|M|      0.0001
Sgn Rank      21682.5   Pr>=|S|      0.0001          Sgn Rank      1842128   Pr>=|S|      0.0001


----------------- SERV=CTGD ------------------      --------------- SERV=MARI -----------------

N                 147   Sum Wgts        147          N                 177   Sum Wgts        177
Mean         3.802721   Sum             559          Mean         3.830508   Sum             678
Std Dev      0.637197   Variance   0.40602           Std Dev      0.888421   Variance   0.789291
Skewness     -1.09473   Kurtosis   2.943965          Skewness     -1.33177   Kurtosis   2.475595
USS              2185   CSS        59.27891          USS              2736   CSS        138.9153
CV           16.75634   Std Mean   0.052555          CV           23.19328   Std Mean   0.066778
T:Mean=0     72.35682   Pr>|T|       0.0001          T:Mean=0     57.36202   Pr>|T|       0.0001
Num ~= 0          147   Num > 0         147          Num ~= 0          177   Num > 0         177
M(Sign)          73.5   Pr>=|M|      0.0001          M(Sign)          88.5   Pr>=|M|      0.0001
Sgn Rank         5439   Pr>=|S|      0.0001          Sgn Rank       7876.5   Pr>=|S|      0.0001


----------------- SERV=NAVY ------------------      -------------- SERV=OTH1 ------------------

N                 601   Sum Wgts        601          N                 220   Sum Wgts        220
Mean         3.783694   Sum            2274          Mean         3.745455   Sum             824
Std Dev      0.789388   Variance   0.623134          Std Dev      0.733247   Variance    0.53765
Skewness     -1.16707   Kurtosis   2.233783          Skewness     -0.96383   Kurtosis   1.656011
USS              8978   CSS        373.8802          USS              3204   CSS        117.7455
CV            20.8629   Std Mean     0.0322          CV           19.57697   Std Mean   0.049435
T:Mean=0     117.5067   Pr>|T|       0.0001          T:Mean=0     75.76452   Pr>|T|       0.0001
Num ~= 0          601   Num > 0         601          Num ~= 0          220   Num > 0         220
M(Sign)         300.5   Pr>=|M|      0.0001          M(Sign)           110   Pr>=|M|      0.0001
Sgn Rank      90450.5   Pr>=|S|      0.0001          Sgn Rank        12155   Pr>=|S|      0.0001


-------------- SERV=OTH2 ------------------         -------------- SERV=OTH3 ------------------

N                 123   Sum Wgts        123          N                 915   Sum Wgts        915
Mean         3.715447   Sum             457          Mean         3.596721   Sum            3291
Std Dev      0.804906   Variance   0.647874          Std Dev      0.867723   Variance   0.752943
Skewness     -0.77801   Kurtosis   0.747748          Skewness     -0.91363   Kurtosis     0.7803
USS              1777   CSS        79.04065          USS             12525   CSS        688.1902
CV           21.66378   Std Mean   0.072576          CV           24.12539   Std Mean   0.028686
T:Mean=0     51.19391   Pr>|T|       0.0001          T:Mean=0     125.3823   Pr>|T|       0.0001
Num ~= 0          123   Num > 0         123          Num ~= 0          915   Num > 0         915
M(Sign)          61.5   Pr>=|M|      0.0001          M(Sign)         457.5   Pr>=|M|      0.0001
Sgn Rank         3813   Pr>=|S|      0.0001          Sgn Rank       209535   Pr>=|S|      0.0001
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--------------- SERV=AIRF -----------------          --------------- SERV=ARMY ------------------

N               296   Sum Wgts        296            N              2721   Sum Wgts       2721
Mean       3.570946   Sum            1057            Mean       3.640206   Sum            9905
Std Dev    0.828538   Variance   0.686475            Std Dev    0.719671   Variance   0.517927
Skewness   -0.28177   Kurtosis   -0.28002            Skewness   -0.65509   Kurtosis   1.021338
USS            3977   CSS        202.5101            USS           37465   CSS        1408.761
CV          23.2022   Std Mean   0.048158            CV         19.77008   Std Mean   0.013797
T:Mean=0   74.15096   Pr>|T|       0.0001            T:Mean=0   263.8493   Pr>|T|       0.0001
Num ~= 0        296   Num > 0         296            Num ~= 0       2721   Num > 0        2721
M(Sign)         148   Pr>=|M|      0.0001            M(Sign)      1360.5   Pr>=|M|      0.0001
Sgn Rank      21978   Pr>=|S|      0.0001            Sgn Rank    1851641   Pr>=|S|      0.0001


