

MEASURING SERVICE QUALITY IN CANADIAN FORCES DINING ROOMS:
USE OF THE SERVQUAL INSTRUMENT

BY

JOANNE DENNY-McKINSTRY

A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfilment of the Requirements
for the Degree of

MASTER OF SCIENCE

Department of Foods and Nutrition
University of Manitoba
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ABSTRACT

MEASURING SERVICE QUALITY IN CANADIAN FORCES DINING ROOMS: USE OF THE SERVQUAL INSTRUMENT

The mandate of the Canadian Forces (CF) Food Services system is to provide quality service in an innovative, customer-focused and cost-effective manner. Measurable performance indicators are required to ensure that the food services provider is not only providing customer service, but customer satisfaction with the quality of that service. The main objective of this study was to determine whether a generic instrument, SERVQUAL, designed to evaluate a customer's zone of tolerance of service quality, could be used to accurately measure diner expectations and perceptions of service quality in CF dining rooms.

Data from completed questionnaires from a randomly selected sample of 444 diners in 12 dining rooms at four CF Bases were analyzed. Significant results could not be concluded for 3 dining rooms due to inadequate sample sizes ($n \leq 11$). Results indicate that the overall perceived service quality (OSQ) ratings for the five SERVQUAL dimensions, reliability, responsiveness, assurance, empathy and tangibles, were rated as average or above, on a 9-point scale ($p > 0.05$). For all the dining rooms, the overall service quality perceived by the diners for each dimension was within their applicable zone of tolerance, or levels of

expectations. Significant differences in OSQ ratings for some dimensions were determined between rank levels and types of dining service ($p < 0.05$).

The coefficient (Cronbach's) alpha measurements exceeded 0.80 with few exceptions, indicating high internal reliability. For validity, across most dining rooms the adjusted R^2 values for measures of service superiority (MSS) and service adequacy (MSA) were low (0.13 to 0.61). Predictive validity was determined to be the highest for perceptions-only (adjusted R^2 values 0.48 to 0.84).

SERVQUAL, in its current generic form, does not accurately measure service quality in CF Food Services. Despite its high internal reliability, the ability of SERVQUAL to measure food services is highly questionable. SERVQUAL requires modifications to incorporate the full range of dimensions within food services, such as food quality and value. Prior to full implementation as a performance measurement tool in food services, the modified instrument should undergo revisions over several years, in order to assess 1) its reliability and validity; 2) its ability to evaluate diners' perceptions and expectations; and 3) its stability and usefulness in the food services industry, over time.

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To my husband, family and friends, thank you for always being there for me when I've needed you most.

DEDICATED TO THE MEMORY OF MY FATHER,

PAUL DENNY,

**who taught me the meaning of hard work, determination
and not giving up on my goals in life**

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LIST OF ABBREVIATIONS

ASD	-	Alternate Service Delivery
CAFACS	-	Cost Accounting Food Allotment Control System
Capt	-	Captain
CF	-	Canadian Forces
CFB	-	Canadian Forces Base
Col	-	Colonel
CTC	-	Combat Training Centre
D Food S	-	Directorate of Food Services (has recently changed to D Sup 4 (Directorate of Supply 4) - Food Services
DND	-	Department of National Defence
FSAT	-	Food Services Action Team
JrNCO	-	Junior Non-Commissioned Officer, with a rank level of Private, Corporal or Master Corporal
Jr Ranks	-	another term for JrNCO
LCol	-	Lieutenant Colonel
Lt	-	Lieutenant
2Lt	-	Second Lieutenant
Maj	-	Major
MEO	-	Most Efficient Organization
MSA	-	Measure of Service Adequacy
MSS	-	Measure of Service Superiority
NDHQ	-	National Defence Headquarters
OCdt	-	Officer Cadet
OSQ	-	overall service quality
SERVQUAL	-	Service Quality
SOW	-	Statement of Work
SrNCO	-	Senior Non-Commissioned Officer, with a rank level of Sergeant, Warrant Officer, Master Warrant Officer or Chief Warrant Officer
TQM	-	Total Quality Management
Wg	-	Wing

LIST OF DEFINITIONS

The following definitions apply to terminology used by the DND Food Services and to research concepts employed in this thesis.

- adequate service - the minimum service level diners consider acceptable
- alternate service service - service delivery options which include in-house, contracted-out to commercial industry and partnership with private sector
- assurance - communication, credibility, security, competence and courtesy
- cafeteria service - usually offered in the JrNCOs' dining room. Service and amenities are equivalent to that provided in an industrial cafeteria
- desired service - service level that diners believe service providers can and should deliver
- empathy - understanding and knowing the diner; approachability and eye contact
- limited table service - usually offered in the SrNCOs' dining room. This service is basically a modified full table service where the diner must go through a steamline; beverages, salads and desserts are self-serve; and tables are set but dishes are cleared by the diner. There is no waiter/waitress service
- mixed dining room - SrNCOs' and JrNCOs' (mixed ranks levels') dining room with cafeteria service

- modified table service - usually offered in the Officers' Mess dining room. Recently changed from full table service, it is similar to limited table service except diners do not clear their dishes from the tables
- Measure of Service Adequacy - also known as MSA; is the difference between perceived service level and adequate level of service quality
- Measure of Service Superiority - also known as MSS; is the difference between perceived service level and desired level of service quality
- plate count - number of diners who actually eat a meal in dining room, represented by number of plates used during that meal
- perceived service - the diner's assessment of the overall excellence or superiority of the service
- ration strength - members are given entitlement to dine in a specific dining room because they have chosen to be on ration strength (paying) or if on imposed restriction or duty, are placed on ration strength (not paying)
- reliability - consistency of performance, doing it right the first time
- responsiveness - willingness or readiness of employees to provide service
- service quality - the difference between diners' expectations or desires and their perceptions
- tangibles - physical evidence of service such as appearance of staff
- zone of tolerance - range of acceptance a diner has for the level of service quality

CHAPTER 1 - INTRODUCTION

1.1 Background

DEPARTMENT OF NATIONAL DEFENCE (DND) FOOD SERVICES SYSTEM

The DND Food Services System is an extensive system where the delivery of food and food services is provided to the Canadian Forces (CF) by DND military and civilian personnel. Changes are being made within the system to improve efficiency and effectiveness of the operation, including investigation into contracting out. This system encompasses five main types of feeding - flight feeding, shipboard feeding, field feeding, contracted feeding and static feeding. The last type is the focus of this study. For those unfamiliar with the DND Food Services System, more detailed information is provided in Appendix 1-A. Descriptions of types of dining room service and rank levels of diners form part of this appendix.

Recent Changes to DND Food Services

DND Food Services has been viewed as a resource package that could be contracted out, or, at least, static food services could be. As a result, a Food Services Action Team (FSAT) involving all Command elements of the CF (Air, Land and Sea), and National Defence Headquarters (NDHQ), was

developed with the following mandate (DND 1995):

"To produce a blueprint for future DND food services support which encompasses best practices, maintains an essential core military capability [operational positions], and exploits to DND's benefit Alternate Delivery options."

The team developed a vision of static food services which is known as "The Kincade Most Efficient Organization (MEO) Principles". This model has been adopted by DND as the most efficient operation. Over the last two years, the Food Services system has been subject to Alternate Service Delivery (ASD) testing (which includes the option of contracting out) on a site-specific basis. Three test Bases were selected for ASD testing - Trenton, ON (Air), Gagetown, NB (Land) and Halifax, NS (Sea).

There is a strong probability that all other CFB Food Services establishments across Canada will be ASD-tested in the near future. The Food Services Generic Statement of Work (DND 1996) states that "food services operations should satisfy the following expectations:

1. Be customer-focused.
2. Provide flexible and responsive support to military activities.
3. Provide variety of choice and ready-availability of nutritious, wholesome food.
4. Provide continuous quality improvement.
5. Provide competitive pricing.
6. Provide maximum ease of access (hours of operation and location).

