CUSTOMER SATISFACTION/SERVICE QUALITY RESEARCH: THE DEFENSE LOGISTICS AGENCY

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ABSTRACT

This paper overviews the initial stages of a project sponsored by the Defense Logistics Agency (DLA) to examine logistics service quality in the DLA environment. A literature review of perceived service quality and attitude models provided antecedent justification that perceived service quality is an attitude best assessed through the adequacy-importance model, with value substituted for importance. Preliminary data collected through focus groups with DLA customers suggested five dimensions of logistics customer service within the DLA environment: timeliness, availability, quality, procedures, and responsiveness. Project experience also indicated differences between customer satisfaction/service quality in a government environment versus a business environment. These differences provide implications for studying and managing customer satisfaction/service quality, both in the government and industrial sectors.

INTRODUCTION

The Defense Logistics Agency (DLA) manages over 4.5 million consumable items (including food, clothing, medical supplies, spare parts, and general supplies) for the Army, Navy, Marines, Air Force, numerous Federal agencies, DOD agencies, and foreign governments. As part of the quality management process, DLA wanted to achieve an initial assessment of customer needs and requirements and how DLA is meeting those needs. In addition, DLA wanted to be able to track their performance in meeting these needs on an ongoing basis. Specifically, the purpose was to gain an understanding of customer needs and requirements, how customers value these requirements, and how the Defense Logistics Agency can best meet these needs and requirements. To accomplish this purpose, a grant was awarded to an academic research team to bring to bear the existing literature and practice in customer assessment upon these DLA issues.

The purpose of this article is to provide an overview of the initial stages of this project and contrast customer satisfaction research and management in the private sector with that in a government agency. To accomplish this purpose, the literature on perceived service quality and attitude models is reviewed to provide antecedent justification for the overall philosophy guiding the DLA research: perceived service quality as an attitude. This is followed by a discussion of how this philosophy was used in conjunction with numerous customer focus groups to design the DLA measurement instrument. The article concludes with a discussion of the differences in customer satisfaction/service quality research and management in business versus government organizations.

PERCEIVED SERVICE QUALITY

Quality has been defined as conformance to requirements (Crosby 1979), "zero defects" according to the often cited Japanese philosophy (Zeithaml 1988), or "the extent to which a . . . product provides the characteristics the individual desires" (Maynes 1985, p. 195). These definitions of quality imply that the standards against which products/services are judged for quality are relatively enduring and linked to fundamental needs, desires, or requirements.

In some of the early research on services in marketing, Berry (1980) pointed out that services are different from products in many ways. Services are less tangible than products, less standardized than products, and service production is more closely related to consumption. Gronroos (1982), Lewis and Booms (1983) and Sasser, Olsen, and Wyckoff (1978) endorsed the differences between products and services and the importance of processes as well as outcomes to evaluations of service quality and theorized that service quality perceptions depend on the comparison of expectations and performance.

Parasuraman, Zeithaml, and Berry (1985) conducted a series of focus group interviews for

consumer services and proposed a conceptual model of service quality, based on the consumer satisfaction/dissatisfaction model of a gap between expectations and performance. The authors contended that differences between products and services cause consumers to use different cues to judge service quality from those used to judge product quality. Services have relatively more experience and credence attributes than search attributes. This is in contrast to products, which have more search attributes, but fewer experience and credence attributes. Therefore, consumers must use experience to judge the difference between what is expected and what is received.

Parasuraman, Zeithaml, and Berry (1988) supported the idea that service quality depends on process as well as outcome. In their development of a service quality scale (SERVQUAL), they conceptualized service quality as an overall evaluation, "similar to attitude" (p. 15), but differentiated from satisfaction.

Zeithaml (1988) stressed the importance of understanding attribute cues that cause customers to infer quality. Attributes are characteristics of products or services that are at the lowest level of abstraction in the means-end chain. Product or service attributes cause consumers to infer higher level consequences and fundamental benefits or needs that the product or service assists in providing. The dimensions identified by Parasuraman, Zeithaml, and Berry (1985) and refined in their SERVQUAL scale (Parasuraman, Zeithaml, and Berry 1988) for measurement of service quality represent these higher level consequences or fundamental needs.

Bolton and Drew's (1991a) longitudinal research on service quality assessments for telephone service referred to service quality assessments as attitudes, but continued to use the satisfaction/dissatisfaction model to measure the effects of disconfirmation, performance, expectations, and prior attitudes on service quality assessments, i.e., attitude toward telephone service. They demonstrated that performance and prior attitudes affected present attitudes most directly and strongly. However, when there was either a positive or negative disconfirmation, there was a stronger effect on present attitude than either performance or prior attitudes alone.

