
Is NIPARS Working As Advertised? An Analysis Of NIPARS Program Customer Service

By

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INTRODUCTION

With the draw down of its military forces, the United States has begun to rely more heavily on strategic alliances to project combat power when and where needed. This power projection is often accomplished by the strategic partner using U.S. supplied equipment. Therefore, the ability of the U.S. Air Force to adequately support the weapon systems and associated equipment of its Foreign Military Sales (FMS) customers impacts directly on the national security of the United States and the foreign customer. The use of the word *customer* is deliberate because responsive service is expected in terms of logistics support, technical help, and equipment delivery.

The quality of service the FMS customer receives represents the output of the FMS logistics function. It represents both the capability and the capacity of the program as it provides time and place utility to the goods and services which are the outputs of the system. The process of assessing service quality also requires an understanding of the customer's expectations as well as a determination of any differences that may exist between the customer's perceptions of the service provided and what the customer originally expected.

This article is based on a recent AFIT Masters Thesis which examines the U.S. Air Force Non-Standard Item Parts Acquisition and Repair System (NIPARS) in these terms.¹ It is a comprehensive look at how an organization performs according to management indicators versus how customers expected it to perform as well as how well they thought it actually performed. Stated another way, it examines contractor performance in terms of traditional military and commercial metrics of system performance in addition to examining whether or not the customer is actually satisfied with the service being provided.

BACKGROUND

The ultimate drivers in determining the quality of service delivered by an organization are the measures of performance that are used to control the management actions that ensure quality customer service. These performance measures provide the signals which management uses to evaluate the efficiency and effectiveness of a service delivery process. This article examines four factors of NIPARS system performance: the time required to cancel a requisition, the administrative lead time required to put an item on contract (PALT), the production lead-time (PLT), and the cost of the item to the customer. It then compares these factors to previous methods that were used by the Air Force to supply this same type of support. Of these measures, the NIPARS contract only utilizes PALT as an indicator of the quality of service rendered by the NIPARS Contractor, Systems Control Technology, Inc. (SCT). However, the other measures used herein are widely used as accepted measures of the efficiency and effectiveness of business practices in the commercial sector. The time required to cancel a requisition is important because it

¹ deKam, Peter F. and Dorothy Tribble, *Is NIPARS Working as Advertised? An Analysis of NIPARS Program Customer Service*. MS Thesis, AFIT/GLM/LSM92S-17. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright Patterson AFB, OH, September 1992.

represents a portion of the total amount of time a customer thinks he is getting something but, in fact, is not. PALT is important because it represents the amount of administrative effort required to put something on contract and into production, or to ship the items from stock. PLT is important because it represents the amount of time actually required to produce the item or ship it from existing stocks. In general, the shorter the time a purchasing organization has to wait to receive an item, the lower number the amount of items he has to maintain on hand in inventory as a buffer against the vagaries of supply and demand. These lower inventories translate into lower internal costs to the customer and a higher availability of the system being supported. Appendix B provides an explanation of how the actual data was collected.

A survey of the internal customers (country, program managers, and logistics personnel) of NIPARS at the Air Force Security Assistance Center (AFSAC) was also conducted to examine expectations and perceptions of customer service. This survey utilized the SERVQUAL (service quality) psychometric testing instrument to analyze whether perceptions of service exceeded expectations of service.² Because this was the first use of the SERVQUAL instrument in DoD, extensive work was done to refine the instrument to accurately reflect the views of customer service in the sample population. Because of the good results obtained with this instrument, it appears that, with further refinement, it could be used as a standard measure of customer service within the DoD. This survey also looked at customers' views of whether the contractual measures of performance adequately measured the quality of service they received.

Because of the time limitations imposed on this study, several assumptions were made. The first was that the information gleaned from the Security Assistance Management Information System (SAMIS) and DO41 data bases used in this study were accurate. The second assumption held that an application of inflation factors to the last paid price for nonstandard item represents the sole factor to impact the price of an item from the time it was last purchased by the Air Force Security Assistance Center (AFSAC) to the time it was purchased by NIPARS. Finally, the study assumes that all responses to survey instruments were truthful.