7. Reduce administration through automation.
8. Be cost-effective.
9. Provide food services in a seamless fashion to the customer.
10. Provide employment for military cooks when not engaged in operations and exercises.
11. Where feasible, include upgrades, additions or replacements to facilities to rationalize and sustain the Base's physical food services assets."

1.2 Statement of Problem

In response to an increased desire for greater cost efficiency within the Canadian Forces, the DND Food Services has become committed to improving management practices. The key strategy has been to determine, between various options, which option is the most viable and cost-effective food services delivery method. The options include services conducted wholly in-house, contracted to the private sector, or shared in partnership with private industry.

Regardless of which option 'wins' the food services contract bidding process, there is a definite requirement for measurable performance indicators to ensure the 'service provider' is satisfactorily fulfilling the contract specifications. Critical success factors and appropriate benchmarks are needed to accurately assess contract performance.

There are many areas in food services which must be evaluated as part of a performance measurement system. Customer satisfaction is a major component of performance

measurement; therefore, measuring and tracking it over time is vital to the success of any food services operation. This includes military food services, whether the customer is being served in a Base dining facility, also known as the "dining hall/room", "mess", "galley" or "wardroom", depending on the CF element and the location of the facility away from Base. In the past, diners in CF dining rooms had generally been restricted to dining in their allocated dining room, in the sense that their ration allowance could not be used in other dining establishments. However, this did not stop diners from expressing their views on their likes and dislikes of food and food service. With the shift to cost accounting and the user-pay system, the DND Food Services system is feeling even more pressure from non-military competitors in the food services industry. As a result, DND Food Services managers are becoming more cognizant of the popular trends that satisfy diners. A standardized performance measurement system is required by DND Food Services which contains this essential function of assessment of customer satisfaction.

1.3 Justification for Study

The main objective of the food services provider, as stated in the generic Statement of Work (SOW) is "to provide quality service in an innovative, customer-focused and cost-effective manner" (DND 1996).

To be competitive in this aggressive environment, it is of utmost importance to know exactly where one's performance stands with customers, employees and industry. Until now, DND Food Services has had virtually no competitive experience, with the exception of bid evaluation, supervision, and general performance evaluation of summer catering contracts of commercial catering companies for cadet and militia units. Assessment of a contractor's performance involves the use of a detailed checklist provided in the DND Food Services Manual - Catering Contracts (1993), which is linked to clauses in the contract specifications. Overall, the critical factor for a successful contract has been customer satisfaction with the services that the contractor is providing.

Many firms' performance measurement systems have not been sufficiently redesigned to meet the needs of today's environment. Many systems, including the DND, had consisted of an estimated financial budget against which actual performance was measured at regular, usually monthly, intervals. However, change is imminent in all service industries and the CF Food Services system is no exception. Drastic modifications to CF Food Services policies and procedures have been occurring faster over the last few years than ever before. The implementation of the Cost Accounting Food Allotment Control System (CAFACS) and the user-pay system are major examples. Diners in CF dining

rooms are now being given the option of "pay-as-you-go", thus having the choice of eating their meals where they wish. CF Food Services managers need to know what satisfies their customers in order to ensure diners come back for repeat business.

It is imperative that CF Food Services become and remain competitive in the food services industry, and at the same time ensure that it not only provides quality service but diner satisfaction as well. Clearly a more reliable, accurate instrument is needed to assess performance of customer service, regardless of which delivery method is successful in the bidding process. Investigation into implementation of an instrument is required. This "tool" would form a part of a larger food services performance measurement system and would be a starting point towards ensuring that the service provider meets customer expectations of service quality.

CHAPTER 2 - REVIEW OF LITERATURE

2.1 Introduction

The concept of service quality has been under investigation for years. In the customer-focused services industry of the 1990s, poor service will drive customers to competitors. Many companies have recognized the importance of quality in terms of customer satisfaction. In an attempt to provide customers with quality service, many corporations are focusing on what "service quality" really means to their customers.

2.2 Performance Measurement in the Service Industry

Advocates of the total quality management (TQM) argue that focussing on leading indicators, such as market penetration, customer satisfaction, quality, speed, worker competence, and morale, leads to a good measurement of performance (Howell, undated). TQM, which is a process that has been adopted in almost every industry world-wide, involves continuous improvement by everyone in an organization. However, companies which have implemented this concept are still having problems with acquiring meaningful feedback on customer satisfaction. Comment cards, satisfaction surveys, and simply recording customers' opinions are examples of tools used in the attempt to measure customer satisfaction (Gundersen et al., 1996); however, the response by customers is often low and the

feedback does not effectively capture what managers need to know to provide effective service.

As part of the TQM process, indicators of performance should be structured in the context of a company's overall goals and specific objectives in today's environment. They focus the organization on the company's critical success variables. If success is ultimately measured by customer satisfaction, which is determined to mean "outstanding service, high quality, fast response, variety, and value," then these are the measures that a firm's performance indicator system should emphasize (Howell, undated).

2.3 Service, Quality and Service Quality

The definition of service varies from author to author. It can be defined as: an attitude (Parasuraman et al., 1988), or the act of helping or doing work for another, the act or process of serving food, drinks, etc. (Thompson, 1995).

Perceived quality is a form of an attitude produced from a comparison of expectations with perceptions of performance (Parasuraman et al., 1988).

A review of the services literature indicates a consensus that differences exist between goods and services. Intangibility, inseparability of production and consumption, heterogeneity, and perishability are cited as characteristics of services (Parasuraman, et al., 1985). These distinctive characteristics make them very difficult

to evaluate compared to goods. Hence, service quality can be defined as the difference between consumers' expectations or desires and their perceptions (Parasuraman et al., 1988). Zeithaml (1988) defines perceived service quality as "the customer's assessment of the overall excellence or superiority of the service."

2.4 Measurement of Customer Satisfaction in Food Services

A study comparing the perceptions related to the effectiveness of Canadian Forces dining halls concluded that managers and customers have varying degrees of the level of service that will satisfy the customer (Robinson, 1990). The facets of a dining hall considered important by diners and food services management included factors relating to service, to setting, and to food.

For the food services industry, regardless of whether it is within the military system, managing quality is complex due to the combination of product and service. Managers have to handle problems of providing high quality food with the difficulties of service delivery, involving staff and diner interaction. Kelly and Le Bel (1995) state that "above and beyond the state of the art in the culinary world, success factors exist only relative to competitors' performance, consumers' expectations, and perception of value. Consumers' evaluations ... will be influenced by the market-wide level of quality, and by the availability of dining alternatives".

2.5 Measurement of Service Quality

Quality of service is difficult to measure because of its diverse definition within the service industry and by the customer. Quality evaluations are not made solely on the outcome of a service; they also involve evaluations of the process of service delivery, which led to the development of the Service Quality (SERVQUAL) scale (Parasuraman et al., 1985). Figure 2-A indicates that not only is expected service quality based on various influences, such as word-of-mouth, personal needs and past experience, but the determinants of service quality are also subject to customers comparing their perceptions of the actual service level to their expectations of that service.