Bolton and Drew (1991b) supported a multiattribute assessment of performance. They elicited only disconfirmation and performance measurements for each attribute; expectations were not measured. This research indicated that service quality is primarily a function of disconfirmation, although performance explained some variation in quality. In their conceptual models (1991a; 1991b), the authors depicted the satisfaction construct as an antecedent to the service quality construct.

Bitner (1990), Booms and Bitner (1981) and Bitner, Booms and Tetreault (1990) used essentially the same model, i.e., expectations versus performance and disconfirmation, to measure service quality assessments, except they included attributions in their model. The reason for the inclusion of attributions was that they hypothesized less negative disconfirmation (and, therefore, higher service quality evaluations) when service customers attribute service failures to factors outside the service provider's control.

There are several problems with service quality research in its present form. Expectations, as defined in SERVQUAL, are not necessarily the same as the expectations defined in the satisfaction/dissatisfaction models. In fact, consumer satisfaction/dissatisfaction has identified three different types of expectations: ideal, expected (or probable), and equitable expectations (Tse and Wilton 1988). There also remains a great deal of confusion regarding the difference between satisfaction, perceived quality, and attitude. Parasuraman, Zeithaml, and Berry (1985, 1988) contended that satisfaction occurs with discrete encounters and influences long-term, overall service quality assessment; i.e., satisfaction over time leads to the overall assessment of quality. However, their conceptual model of service quality (1985, 1988) does not contain the satisfaction construct. Additionally, they continue to state that service quality is an overall assessment, "similar to attitude" (1988, p. 15), but decline to call perceived quality an attitude and continue to measure it using a satisfaction model instead of an attitude model.

Another problem is that not all services are necessarily concerned with process over outcome. Lovelock (1983) presented an excellent classification scheme for services that indicated services vary considerably on a number of factors,

one of which is the extent to which the supplier and customer interact. For those services that do not exhibit a high degree of interaction between service supplier and customer, outcomes are probably more important than process. Most of the services research in marketing to date has been concerned with end use consumer services. Although process and outcome are probably both considered for industrial service quality assessments, many industrial services may exhibit a decreased amount of interaction between service provider and customer, which would decrease the relative importance of the process.

Zeithaml, Berry, and Parasuraman (1993) explicitly addressed different types of expectations, but continue to advocate the gap model of service quality. The authors argued that the expectation standard of ***predicted service*** changes over time as a result of experiences with service encounters, advertising, and word of mouth. The expectation standard of ***desired service*** is determined primarily by fundamental needs and is less subject to change over time. The expectation standard of ***adequate service*** is the minimum that a customer will accept and is affected by situational factors inherent in a service encounter.

Boulding, Kalra, Staelin, and Zeithaml (1993) conducted extensive longitudinal research to discover the part played by different types of expectations. Their research finally abandoned the "gap" model, claiming that expectations affect performance perceptions which, in turn, drive service quality evaluations. The two types of expectations investigated were "should expectations" (what the customer desires from the service) versus "will expectations" (what will probably occur, based on past experience). In an effort to disentangle satisfaction from service quality, the researchers stated that "customer satisfaction" in the "popular press" is essentially the same as service quality, but "satisfaction" in academic literature is a discrete, transaction-specific concept that differs from service quality.

ATTITUDE MODELS

Cronin and Taylor (1992) contended that service quality is an attitude and therefore attitude models should be used to predict and measure the construct. They recommended the adequacy-importance attitude model and demonstrated that this model, using performance assessments alone without an importance component, was a superior predictor of service quality assessments. In addition, their structural model results indicated perceived quality is an antecedent to satisfaction and that satisfaction, not perceived quality, directly affects behavioral intentions.

The attitude models examined here include Rosenberg's expectancy-value model, Fishbein's behavioral model, and the adequacy-importance model. The expectancy-value model is based on cognitive consistency theory, which looks at how products or services either block (interfere with) or are instrumental in the attainment of fundamental needs or desired states. In addition, the model assesses the value importance of these requirements, needs, or desired states (Cohen, Fishbein, and Ahtola 1972; Lutz 1990).

The Fishbein model focuses more on specific product characteristics or attributes rather than values and is based on learning theory instead of cognitive consistency theory. Essentially, "mini" attitudes or evaluations of attributes or characteristics are transferred (in a process that is similar to classical conditioning) to products that are believed to possess those attributes. The Fishbein model has two components. The first component measures the value or importance of each attribute or characteristic. The belief component of the Fishbein model measures the likelihood that the object possesses the attribute or characteristic (Cohen, Fishbein, and Ahtola 1972; Mazis, Ahtola, and Klippel 1975; Lutz 1990).