LEAD TIME AND COST

In general, a significant difference does exist in the measures of performance for nonstandard items versus the previous methods used to provide this support. NIPARS provides significantly better (lower) PALT and PLT (for nonstandard as well as standard items) to its customers when compared to previous methods used to supply this support.³ This means that FMS customers can expect to be able to reduce their level of stocks on hand, therefore realizing indirect monetary savings from NIPARS as well as improved operational sortie rates from actually having parts on hand. Customers should also be able to refine their ordering practices based on the reduction of system variability and the subsequent ability to depend on the system to provide consistent reliable service. Using economically adjusted data, a significant difference also exists in the costs of nonstandard items requisitioned through NIPARS versus the previous methods used to supply this support. The majority of NIPARS unit prices were lower than the economically adjusted Air Logistic Center (ALC) unit prices for the same items, and the total price for NIPARS procured items was significantly lower than ALC procured items. A 95 percent confidence interval around the mean showed NIPARS unit prices were, on the average, \$5.05 to \$65.39 less expensive than the same items procured by the five USAF ALCs. Moreover, when total costs to the customer were compared, there was a significant difference between NIPARS and the ALC delivered items. NIPARS was, on the average, \$4,298 less expensive for the same items than the ALCs. This was the result of the NIPARS pricing structure making it extremely inexpensive to requisition big ticket

² SERVQUAL is a measure of customer service developed in Zeithaml, V. and others, *Delivering Service Quality: Balancing Customer Perceptions and Expectations*. NY, The Free Press, 1990. See Appendix A.

³ For specific explanation on how this information was computed please refer to Appendix B and Appendix C.

items, thereby more than offsetting increases in inexpensive items.⁴ Additionally, these increases in the prices of lower priced items may be further offset by reduced inventory ordering and carrying costs but an analysis of this factor was beyond the scope of the thesis.

CUSTOMER SERVICE

The surveyed customers view the NIPARS process as adequately meeting their requirements for nonstandard items. In general, NIPARS appears to be rendering satisfactory customer service. However, customers may not be able to adequately predict prices for goods and services based on previous methods used to supply this support. This is because (while there is a great deal of correlation between NIPARS and ALC unit prices) there is little correlation between the two when total prices are compared. This phenomena is also explained by the NIPARS pricing structure which makes large ticket items extremely cheap to requisition through NIPARS but slightly more expensive than the previous methods used to provide this support for low dollar value items. Extrapolating then, it appears that the NIPARS Program needs to concentrate on keeping their customers informed on optimal ordering practices. One interesting side note discovered during analysis was that the SERVQUAL dimensions of reliability and responsiveness are significantly correlated. The overall analysis suggests that the NIPARS Program needs to better advertise their successes. As a result, the Program appears to require management attention to refine the manner in which it communicates with its customers.