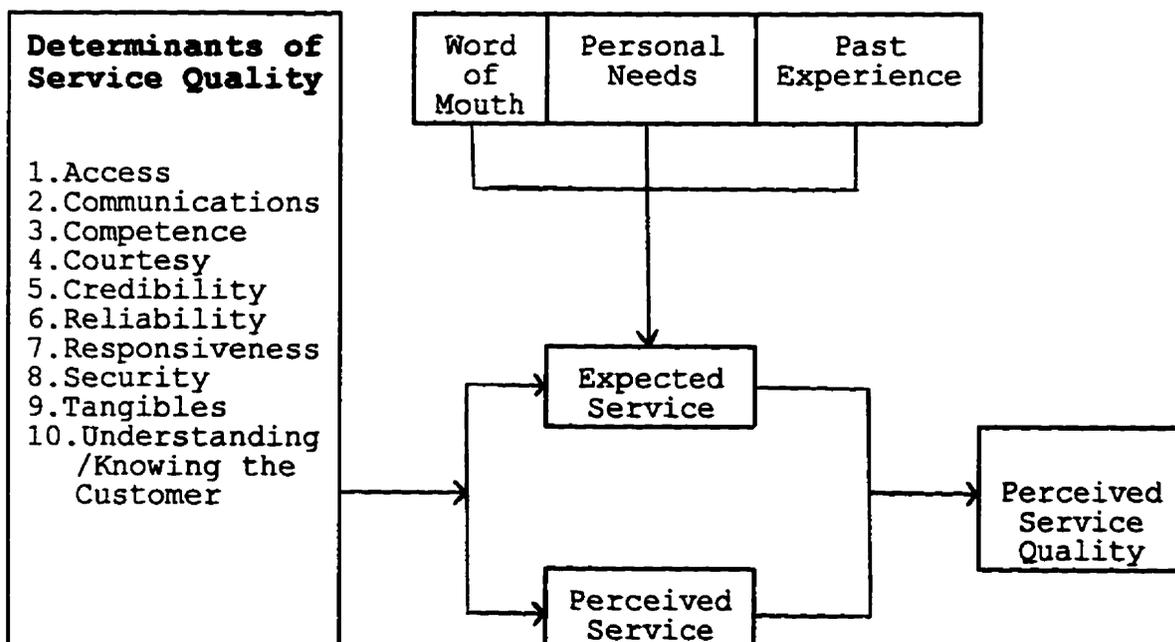


Figure 2-A Determinants of Perceived Service Quality (adapted from Parasuraman et al., 1985).

2.5.1 SERVQUAL Instrument Development

Parasuraman, Berry and Zeithaml began their initial research on service quality in 1983, using the ideas and concepts identified above. Exploratory investigation was required to assess the service quality concept from customer and executive viewpoints. This evaluation involved focus groups with customers and detailed interviews with executives from four services, banking, credit card, securities brokerage, and product repair/maintenance (Parasuraman et al, 1985). The main outcome from the executive interviews was that

"A set of key discrepancies or gaps exists regarding executive perceptions of service quality and the tasks associated with service delivery to consumers. These gaps can be major hurdles in attempting to deliver a service which consumers would perceive as being of high quality." (Parasuraman et al, 1985)

From the results of this study, Parasuraman et al. (1985) created a ten dimensional Service Quality Model which measured the differences between consumer expectations and their perceptions (referred to as gaps) on a seven-point scale. Figure 2-A lists these ten dimensions, referred to as "Determinants of Service Quality".

Further research and scale analysis refined the original model to a 22-item, two-part scale along five dimensions: reliability, responsiveness, assurance, empathy and tangibles (Parasuraman et al., 1988). Figure 2-B indicates these five dimensions of perceived service

quality. The five SERVQUAL dimensions are defined as (Parasuraman et al., 1988):

- 1) responsiveness - willingness or readiness of employees to provide the service;
- 2) tangibles - the physical evidence of service such as the appearance of staff;
- 3) empathy - understanding and knowing the diner, approachability and eye contact;
- 4) reliability - consistency of performance, doing it right the first time; and
- 5) assurance - communication, credibility, security, competence and courtesy.



Figure 2-B Five Dimensions of Perceived Service Quality (adapted from Parasuraman et al., 1988).

There is continuing debate about how best to incorporate expectations into service quality measurement (Babakus and Boller, 1992) and concerns regarding the effectiveness in measuring the perceptions-minus-expectations gap (Cronin and Taylor, 1994; Peter et al., 1993; Teas, 1993; Teas, 1994). Parasuraman et al. (1991) had addressed some of these issues by refining and reassessing the SERVQUAL scale, and in 1994, they further developed and tested three variations of the SERVQUAL scale to address the measurement issues being debated.

This recent work on the concept of expectations suggests that customers have a range of expectations which is labelled the zone of tolerance. This zone is surrounded by two boundaries - one of desired service - the service level customers believe companies can and should deliver - and one of adequate service - the minimum service level customers consider acceptable (Zeithaml et al., 1993). Figure 2-C illustrates the concept of the zone of tolerance.

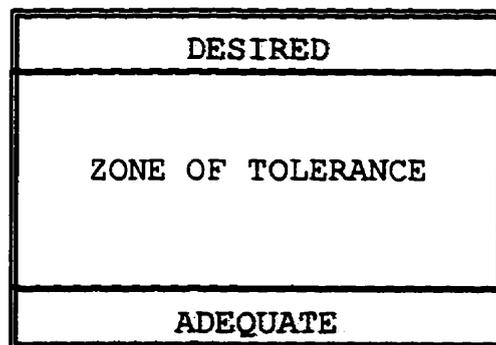


Figure 2-C Zone of Tolerance (adapted from Parasuraman et al., 1993).

Three variations of the SERVQUAL tool covered this enlarged conceptualization of customer expectations. Analysis of these variations indicated that the three-column format questionnaire generates separate ratings of desired, adequate, and perceived service with three identical, side-by-side, 9-point Likert scales (Parasuraman et al., 1994). An example of this format is at Figure 2-D.

	COLUMN 1	COLUMN 2	COLUMN 3
When it comes to:	My <i>Minimum</i> Service Level Is:	My <i>Desired</i> Service Level Is:	I Think The Service In <i>This Dining Room</i> Is:
1. Performing services right the first time	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N

Figure 2-D. Example of Three-Column Format of SERVQUAL.

From the three-column format, three measurements could be assessed on service quality - perceptions-only, MSA and MSS, where perceptions-only is the level of service quality that the customers perceive that they are actually receiving.

The MSA, or, Measure of Service Adequacy, is the difference between the perceived service quality rating (Column 3 of Figure 2-D) and the adequate (or minimum) service quality rating (Column 1 of Figure 2-D), which is calculated for each of the five dimensions. A positive MSA value would mean that the overall service quality (OSQ)

rating that customers perceive the service quality level to be, is greater than their adequate service quality level for that dimension. A negative MSA value would mean that the OSQ rating for what the customers perceive the level of service quality to be, is less than the their adequate service quality level for that dimension. A value of zero would mean that the OSQ rating that the customers perceive the service quality to be, is equivalent to their adequate service level for that dimension.

The MSS, or, Measure of Service Superiority, is the difference between the perceived service quality rating (Column 3 of Figure 2-D) and the desired service quality rating (Column 2 of Figure 2-D). A negative MSS value would mean that the OSQ rating for what the customers perceive the level of service quality to be, is less than their desired service quality level for that dimension. A positive MSS value would mean that the OSQ rating that the customers perceive the service quality level to be, is greater than their desired service quality level for that dimension. A value of zero would mean that the OSQ rating that the customers perceive the service quality to be, is equivalent to their desired service level.

This three-column version of the SERVQUAL instrument was superior to the others in terms of its diagnostic value, i.e., ability to pinpoint perceptions relative to customers' zones of tolerance and to accurately identify areas for

improvement. The findings implied that managers can obtain a more accurate assessment of service quality by comparing perceptions against expectations than by interpreting perceptions alone (Parasuraman et al., 1994).

2.5.2 Uses of SERVQUAL in the Service Industry

The SERVQUAL instrument was designed to be applicable across all service industries (Parasuraman et al., 1988). Since then, many published service quality studies have used SERVQUAL, or a modified model, worldwide (Nelson and Nelson, 1995), including the hospitality industries (Saleh and Ryan, 1991; Akan, 1995), the U.S. military messing system (Campbell, 1993), hospital health care (Bowers et al., 1994); the legal profession (Witt and Stewart, 1996); and the maintenance and repair of U.S. Air Force facilities (Zumbahl and Mayo, 1994). The important role played by customers' expectations when evaluating services has been acknowledged in service quality literature (Bolton and Drew, 1991a, 1991b; Parasuraman et al., 1985, 1988; Zeithaml et al., 1993).

SERVQUAL has been used as an indicator of the quality of service being provided within various industries (Campbell, 1993; Parasuraman et al., 1991). Using the SERVQUAL instrument allows managers to follow the trend in customer expectations and perceptions and to uncover broad areas of a company's service quality shortfalls and

strengths (Parasuraman et al., 1991).