The adequacy-importance model is a variation of both the expectancy-value and the Fishbein models. This model assesses importance of product attributes or dimensions and evaluates the adequacy of, or satisfaction with, a product on each attribute or dimension. The two parts of the model, the adequacy/satisfaction component and the importance component, tend to be highly correlated. The reason for this is that if a product possesses an ***important*** attribute or characteristic, it would be rated high on the adequacy/satisfaction measure. However, if the product does ***not*** possess an attribute or characteristic that is ***not important***, the product would also be rated high on the adequacy/satisfaction measure. The adequacy/satisfaction measure combines the

importance of an attribute or characteristic with the degree to which the product possesses the attribute or characteristic. Therefore, measuring importance along with adequacy/satisfaction is somewhat redundant. Not surprisingly, assessing adequacy/satisfaction alone explains a significant amount of variation in overall evaluation or attitude. Adding the importance component may not significantly improve the model's predictive power (Cohen, Fishbein, and Ahtola 1972; Mazis, Ahtola, and Klippel 1975).

Mazis, Ahtola, and Klippel (1975) compared the predictive power of four attitude models: two versions of the Rosenberg expectancy-value model, the Fishbein model, and the adequacy-importance model. One version of the expectancy-value model measured products for their ability to aid in the attainment of fundamental values, the other version measured products on several attributes or dimensions. The authors found the adequacy model without the importance component to be slightly better at predicting both attitudes and behavior when the direction of evaluations of either fundamental values or product attributes/characteristics remained constant across respondents. That is, when "more is better" with regard to all attributes or characteristics, the adequacy model was the better predictor.

In a review of multiattribute models in marketing, Wilkie and Pessemier (1973) pointed out that although inclusion of the importance component in multiattribute models may not reduce the explanatory power of a model, it may not add significantly to it either. However, they suggested that operationalizing importance measurements as ***value*** rather than ***importance*** might reduce the redundancy between the two model components and add to the explanatory power of the model.

PERCEIVED SERVICE QUALITY AS AN ATTITUDE

A judgement of service quality implies an overall evaluation or attitude. Therefore, a better model for assessing service quality should be an attitude model, rather than the transaction specific disconfirmation or satisfaction model.

Quality, by definition, implies meeting a standard or conforming to requirements, i.e., possessing a necessary characteristic or attribute. There should be no fundamental difference in this definition of quality between products and services. Any difference between product and service quality assessments lies in the differential lower level cues used by consumers to infer higher level required characteristics or attributes. These cues will, of necessity, be more experienced-based for services than for products. However, the evaluation of overall quality for either products or services should consist of assessing these cues for the degree to which a particular service possesses the characteristics or attributes required by the customer.

The fact that quality implies an overall evaluation as well as conformance to requirements or possession of required attributes/characteristics argues for measuring perceived service quality using a multiattribute attitude model. The adequacy-importance model has been shown to be a superior predictor of attitudes and behavioral intentions when product attribute evaluations are directionally consistent (e.g., "more is better" for all attributes or characteristics). Furthermore, operationalizing the importance component of the model as ***value*** rather than ***importance*** could increase the explanatory power of the model, especially when ***value*** might differ in degree or weight (but not in direction) across respondents.

The conclusions from this research on perceived service quality and attitude models led to the philosophy for the DLA customer assessment project. That is, perceived service quality is an attitude that can best be assessed through the adequacy-importance model, but with value substituted for importance.

INTERACTION WITH DLA IN DESIGNING THE MEASUREMENT PROCESS

An initial series of meetings with DLA personnel identified market segments served by DLA, identified existing qualitative and quantitative data on customer assessment, and designated questions that needed to be addressed in a series of focus group interviews. DLA personnel were also apprised of relevant research in the areas of service quality and customer satisfaction.

In order to generate qualitative data to assist in the design of the assessment instrument, twenty

focus group interviews were conducted. These focus groups consisted of representatives from the numerous DLA market segments. Representatives from all four military services as well as Federal and DOD agencies attended. In addition, focus groups included both orderers and end users of DLA items. Finally, focus groups included different product types (fuels, clothing items, industrial supplies, and electronic supplies, for example).

Based upon previous research on physical distribution service quality (for a review, see Mentzer, Gomes, and Krapfel 1989) and a content analysis of initial focus groups, five dimensions of the logistics service quality provided by DLA were identified: timeliness, availability, quality, procedures, and responsiveness. The first three dimensions (timeliness, availability and quality) tap the three types of utility that logistics service provides or assists in providing to customers: time, place, and form utility. These dimensions and the types of utility they represent primarily reflect outcome or technical measures (Gronroos 1982) of service quality. The last two dimensions (procedures and responsiveness) reflect process or functional dimensions (Gronroos 1982) of service quality. These may be important when long term relationships exist between service provider and customer, as is the case with DLA and its customers. These five dimensions reflect the multidimensional nature of DLA customers' fundamental needs and requirements, which the logistics service provided by DLA should be meeting or satisfying.