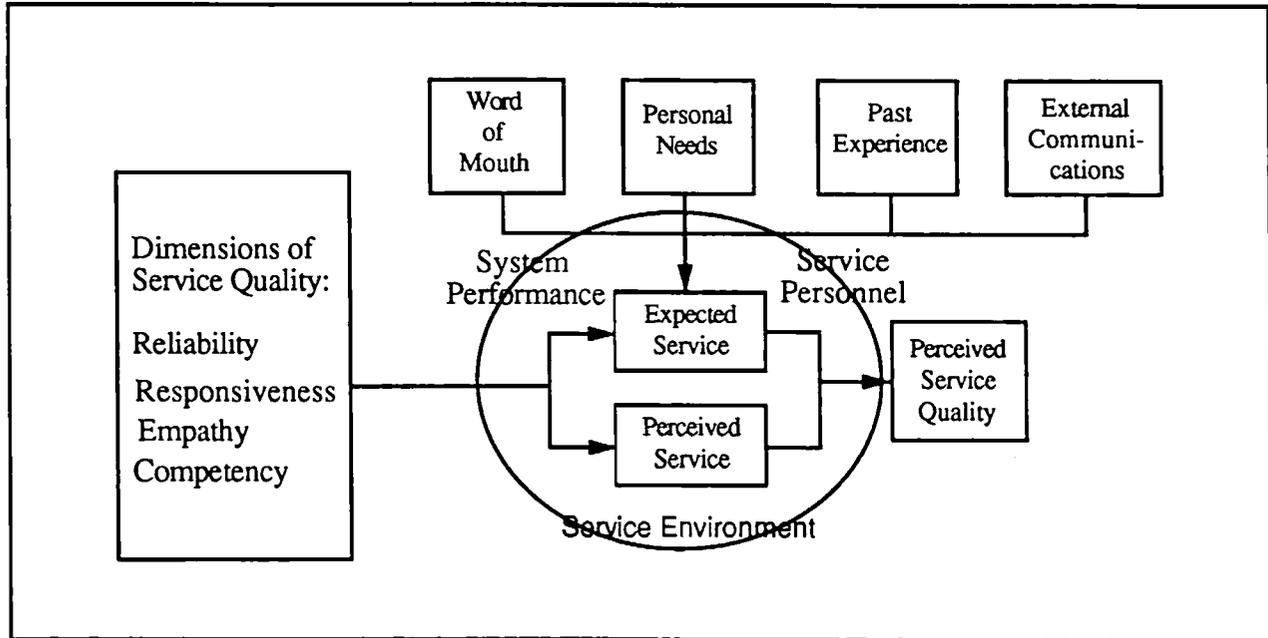
The overall evaluation of the contractual measures of performance examined the difference between the customers' expectations and perceptions regarding the efficacy of the measures of service quality found in the NIPARS contract. The results from this part of the analysis indicated that the measures were not found to be particularly *valid*, and were found to be even less *reliable*. This lack of validity and reliability indicates that service quality cannot be defined in terms of conformance to contractual specifications. This finding is congruent with the literature pertaining to service quality which states that the nature of service quality for *goods* differs from the nature of service quality for customer service. Although both ideally start with the identification of a customer's needs, goods are produced according to some design specification before they are sold and services are generally sold on the basis of expectations before they are produced. This distinction highlights the importance of communication between the NIPARS Program and its customers because the hard (quantifiable) contractual measures of customer service do not accurately/fully reflect customers expectations and perceptions of customer service. It also highlights the need for AFSAC (as well as all government offices that contract for service) to carefully examine the measures of performance before they include these measures of performance into a contract.

CONCLUSION

The bottom line is that the NIPARS contractor outperforms all five ALCs in the provision of nonstandard items to FMS customers. This was expected because nonstandard FMS orders have always been low on the priority list of the ALCs. What was not expected was that the NIPARS contractor was able to provide nonstandard items significantly faster than the ALCs could provide standard items to FMS customers. Neither was it expected that the NIPARS provided items would prove less expensive than ALC procured items. This data indicates that the NIPARS Program is providing its customers with nonstandard items faster and less expensively than previous methods used to supply this support. The customer will also realize additional savings by reductions in their inventories required for normal daily operations.

⁴ For more information on the NIPARS pricing structure, refer to Brusky, Richard P. and Joyce A. Burton, "Non-Standard Item Parts Acquisition and Repair Support," *The DISAM Journal*. Winter 1990/1991.

APPENDIX A: SERVQUAL Paradigm



Dimension	Definition	Area of Evaluation
Reliability	Ability to perform the promised service dependably and accurately	System Performance
Responsiveness	Willingness to help customers and provide promised service.	System Performance
Competency	Possession of the required skills and knowledge to perform the service.	Service Personnel
Empathy	Politeness, respect, consideration, and friendliness of contact personnel.	Service Personnel

APPENDIX B: PALT, PLT, Cancellation Rate

Data selected to measure production lead time, procurement administrative lead time, requisition, and cancellation statistics was based on MILSTRIP (Military Standard Requisitioning and Issue Procedures) code based criteria. These codes were either document identifier codes or supply codes. Fair comparison of pre- and post-NIPARS implementation required the use of the same "yardstick" for both systems. For this reason, PALT and PLT statistics were computed from the measures commonly used at ALCs. PALT was defined as the date of "BV" (on contract for direct shipment) or "P2" (on contract status) posting in SAMIS minus the SAMIS receipt of requisition date (rather than the date of contractor receipt). This slightly skewed the data in favor of ALC statistics because the NIPARS contractor is allowed to send certain status to SAMIS to turn off the PALT clock for reasons which are beyond the control of the contractor; however, the objective of this study was to measure NIPARS system performance rather than contractor performance. PLT was defined as the shipping date (date of "AS_" [shipped status] transaction posting in SAMIS) minus the date of contract award as represented by "BV" or "P2" status assignment in SAMIS. PALT and PLT statistics were computed in equivalent 18 month periods/blocks of time for both AF procured standard as well as AF and NIPARS procured non-standard items.