The original authors (Parasuraman et al., 1991) suggest that the information generated by SERVQUAL is a "useful starting point, not the final answer, for assessing and ultimately improving service quality in an organization". However, a longitudinal study using the original SERVQUAL scale failed to consistently evaluate two dimensions of service quality (Triplett et al., 1994). The researchers concluded that the type of service industry may determine the dimensions of service quality. Managers have been advised to carefully consider which areas are important to service quality in their specific industry and to modify the SERVQUAL scale as required (Brown et al., 1993).

In a SERVQUAL study on food services outlets by Johns and Tyas (1996), SERVQUAL was modified to include the concepts of food service, food quality and value. However, even though the internal reliability of the instrument was high, the five-dimensional model of Parasuraman, Berry and Zeithaml was not supported. The researchers concluded that catering services did not conform to the SERVQUAL model, supporting the conclusion by Triplett et al. (1994) that the attributes of service quality are dependant on the type of service involved. It should be noted that the research of Johns and Tyas (1996) had not been published until the current SERVQUAL study on CF Food Services was in its data collection stage.

2.6 Conclusion

A search of the literature indicates that a potentially useful instrument for measuring quality of service is SERVQUAL. It has been used as an indicator of the quality of service being provided within a variety of industries (Campbell, 1993; Johns and Tyas, 1996; Parasuraman et al., 1991; Triplett et al., 1994). Using the SERVQUAL instrument would allow managers to follow trends in customer expectations and perceptions and to reveal broad areas of a dining room's service quality shortfalls and strengths (Parasuraman et al., 1991).

The original authors (Parasuraman et al., 1991) suggest that SERVQUAL is "a useful starting point, not the final answer, for assessing and ultimately improving the level of service quality in an organization". Its use as a tracking agent to evaluate performance over a period of time, specifically diner satisfaction with service quality, must be examined. With the imminent changes facing the DND Food Services, SERVQUAL's potential use as part of a performance measurement system in food service delivery must be investigated.

Since it was recommended by Parasuraman et al. (1994) that managers should consider implementing a measurement approach that provides separate ratings of desired, adequate, and perceived service, the three-column SERVQUAL questionnaire format was selected as the assessment tool.

CHAPTER 3 - GOALS AND OBJECTIVES OF STUDY

With the SERVQUAL instrument's ability to broadly evaluate the full range of service quality provided in a dining room setting, SERVQUAL would be the tool to pinpoint areas of food services which require improvement, and areas which are successful. Areas that fall below what the customer expects (below the standard) would then be investigated in greater detail by management to assess where improvements could be made.

Specific goals of this research included determining:

- (1) the overall service quality ratings for the five dimensions measured by SERVQUAL: tangibles, reliability, responsiveness, assurance and empathy at each of the dining rooms;
- (2) the diners' perceptions of service quality and zones of tolerance for each dimension at each of the dining rooms;
- (3) whether there are significant differences between overall service quality ratings for each dimension for the types of dining room service being provided;
- (4) whether there are significant differences in the median MSA and MSS ratings for each dimension among the types of dining room service being provided; and

- (5) the reliability and validity of the SERVQUAL instrument.

From the information captured from these goals, the main objective of this research, to determine whether the SERVQUAL instrument could be used to accurately measure customer expectations and perceptions of service quality in DND Food Services dining rooms, would be achieved. Tracking performance of service delivery to diners over time was beyond the scope of this research. If successful, use of the SERVQUAL instrument could form part of a DND Food Services performance measurement system.

Other Possible Results

Depending on the actual sample sizes from each type of dining room at all the specified Bases, it may be possible to assess further objectives, specifically differences between types of personnel. These objectives are to determine:

- (1) whether the SERVQUAL instrument can be used to identify significant differences in overall service quality ratings between the rank levels for each dimension;
- (2) whether there are significant differences in the median MSA and MSS ratings for each dimension between the rank levels within a dining room;
and

- (3) whether there are significant differences between living-in members' and living-out members' overall service quality ratings for each dimension.

Some questions are included in Part 3 of the questionnaire with respect to food quality, food quality for money, and service quality for money, for reasons explained in Section 4.3 on Questionnaire Development. Accordingly, the objectives for this area are to determine:

- (1) the quality ratings for overall food quality, food characteristics, food items, food quality for money, and service quality for money;
- (2) whether there are significant differences between quality of service for money and overall service quality, and between quality of food for money and overall food quality; and
- (3) whether there are significant differences between the overall food quality rating calculated from the food characteristics' ratings and the overall food quality rating calculated from the food types' ratings.

CHAPTER 4 - METHODS

4.1 Introduction

The primary purpose of this study was to evaluate the use of the SERVQUAL (Service Quality) instrument as a performance measurement tool in order to assess diners' expectations and perceptions of service quality provided in their dining rooms. The survey was conducted using the following procedures:

- 1) selection of sample;
- 2) development of a survey design and questionnaire;
- 3) pre-testing, which included three phases;
- 4) data collection; and
- 5) data analysis.

Both the questionnaire and the research procedures were approved by the Faculty of Human Ecology Ethics Review Committee. The research subjects were the customers dining in the dining rooms at:

- 1) Formation Halifax, Halifax, NS;
- 2) Combat Training Centre (CTC) Gagetown, Oromocto, NB;
- 3) 8 Wing (Wg) Trenton, Astra, ON; and
- 4) 17 Wg Winnipeg, Winnipeg, MB.

The Food Services staff and diners at 17 Wg Winnipeg were respondents for pre-testing the research questionnaire and procedures. The researcher requested and received direct liaison authority from the Directorate of Food Services (D Food S) at National Defence Headquarters, and from each Command headquarters in order to contact the Bases.

4.2 Sample Selection

The main objective of this study was to assess the quality of service in the dining rooms at the Bases undergoing Alternate Service Delivery (ASD) testing, using the SERVQUAL instrument developed by Parasuraman et al., 1994. Initially, telephone liaison was made by the researcher with the Food Services Officers at each Base to discuss the purpose of the study in more detail, the approximate timeframe for the survey, and the number and profiles of operational dining rooms.

There was a total of 9 dining rooms from the ASD-testing Bases. They are as follows: 4 for Formation Halifax, 3 for CTC Gagetown, and 2 for 8 Wg Trenton. 17 Wg Winnipeg was used as the pre-test Base, with a total of 3 dining rooms. The distribution of dining rooms and categorization of dining room service are shown in Tables 4-A and 4-B, respectively.

Table 4-A Distribution of Dining Rooms Per Base.

DINING ROOM	WPG	TRE	HFX	GGE	TOTAL
Officers'	1	1	1	1	4
SrNCOs'	1 ¹	-	1	1	3
JrNCOs'	1 ¹	-	1	1	3
Mixed Jr/SrNCOs'	-	1	-	-	1
All Ranks'	-	-	1	-	1
TOTAL	3 ¹	2	4	3	12

¹SrNCOs' and JrNCOs' dining rooms are actually in a Combined Mess where dining rooms are separated by a kitchen
Wpg=Winnipeg, Tre=Trenton, Hfx=Halifax, Gge=Gagetown

There are generally three types of dining rooms in the Canadian Forces (CF) Food Services system for the different rank levels of service members. Refer to the profiles at Appendix 4-A for more detail which includes Mixed Jr/SrNCOs' and All Ranks' dining rooms.

Table 4-B Categorization of Service in CF Dining Rooms.

RANK LEVELS	TYPE OF SERVICE
Officers	Modified table service
Senior Non-Commissioned Officers (SrNCOs)	Limited table service
Junior Non-Commissioned Officers/Ranks (JrNCOs/Jr Ranks)	Cafeteria-style service

The goal for the sample size from each dining room was 40-50% of the plate count from the lunch meal. The lunch meal has the largest attendance of the three meal periods in any dining room. The random sample was selected as every other diner, as described in Phase 3 of the pre-testing under Procedures Section 4.4.