An overall content analysis was conducted of all focus group sessions in order to validate the five service quality dimensions. With focus group comments as a guide, items were generated that would serve as indicators of the extent to which each of the five dimensions of fundamental customer requirements were being met by DLA service.

The item generation was an iterative process. Items generated were given to DLA personnel, who provided comments regarding additional items, items that should be deleted, and items that should be reworded to reflect standard terminology. The researchers refined the items according to DLA comments and their own suggestions for improvement, with consideration of the extant theoretical research and measurement issues, and returned the refined items to DLA personnel for comments. The resultant questionnaire contained numerous items to tap the five dimensions discussed above. Consistent with the suggestions of Wilkie and Pessemier (1973), respondents were asked to evaluate DLA performance and the value of performance on each item.

BUSINESS/GOVERNMENT QUALITY RESEARCH DIFFERENCES

In the course of this research, a number of differences were observed between the measurement and management of customer satisfaction/service quality in the private sector and a government agency. The primary of these differences was the fact that the customers DLA serves, for the most part, are not in a position to purchase from DLA competitors. Although there are provisions for purchasing items locally in some circumstances, DLA is and will be the customer's primary supplier for most consumable items. Thus, it is hypothesized that behavioral intention from customer dissatisfaction is relatively insensitive over the short range.

This relationship is reflected in the process of assigning priorities to DLA customer orders. Although customers are allowed to provide a Required Delivery Date with each order, DLA assigns each order an Estimated Delivery Date that may not have any relationship to the customer-provided date. These dates are, in part, derived from the system for rating the priority of the order, with DLA specifying the range of priorities any given order can have. These priority restrictions and discrepancies between the required and estimated delivery dates are a source of considerable impact upon customer perceived quality/satisfaction. However, the relative supplier-choice restriction for DLA customers provides little competitive pressure for DLA to change this system.

The items purchased by DLA customers are not personal consumption items and, thus, place the DLA more in the context of an industrial marketer. This industrial marketer analogy is further enhanced by the "extended buying center" with which DLA must contend, i.e., DLA

customers have numerous "customers" who are directly or indirectly influenced by DLA logistics service quality. The direct customers include the supply personnel placing the order and the command personnel who will implement the material once it is delivered. The most apparent indirect customer in the focus groups was the taxpayer. DLA personnel and customers were all concerned about providing value (in the form of missions accomplished at a minimum of cost) to the taxpayer. This form of extended buying center where many different parties have a vested interest in service quality performance is similar to large industrial customers.

Also similar to large industrial customers is the complexity of the ordering process. However, the degree of government rules and regulations far exceed even the most formalized company. When the fact that not only the customer, but also the supplier are government entities, this presents a level of complexity far different from industrial customers. This complexity is further exacerbated by the fact that DLA customers often order large, complex, and unique products. Thus, training of DLA and customer personnel in products, procedures, and systems knowledge took on far greater customer satisfaction value than would be seen in normal business settings.

There are instances, however, where customers become extremely involved in the delivery performance of DLA and act with the emotions similar to some consumer marketing settings. Focus group respondents who reflected this personal involvement were especially evident when discussing such topics as the delivery of medical supplies and the delivery of food to Somalia.

In terms of sampling frame, the DLA was in the unique position of being able to identify all their customers and have the financial commitment sufficient to survey them all. This has a profound effect upon resultant methodology when inferential statistics are not fully needed, but rather the study becomes more of a census of the various market segments.

This effect was exacerbated by the fact that the survey protocol called for the survey to be sent to each respondent's commanding officer with a request that the commander have the respondent complete the questionnaire. This "authority involvement" probably drastically increased response rate and, thus, limited the concern over non-response bias. However, the fact that in some cases the respondent was "ordered" to complete the questionnaire may have created a different type of response bias that was not measured in this study. Perhaps the inferential component of the methodology will eventually constitute measuring the effect of this military-unique source of response bias.

CONCLUSIONS

The Defense Logistics Agency provides an interesting environment in which to examine the differences between customer satisfaction/service quality research in businesses and government organizations. Based upon evidence from the relevant literature and from twenty focus group sessions, a philosophy of perceived service quality as an attitude was adopted for this research.

Planning the project, conducting the focus group sessions, and designing and implementing the survey instrument led to the observation that government agencies are similar to industrial marketers in oligopolistic industries, i.e. few competitive purchase options leading to a behavioral intention from customer dissatisfaction that is relatively insensitive over the short run.

Although several methodological and procedural differences were also observed, there appears to be an overwhelming attitudinal similarity between customers of business suppliers and government suppliers. In other words, the relationship between perceived service quality and customer satisfaction appears relevant regardless of whether a customer is buying from a business or from a government supplier and the same delivery concerns seem to exist. It is left to the analysis of the full survey to confirm or dispute this contention.

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