--------------- SERV=CTGD -----------------          --------------- SERV=MARI ---------------

N               148   Sum Wgts        148            N               177   Sum Wgts        177
Mean       3.554054   Sum             526            Mean       3.542373   Sum             627
Std Dev    0.652403   Variance    0.42563            Std Dev    0.859215   Variance   0.738251
Skewness   -0.87339   Kurtosis   1.035347            Skewness   -0.59482   Kurtosis   0.785948
USS            1932   CSS        62.56757            USS            2351   CSS        129.9322
CV         18.35659   Std Mean   0.053627            CV         24.25536   Std Mean   0.064583
T:Mean=0   66.27335   Pr>|T|       0.0001            T:Mean=0   54.85028   Pr>|T|       0.0001
Num ~= 0        148   Num > 0         148            Num ~= 0        177   Num > 0         177
M(Sign)          74   Pr>=|M|      0.0001            M(Sign)        88.5   Pr>=|M|      0.0001
Sgn Rank       5513   Pr>=|S|      0.0001            Sgn Rank     7876.5   Pr>=|S|      0.0001


--------------- SERV=NAVY -----------------          --------------- SERV=OTH1 ------------------

N               602   Sum Wgts        602            N               219   Sum Wgts        219
Mean       3.609635   Sum            2173            Mean       3.611872   Sum             791
Std Dev    0.798568   Variance   0.637711            Std Dev    0.723172   Variance   0.522978
Skewness   -0.59778   Kurtosis   0.430923            Skewness   -0.43387   Kurtosis   0.819163
USS            8227   CSS        383.2641            USS            2971   CSS        114.0091
CV         22.12323   Std Mean   0.032547            CV         20.02208   Std Mean   0.048867
T:Mean=0   110.9046   Pr>|T|       0.0001            T:Mean=0   73.91164   Pr>|T|       0.0001
Num ~= 0        602   Num > 0         602            Num ~= 0        219   Num > 0         219
M(Sign)         301   Pr>=|M|      0.0001            M(Sign)       109.5   Pr>=|M|      0.0001
Sgn Rank     90751.5   Pr>=|S|      0.0001            Sgn Rank      12045   Pr>=|S|      0.0001


--------------- SERV=OTH2 -----------------          --------------- SERV=OTH3 ------------------

N               123   Sum Wgts        123            N               915   Sum Wgts        915
Mean       3.634146   Sum             447            Mean       3.445902   Sum            3153
Std Dev    0.771079   Variance   0.594562            Std Dev    0.842051   Variance   0.70905
Skewness   -0.46097   Kurtosis   0.515486            Skewness   -0.68327   Kurtosis   0.381714
USS            1697   CSS        72.53659            USS           11513   CSS        648.0721
CV          21.2176   Std Mean   0.069526            CV         24.43631   Std Mean   0.027837
T:Mean=0   52.27046   Pr>|T|       0.0001            T:Mean=0   123.7869   Pr>|T|       0.0001
Num ~= 0        123   Num > 0         123            Num ~= 0        915   Num > 0         915
M(Sign)        61.5   Pr>=|M|      0.0001            M(Sign)       457.5   Pr>=|M|      0.0001
Sgn Rank       3813   Pr>=|S|      0.0001            Sgn Rank     209535   Pr>=|S|      0.0001
```

APPENDIX F

FY 94 CUSTOMER INFORMATION FILE LAYOUT

FY 94 Customer Information File Layout.
Sorted By DoDAAC. Dollar value in whole dollars.

Start column	End column	Item description
1	6	DoDAAC
8	12	ZIP Code
14	15	Mail State
17	20	Service
22	56	TAC Line 1 (Address Line 1)
58	92	TAC Line 2 (Address Line 2)
94	128	TAC Line 3 (Address Line 3)
130	139	Requisition volume - C
141	150	Dollar value of requisitions - C
152	161	Requisition volume - E
163	172	Dollar value of requisitions - E
174	183	Requisition volume - F
185	194	Dollar value of requisitions - F
196	205	Requisition volume - G
207	216	Dollar value of requisitions - G
218	227	Requisition volume - I
229	238	Dollar value of requisitions - I
240	249	Requisition volume - M
251	260	Dollar value of requisitions - M
262	271	Requisition volume - S
273	282	Dollar value of requisitions - S
284	293	Requisition volume - T
295	304	Dollar value of requisitions - T

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13. ABSTRACT (Maximum 200 words)

This project developed a plan for conducting recurring surveys of Defense Logistics Agency customers, in support of the DLA Corporate Customer Assessment Team. The primary product was a sampling plan, including stratification of customers by Military Service or Federal Agency and by commodity purchased from DLA, and sample size calculations for each stratum. The secondary product was a customer data base, identifying customers by activity name, major Service or Agency, mailing address, and Department of Defense Activity Address Code (DoDAAC). Number of requisitions submitted and the dollar value of those requisitions are included for each customer, for each commodity, using fiscal year 1994 data. While the data base was initially developed to provide required address information for mailing customer satisfaction surveys, it is very useful in examining requisition data on individual customers and groups of specific customer types, both within and across individual Inventory Control Points.

14. SUBJECT TERMS

Sample, Sampling, Customer Satisfaction, Customer Survey

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