4.3 Survey Design and Questionnaire Development

The experimental design and survey involved several stages of development. A general overview is provided in the flowchart at Figure 4-A.

OVERALL EXPERIMENTAL DESIGN	
QUESTIONNAIRE DEVELOPMENT: Part 1- Personal Information Part 2- Service Quality Part 3- General Dining Information SURVEY DESIGN	Jan-Jun 96
SAMPLE SELECTION METHOD	Jan 96
PRE-TESTING: Phase 1- Foods and Nutrition Grad Students Phase 2- 17 Wg Food Services Management, Staff and Mess Management Phase 3- Diners at 3 dining rooms at 17 Wg Winnipeg	5 Jun 96 11 Jun 96 17-24 Jun 96
RESULTS: Assessment of Pre-Testing Revisions to Research Instruments and Procedures	Jul-Sep 96
DATA COLLECTION: 8 Wg Trenton Formation Halifax CTC Gagetown	28-29 Oct 96 18-21 Nov 96 25-28 Nov 96
DATA ANALYSIS	Jan-May 97

Figure 4-A Flowchart of Overall Experimental Design

The questionnaire was designed in three parts: Part 1 - Personal Information, Part 2 - Service Quality, and Part 3 - General Dining Information. The final questionnaire, with the covering letter, is contained in Appendix 4-B. The covering letter described the purpose of the study to the diners, as well as its applicability to the food services operation. This letter also emphasized that participation in the study was purely voluntary and that all information was confidential. To ensure confidentiality, diners were specifically requested to return the completed questionnaires directly to the researcher. Contact phone numbers were provided should the respondents have had any questions.

Part 1 - Personal Information

The purpose of the questions in Part 1 was to gather some basic information to classify the survey responses, and to analyze whether there were any significant differences among the respondents with respect to rank level.

Part 2 - Service Quality

The SERVQUAL instrument developed by Parasuraman et al. (1994) was adapted for assessment of service quality in the CF Food Services dining rooms, and was used as the key tool in the research. Since it was recommended by the original researchers that managers should consider implementing a measurement approach that provides separate ratings of

desired, adequate, and perceived service (Parasuraman et al., 1994), the three-column questionnaire format was selected as the assessment tool.

This instrument uses a 9-point Likert scale, which was retained for this study. This Likert scale was used three times for each statement, to rate the respondent's 1) adequate service level (Column 1); 2) desired service level (Column 2); and 3) perceived service level in the dining room (Column 3). Each scale was anchored on both ends with "low" on the lower end of the scale (towards "1") and "high" at the higher end of the scale (towards "9"), in accordance with the format used with Parasuraman et al. (1994). As part of the instructions for Part 2, and as a reminder just before the statements, "1" was defined as "extremely poor", and "9" was "extremely good". If the respondents felt that their feelings were in between, they were instructed to circle the appropriate number. No statement was made to define the numbers between "1" and "9". The SERVQUAL instrument used in this study, modified to measure the quality of service in dining rooms, is located in Part 2 of the questionnaire at Appendix 4-B. Some modification of wording and format was required to the SERVQUAL instrument for its readability, applicability to the food services operation and as a result of pre-testing, which will be explained further in Section 4.4.1.2.

Because SERVQUAL is somewhat complex in its format, an illustration of three completed statements, rating the quality of service at a barber shop/hairdresser, was added to the instructions at the beginning of this section. The example stressed the requirement to circle a rating in each of the three columns and that the adequate service quality rating should be lower than or equal to the desired service quality rating. With this demonstration, it was hoped that erroneous responses could be reduced or avoided.

The following statements in the SERVQUAL scale were used to measure the five dimensions: reliability (#1-4); responsiveness (#5-8); assurance (#9-12); empathy (#13-17); and tangibles (#18-21). Each dimension was composed of four statements, with the exception of empathy, which had five statements. The dimensions, divided into their applicable statements, are stated in Appendix 2-A.

Part 2 also contained two questions on the overall service quality (OSQ) rating of the dining room. Question #22 requested a specific OSQ rating using the same anchored 9-point scale as used for the SERVQUAL dimensions. The purpose of this question was to measure the instrument's internal reliability. Question #23 was open-ended and in two parts; 1) asking the diners their opinion on the service quality in the dining room; and 2) whether there were any improvements that they would like to see made. This question was included to receive further feedback from

diners for practical application by Food Services management.

Part 3 - General Dining Information

The questions in Part 3 were designed to gather general information regarding the diners' use of the Food Services dining room, which included whether they were on ration strength or not (Q#1), (refer to List of Definitions, page xviii), the length of time that they were dining in that particular dining room (Q#2), and a weekly pattern for meal consumption in the dining room (Q#3). The intention was to further classify the survey responses.

Even though the focus of this research was quality of service in the CF dining rooms, because the customer comes for the food, it is difficult to separate food from service in food services when one considers customer satisfaction. In addition, the Statement of Work (SOW) states that food services operations should "provide variety of choice and ready-availability of nutritious, wholesome food", and "be customer-focused" (DND, 1996). For these reasons, questions #5 and #6 on quality of food formed a component of Part 3. These questions focused specifically on rating the quality of food characteristics and food types.

From the SOW, Food Services operations should not only be maintaining quality service to the customer, but also satisfying their expectations for competitive pricing. Questions #7 and #8 asked the diners to rate the quality of

service and food that they feel they are receiving in the dining room for their money. These questions were included in order to determine whether the diners were satisfied with the quality of the product and service for which they were paying. Question #4 asked the diners to state the commercial food services establishment where they dined which provided the best service for their money. The purpose of this open-ended question was to ascertain what food services outlet, external to the Department of National Defence (DND), the respondents frequented, as a comparison of quality and style of service.

Questions #5 to #8 used a single 9-point Likert scale, similar to the SERVQUAL questions in Part 2. The Likert scale was chosen for these questions to provide consistency and simplicity to the questionnaire, in order for the respondents to answer the questions with ease and understanding.

4.4 Procedures

4.4.1 Pre-testing

4.4.1.1 Method

Pre-testing was a very important step in the design stage of the questionnaire, to avoid as many potential errors as possible and to ensure smooth operation of the procedures. There were three phases of pre-testing:

- (1) with some graduate students at the University;

- (2) with the Food Services management and staff at 17 Wg Winnipeg; and
- (3) with the diners in the three dining rooms at 17 Wg Winnipeg.

Phase 1

Before pre-testing the questionnaire with a larger number of respondents, four Foods and Nutrition graduate students at the University of Manitoba, three of whom had experience in survey design and questionnaire development, volunteered their time to critique the questionnaire, including the cover letter, a one-page questionnaire for non-respondents, an information poster, and a questionnaire critique form, using the latter as part of their critique. From their constructive feedback, modifications were made to the drafts on grammar, readability, wording and format. Final versions of the questionnaire with the covering letter and the information poster are in Appendices 4-B and 4-C, respectively.

Phase 2

After the changes were made based on the results of Phase 1, a preliminary pre-test of all procedures and survey instruments was conducted at 17 Wg Food Services Winnipeg, obtaining input from 35 personnel. This pre-test included the testing of the questionnaire, the cover letter and the one-page questionnaire for non-respondents. Respondents included civilian and military Food Services management, clerical staff, kitchen and service staff, and Mess staff.

A meeting was held by the researcher with the managers and staff to explain how important their feedback was to the study, and to stress that participation was voluntary. As for Phase 1, the questionnaire critique form was used to provide comments. The respondents were asked to complete the questionnaire, and to indicate on the questionnaire or letter, and/or on the critique form, where they had difficulty with interpretation of instructions or questions, grammar, etc., and if possible, state how they thought the problem area could be improved.

Phase 3

The profiles of each dining room were collected from the 17 Wg Food Services Officer (using the sample form in Appendix 4-D) before pre-testing the questionnaire with the diners. No personal information was sought in these profiles. Each profile was verified again with the Food Services management at the time of data collection. The dining room profiles are in Appendix 4-A. A letter requesting authorization and support of the pre-testing was mailed to the 17 Wg Commander (sample at Appendix 4-E), and approval received.