Cancellation comparisons were made only on those cancellations created by the NIPARS contractor or the item manager. The intent was to eliminate the impact of the occasional spikes in cancellations caused by events beyond NIPARS or Item Manager control. For example, a country may have open requisitions canceled at State Department level for political or fiscal reasons. Another example might occur when a country's oversight during implementation of a new supply system creates several thousands of requisitions in one day rather than over the intended period of several months. The resulting over-commitment of their funds caused Case/Country managers to cancel many of these requisitions. It was important to separate the "aberrations" from the system performance measure so they did not skew the averages. Other reasons for customer cancellation of requisitions also include discovering the wrong material was requisitioned. Therefore, capturing the data without customer-generated cancellations eliminated this potential source of "system noise" and presents a clearer comparison between the performance of the NIPARS system and that of the inventory control point (ICP). Reasons for contractor cancellation or item manager (IM) cancellations tended to be primarily for items that could not be identified for procurement.

APPENDIX C: Material Price and Cost

The issue of determining how pre- and post-NIPARS system implementation has affected the price of a product evokes considerable emotional debate. Therefore, the rational investigation of costs requires the precise statement of the methodology and assumptions used in this study. Cost data was developed from AFSAC supplied data which matched 332 identical items between pre and post-NIPARS implementation. Therefore this study was able to compare apples to apples and oranges to oranges.

To begin, two cost comparisons were made in this study. The first was strictly based on unit cost as an approximation of material cost. The second was based on the comparison of the additional fees and charges, in addition, to unit cost, collected as the total cost of doing business under pre-NIPARS methods used to those used by NIPARS. There were three assumptions which were made to reduce the problem to manageable dimensions. The first was that the cost data for the last procured price of the item was representative of the unit cost at that time. Considerations could not be made for quantity discounts or lot buys, nor could it be inferred that a procurement for a quantity greater than one necessarily implied the unit cost for only one would be higher. When comparing unit prices, appropriate comparisons could not be made between item prices from 1977 and those charged in 1992 without compensating for the effects of inflation. The inflation index used to generate the adjusted prices(s) and total costs was the 14 February 1992 USAF Raw Inflation Indices (AFR 173-13, Attachment 45). Therefore, the second assumption was that the raw inflation indices used to inflate the unit costs to 1992 prices is a useful representation of the price increases that each item has been subjected to over time. The third assumption was that all of the pre-NIPARS non-standard cases were subject to the same surcharges, regardless of case. After the data was normalized, each item was subjected to a 3 percent administrative surcharge, a 1.5 percent logistics surcharge, and a 5 percent nonstandard case surcharge. This 9.5 percent total surcharge rate was applied to all ALC-procured unit prices to compute the total requisition cost, to the FMS customer, of the items. NIPARS unit prices were normalized in the same manner as ALC-procured unit prices. The total cost to the customer for NIPARS procured items was computed by identifying the requisition sequence number and applying the appropriate requisition fill fee, award fee, and research fee to the unit price. The unit price was also subject to an additional 3 percent administrative surcharge to build the appropriate total price.

ABOUT THE AUTHOR

Capt deKam is currently stationed at Los Angeles AFB, at the U.S. Air Force Space and Missile Systems Center as Senior Project Manager. He is currently involved in the concept development and implementation of the Integrated Product Development concept within Air Force Materiel Command. He holds a B.A. in Political Science from the University of the Philippines where he did graduate studies in Political Science and Political Psychology as well. He also has an M.S. in Human Resource Management and Development from Chapman University in addition to a M.S. in Logistics Management from the Air Force Institute of Technology (AFIT).