One week prior to the commencement of pre-testing at the applicable dining room, posters on 8.5" x 11" coloured paper (Appendix 4-C), provided to the Food Services Officer by the researcher, were to be placed in visible locations in the dining rooms (4 per dining room), in order to encourage

participation and receive an adequate number of responses. Posters stated the date and meal times that the study would take place in the dining room. One day before the commencement of the pre-testing, a letter to the diners, which explained the study in further detail, was to be placed on each dining room table in order to facilitate a better response during the pre-testing (Appendix 4-F). Sufficient copies of both the poster and the letter were provided to management for this purpose. Management was requested to photocopy the required number of copies should more copies of the letter be required.

The survey instruments were available only in English at the time of pre-testing. French translation would be completed after having the final version as a result of the pre-testing, to use for data collection at the other three Base locations.

The dining rooms had been randomly allocated to certain days of the week during a meeting with management, at the time of pre-testing with management and staff. The timings for placing the letter on each table in the dining rooms and posting the posters, as well as the method for data collection used by the researcher, were given to the Food Services management during this meeting. It was requested that the researcher be notified should an event occur which would disrupt regular dining room operations and thus affect the administration of the survey or sampling process. Only

weekdays were selected for data collection in the dining rooms because historically the number of diners decrease substantially for weekend meals, which would negatively affect the pre-test results.

The days of the week for data collection in the three dining rooms were chosen randomly by writing the days of the week (Monday through Friday) on slips of paper, which were folded, scrambled and then the slips selected for the number of dining rooms (3). Monday, Tuesday and Thursday were chosen using this method. The day of the week for data collection in a specific dining room was selected randomly using the same method (using the dining room name instead of the day of the week), with the first dining room chosen assigned to Monday, the second to Wednesday and the third to Thursday of that same week. The month of June and the third week of the month were selected due to time constraints - allowing time for the posters and letters to be displayed. The last week of June was avoided due to summer leave, postings, decrease in course loads, etc., which combined would reduce the number of diners in the dining room. An adequate number of respondents was required to ensure sufficient feedback for the pre-testing of the questionnaire.

The method of random selection of diners was tested at 17 Wg Winnipeg. The intent was to attempt to achieve a sample size of 40-50% of the plate count of the lunch meal

period. Therefore, the sampling plan chosen was to ask every other diner arriving for the lunch meal if he/she would like to participate in the study. The solicitation commenced with the first diner who exited the steamline area in the Officers' Mess, and the first one to pick up his/her meal card at the entrance to the steamline in the SrNCOs' and Jr Ranks' dining rooms. This selection of canvassing the first diner was chosen randomly by flipping a coin.

The questionnaires were coded for identification by the researcher and for confidentiality, prior to being passed to the respondents to complete. Each questionnaire was assigned a three-digit identification number and was further allocated a one-digit number to distinguish the Base, and a second one-digit number for the dining room type.

The questionnaire was estimated to take approximately fifteen minutes to finish. Even though the researcher was present in the dining room, the questionnaires were self-administered by the respondents. If the respondents had any questions, they were asked to direct them to the researcher. Participation in the study was purely voluntary. No separate form of consent was signed; filling out the questionnaire was taken as consent to take part in the research. The respondent had the option to withdraw from the study at any time, and to choose to omit answering any of the information requested.

The researcher wore civilian clothing to decrease bias

in the study and to promote respondents' participation. There was no way of avoiding the fact that some diners might recognize the researcher, thus influencing their participation.

The researcher would stop the diner according to the sampling plan, describe the purpose of the study and would ask whether the diner would like to complete the questionnaire during the lunch period. If the diner did not have time, the researcher would ask whether he/she would be willing to return and complete the questionnaire at the next meal period (supper). If the response was "yes", a reminder chit would be provided. If the diner did not want to complete a questionnaire at all, he/she was asked to fill out a one-page questionnaire in order to obtain some basic information on the non-respondent diner. Questionnaires were to be returned directly to the researcher after their completion by the respondents.

It was acknowledged before the administration of the survey began that a sufficient number of questionnaires should be made available for those diners who were not selected as part of the random sample, but who wished to complete a questionnaire. If this situation occurred, the completed questionnaires would be kept separate from the random sample to be coded as voluntary. During the supper meal period, only the diners who had been asked by the researcher and had agreed at lunch time to complete a

questionnaire would be taken as part of the random sample. Any other diners who filled out a questionnaire at supper would be coded as voluntary.

The actual plate count for lunch and daily ration strength for the dining room for that specific day, which did not include dispersed meals or staff members' meals, was requested from the Food Services management after data collection.

4.4.1.2 Results of Pre-Testing

As a result of Phases 2 and 3, changes were made to the questionnaire, the one-page questionnaire for non-respondents and the data collection method.

Phase 2

The one-page questionnaire and the full questionnaire were reworded and fine tuned for formatting. The instructions for completion of the SERVQUAL scale in Part 2 were revised to emphasize to the respondents that their desired level should be the same as or higher than their minimum level of service.

Phase 3

Feedback from the diners resulted in more significant changes to the questionnaire. Reformatting and rewording were required to all parts of the questionnaire in order to underscore specific directions and enhance the question flow.

The day for data collection in the Jr Ranks' dining room had to be changed from the Thursday to the next Monday due to the air conditioning unit breaking down in the SrNCOs' dining room. The SrNCOs' had to dine in the Jr Ranks' dining room, which would have affected the random sampling selection. A summary of the meal hour schedule and dates for data collection forms part of the dining room profile at Appendix 4-A.

In the Officers' Mess dining room, the sampling plan was to ask every other diner leaving the steamline area. However, the day of the survey, a new system of calling out numbers was put into place to reduce line-ups at the steamline. Diners were entering the steamline area twice; once to place their order, and the second time to pick up their order. Therefore, the sampling plan was adjusted so that the researcher would only ask every other diner who was carrying his/her order out of the steamline area.

Due to the self-administrative nature of the survey, some respondents would discuss the questions/responses with each other. For data collection at the other Bases, the researcher would stress the importance of completing the questionnaires on their own to the respondents when handing out the questionnaires.

Notes were made by the researcher for those diners who, when asked, did not wish to participate in the study. It was found that diners who did not want to fill out the

questionnaire, also did not want to complete the one-page questionnaire for non-respondents. Therefore, notes were kept by the researcher to record the rank, gender and reason for non-participation of the non-respondents. A checklist for recording gender, rank and reason for non-participation of non-respondents was developed as a result of pre-testing, which captured some basic information on the non-respondents. The checklist (Appendix 4-G) was subsequently used as part of data collection for Trenton, Gagetown and Halifax. As a result, the one-page questionnaire for non-respondents was eliminated from the study.

The reminder chits were not required since no 17 Wg diners said they would complete the questionnaire at supper. Therefore, the chits would be used at the other three Bases if required.

Feedback from the pre-testing was provided to 17 Wg Food Services management on the overall quality of service, quality of food and diners' comments. A letter was sent to the 17 Wg Commander to thank the 17 Wg personnel for their assistance with the pre-testing.

The methods for sampling and survey procedures were judged to be appropriate from the pre-testing at 17 Wg Winnipeg, with the exception of the modifications to the methods described for data collection in Section 4.4.2. Due to the success of the pre-testing which required no major changes to the questionnaire or research procedures, the

diner sample from pre-testing at 17 Wg Winnipeg was analyzed as part of the sample. The findings are discussed under the Results chapter.

4.4.2 Data Collection

Prior to data collection, the profiles of the dining rooms were collected from the Food Services Officers by modifying the profile form at Appendix 4-D. Basic profiles of each dining room are contained at Appendix 4-A. Similar letters to the one sent to the 17 Wg Commander were forwarded to the Formation/Base/Wing Commanders of Formation Halifax, CTC Gagetown, and 8 Wg Trenton to describe the purpose of the research and to obtain support and approval prior to data collection, with information copies to the Food Services Officers (sample at Appendix 4-H). A copy of the questionnaire was forwarded with this letter.

Letters to the Food Services Officers giving instructions for timings, and providing the poster and letter for the table were forwarded one month in advance of the dates for data collection. It was requested that the researcher be notified should an event occur which would disrupt normal dining room operations and thus affect the administration of the survey or sampling process. The same days of the week were used as at 17 Wg Winnipeg: SrNCOs' dining room on Monday; Officers' Mess dining room on Tuesday; JrRanks' dining room on Thursday; and in the case of Halifax, the All Ranks' dining room on Wednesday. A

summary of dates for data collection for all Bases form part of each dining room profile at Appendix 4-A.

To comply with Federal Government policy, the questionnaire, including the cover letter, poster, reminder chit and letter to the diners were translated into French once the modifications were made as a result of pre-testing. The questionnaire and covering letter were translated by a military member of the senior Food Services management who is familiar with the military food service vocabulary in both languages. The diners at the Alternate Service Delivery (ASD) Bases were given the option to complete the questionnaire in their language of choice.

Five days prior to the commencement of the study, the posters were to be visibly placed in all the dining rooms, and three days before the data collection in the dining room, the letter to the diners was to be placed on the tables, to provide information on the research, and to encourage participation for an adequate number of responses.

For actual data collection at Trenton, Gagetown and Halifax, on-site visitation by the researcher was required to emphasize the importance of the research and to ensure full implementation of handing out and collecting the questionnaires to/from the diners. The researcher approached the diners in each of the dining rooms according to the sampling plan (every other diner) determined from the pre-testing, during the lunch meal hours. All dining rooms

at a Base were surveyed in the same week. All survey work at a Base was carried out within one week due to travel plans and to minimize financial costs.

The reminder chits were only given as a reminder for the diners at 8 Wg Trenton; a decision was made not to continue their use at Halifax and Gagetown when the chits were found on the dining tables or on the diners' empty trays in the Mixed Jr/SrNCOs' dining room in Trenton.

4.5 Assumptions

The research is based on the following assumptions:

- (1) Customer satisfaction is a key requirement in a multi-faceted performance measurement system in the food services industry.
- (2) Providing service to a diner does not mean that the diner is satisfied and will return for continued business.
- (3) Quality of service can be measured.
- (4) Quality of service levels were accurately rated by the diners.
- (5) Food is a product, not a service and thus it does not fall under the definition of service.
- (6) Each Food Services operation is operating with the following objectives in mind:
 - (a) cost-effectiveness;
 - (b) quality service and product;
 - (c) competitiveness with the commercial

industry;

(d) operational effectiveness; and

(e) nutritious, wholesome food.

- (7) Each Food Services operation is working towards the most-efficient-organization model, and following the "guidelines" (cost accounting and control system, meal patterns, portion sizes, etc.) provided by National Defence Headquarters.

4.6 Limitations

This research was limited to the diners in the static dining rooms at CTC Gagetown, Formation Halifax, 8 Wg Trenton and 17 Wg Winnipeg. The study focused primarily on the quality of service being provided to the diners at the time of data collection in each dining room.

Due to three out of four of these Bases undergoing ASD testing, and as well as the uniqueness of each individual Food Services operation, the results of this study should not be generalized to CF Food Services operations as a whole. Each of the ASD Bases is from a different CF element, representing the Army, Navy, and Air Force. Although the questionnaire was administered in French and English, these units operate primarily in English. The results cannot be generalized to a pure French environment. Because the sample has been extracted from four provinces - Manitoba, Ontario, New Brunswick and Nova Scotia - there are

too many different environmental factors to generalize to the CF.

Bases were not compared for differences because there were too many lurking variables (i.e. different provinces, management, staff, etc.). Types of dining room service within a Base were compared for differences; however, this analysis was completed more for an interest purpose and for a starting point towards ideas for future analysis, and not for statistical significance.

The results include only the perceptions and expectations from diners who agreed to participate in the study as part of the sample selection. The results do not include those diners who:

- (1) consumed their meal at the dining room, but who did not wish to participate;
- (2) were on ration strength but who did not or were not able to come to the dining room for that specific meal period; and
- (3) volunteered to participate.

To the researcher's knowledge, it is the first time that the 3-column format of SERVQUAL has been used as a research tool since the testing of the various formats by Parasuraman et al. (1994). The questionnaire, particularly Part 2, Service Quality, may have intimidated some of the diners with its format and length.

Due to the self-administrative nature of the survey and

the physical atmosphere of the dining room, there was the opportunity for discussion amongst the respondents while completing the questionnaire; this interaction could have influenced their individual responses.

The data collected provide only a baseline for diner expectations and perceptions of levels for quality of service and food in each dining room at a specific point in time. Performance assessment must be conducted on a regular basis over time by Food Services management.

4.7 Reliability and Validity of Measuring Instrument

4.7.1 Internal Reliability

The internal reliability of the SERVQUAL questionnaire was determined using two methods. First, the internal reliability was determined by calculating whether there was a significant difference between the Overall Service Quality (OSQ) rating (provided by diners on a 9-point scale in Q#22), and the OSQ rating derived from the perceived quality ratings (the 21 statements which comprise the dimensions), for each dining room. Second, the internal consistency method was used where the coefficient alpha (Cronbach's alpha) was calculated for each dimension for each dining room using the method as described in Carmines and Zeller, 1991. The higher the alpha level, the higher the instrument's internal reliability would be.

4.7.2 Validity

Response error was determined for each statement under the dimensions in Part 2, Service Quality, of the questionnaire, as part of the assessment for the SERVQUAL instrument's validity. A response error was said to have occurred when 1) the adequate service rating was higher than the desired service rating; 2) there was no response; 3) there was a non-recognizable response; and 4) a response of No Opinion was provided by the respondent. The error rates were calculated as the proportion of all the response errors for each statement per Base.

Predictive Validity

For this study, the predictive validity of the SERVQUAL instrument was measured by regressing the overall service quality on the five dimensions, resulting in R-squared adjusted values. The higher the R-squared adjusted value, the better the instrument would be at predicting the ability of SERVQUAL to accurately measure service quality.

Content Validity

The content validity of the questionnaire was confirmed by pre-testing the survey instruments with the Food Services management, staff and diners at 17 Wg Winnipeg (Phase 2), and the French translator, who is a senior Food Services manager, to confirm the instrument's applicability to the food services environment.

4.8 Statistical Analysis

Statistical analysis of the data was completed using JMP IN Version 3.1.7 by SAS Institute Inc (1996). Frequency distribution was conducted for each dining room by:

- (a) dining room type;
- (b) gender;
- (c) age;
- (d) living situation;
- (e) membership (Reserve, Regular Force, etc.);
- (f) rank level;
- (g) status on Base (staff, student, visitor);
- (h) reason on Base;
- (i) length of time in CF;
- (j) mode of payment (ration strength, separation expense, meal ticket purchase, duty);
- (k) length of time dining in dining room;
- (l) best service for money in a commercial food services establishment;
- (m) number of French and English questionnaires;
and
- (n) error rates, no responses and no opinions.

Cross tabulations were used to assess the frequency distribution of the location where breakfast, lunch and supper were consumed for members of each dining room.

Quantiles were determined for each service quality

dimension and for food quality. Confidence intervals for each dimension for each dining room were calculated using a non-parametric technique based on the Sign test, for MSS, MSA and perceptions-only (Marascuilo and McSweeney, 1977). Assumptions for this test are 1) that the population is symmetrically distributed; 2) the observations are independent; and 3) the observations are measured on at least an ordinal scale.

R^2 (adjusted) values and coefficient alphas (Cronbach's alphas) were determined to assess the predictive validity and internal reliability of the SERVQUAL instrument, respectively. These methods were used by other researchers to assess the validity and reliability of the instrument (Johns and Tyas, 1996, Parasuraman et al., 1994, Triplett et al., 1994).

Error rates were calculated for each SERVQUAL statement per Base in order to help assess the validity of the instrument. In order to accomplish this objective, the Bases were analyzed to ensure they were considered equal with respect to the proportion of errors per statement. As there were several stages of analysis for these evaluations, only the final error rate results will be presented in Chapter 5, Results. For analysis, the Pearson Chi Square Test of Homogeneity of Proportions was applied with the following assumptions (Marascuilo and McSweeney, 1977):

- 1) Ratings within a particular Base are independent on each statement.
- 2) Ratings between Bases are independent.
- 3) Probability of error within each Base is constant across all statements on a particular Base.
- 4) Expected frequencies exceed five in each category.

This test basically compares the expected number of errors with the number of observed errors. If the sums of these differences are large, the proportions are not equal.

Analysis indicated that all Bases were equal with respect to the proportion of errors per statement, with the exceptions of statements 3, 14, 15 and 19. However, from preliminary testing using the Student's t-test, comparisons for each pair had shown that only statements 9, 10 and 18 appeared to be significantly different ($\alpha=0.05$); therefore, the differences between Bases for statements 3, 14, 15 and 19 would not affect further analysis. The last stage and key focus of the analysis was completed with pooled estimates of error rates from all four Bases to determine whether statements 9, 10 and 18 significantly differed from the others with respect to error rates. The Pearson Chi-Square Test of Homogeneity of Proportions was again applied.

Non-parametric analysis was required because the measurements were on an ordinal scale and the differences

between the ratings could be measured. Even though the samples were selected randomly, since the entire diner population could not be solicited, all conclusions drawn from use of the following tests are suspect and should not be generalized to the population. The methods used were:

- (a) the Wilcoxon Signed-Rank Test, used for one sample, for determining whether:
 - (i) service quality, service quality for money, food quality and food quality for money, were rated average or above;
 - (ii) there were significant differences between quality of service for money and overall service quality;
 - (iii) there were significant differences between quality of food for money and overall food quality;
 - (iv) there were significant differences between the food quality rating calculated from the food characteristics rating and food quality rating calculated from the food type rating; and
 - (v) there were significant differences between the overall service quality rating (Q#22) and the overall service quality rating derived from the perceived service quality ratings (Q#1-21).

- (b) the Wilcoxon Rank Sums Test for determining whether service quality and food quality were rated average or above when the data consisted of two unequal sizes; and
- (c) the Kruskall-Wallis Test for determining whether there were significant differences in service quality levels for rank levels and dining room service when the data consisted of more than two sets.

Assumptions For Tests

- a) Wilcoxon Signed-Rank Test. "The data consist of a random sample of n observations that are drawn from a symmetric and continuous population and measured on either (a) at least an interval scale, or (b) an ordinal scale in such a way that the ranks and signs needed for the test statistic can be determined." (Gibbons, 1976)
- b) Wilcoxon Rank Sums Test. The data consist of two mutually independent random samples of size m and n , i.e. the samples do not have to be of equal size. "Both sets of data are measured on either (a) an interval scale, or (b) an ordinal scale such that the relative magnitude of each element in the pooled sample (both samples combined) can be determined." (Gibbons, 1976)
- c) Kruskall-Wallis Test. "The data consist of k mutually independent random samples, of sizes n_1, n_2, \dots, n_k , which are

drawn respectively from the populations with cumulative distribution function's F_1, F_2, \dots, F_k . All k sets of observations are measured on either (a) at least an interval scale, or (b) an ordinal scale such that the magnitude of each element relative to every other element can be determined." (Gibbons, 1976)

4.8.1 Hypotheses

Using the SERVQUAL instrument, the following hypotheses were considered for testing in this study:

Hypothesis 1: The overall service quality ratings for the five dimensions: tangibles, reliability, responsiveness, assurance and empathy (Parasuraman et al., 1988), at the DND Food Services dining rooms at Canadian Forces Bases Trenton, Gagetown, and Halifax, will be rated average or above in each dining room.

$$H_0: M_{\text{dining room}} \geq 5 \text{ vs. } H_A: M_{\text{dining room}} < 5$$

where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{dining room}}$ represents the median service quality rating of the applicable dimension for the dining room in question. A p -value > 0.05 means the null hypothesis is not rejected and that

the rating is average (5) or above in the dining room.

Hypothesis 2: The diners' perceptions of overall service quality for each dimension will fall within their zones of tolerance in each dining room.

Hypothesis 3: There will be significant differences between overall service quality ratings for each dimension among the types of dining room service being provided.

$$H_0: M_{\text{service type } i} = M_{\text{service type } j}, i \neq j$$

vs

$$H_A: \text{at least one } M_{\text{service type } i} \neq M_{\text{service type } j}, i \neq j$$

where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{service type } i \text{ or } j}$ represents the median overall service quality rating of the applicable dimension for the type of service in question. A p-value < 0.05 means the alternate hypothesis is accepted and that there is a difference in overall service quality rating between the types of service.

Hypothesis 4: There will be significant differences in the median MSA and MSS ratings for each dimension among the types of dining room service being provided.

$$H_0: M_{\text{service type } i} = M_{\text{service type } j}, i \neq j$$

vs

$$H_A: \text{at least one } M_{\text{service type } i} \neq M_{\text{service type } j}, i \neq j$$

where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{service type } i \text{ or } j}$ represents the median MSA or MSS rating (as applicable) for that particular dimension and type of service. A p-value < 0.05 means the alternate hypothesis is accepted and that there is a difference in MSA or MSS rating (as applicable) between the types of service.

Hypothesis 5: For internal reliability, there will be a significant difference between the overall service quality (OSQ) rating and the overall service quality rating derived from the perceived ratings at each of the dining rooms.

$$H_0: M_{\text{difference}} = 0 \text{ vs. } H_A: M_{\text{difference}} \neq 0$$

where H_0 and H_A are the null and alternate

hypotheses, respectively. $M_{\text{difference}}$ represents the median difference between the OSQ rating and the overall service quality rating calculated from the perceived ratings for the dining room in question. A p-value < 0.05 means the alternate hypothesis is accepted and that there is a difference between the two ratings in the dining room.

For validity, two hypotheses will be required for testing for differences concerning response error. They are:

Hypothesis 6: All Bases will be considered equal with respect to the proportion of errors per statement in the SERVQUAL instrument.

$$H_0: P_{\text{Trenton1}} = P_{\text{Gagetown1}} = P_{\text{Halifax1}} = P_{\text{Winnipeg1}}$$

$$H_A: \text{at least one } P_i \neq P_j, i \neq j$$

where i and j represents the error rate for a particular Base and statement, and where P_{Trenton1} would represent the error rate for statement 1 at Trenton. The above hypothesis is constructed for each of the 21 statements. The test statistic for each set of hypotheses is the sum of the differences, and is compared to a Chi-Square value based on $\alpha=0.05$ and $df=3$. In order to not reject the H_0 (in other words, the Bases are

equal with respect to the proportion of errors per statement), the test statistic must be less than the Chi-Square value for each statement.

Hypothesis 7: There will be no significant difference in error rates between the statements.

$H_0: p_1 = p_2 = p_3 = p_4 = \dots = p_{20} = p_{21}$

$H_A: \text{at least one } p_i \neq p_j, i \neq j$

where i and j represents the error rate for a particular statement, and where p_{21} would represent the proportion of errors in statement 21. The test statistic is the same as Hypothesis 6 and compared to a Chi Squared value based on $\alpha=0.05$ and $df=20$. If there is a significant difference between the statements, the H_0 is not accepted (the test statistic would be greater than the Chi-Squared value).

Overall, the results of hypotheses 1 to 7, combined with reliability and validity measures, will determine whether SERVQUAL, modified to measure food services, will be successful at accurately measuring desired, adequate, and perceived service quality in DND Food Services dining rooms, thus meeting the main objective of this study.

Depending on the sample sizes, the following hypotheses may be investigated:

Hypothesis 8: There will be significant differences in overall service quality ratings for each dimension between the rank levels within a dining room.

$$H_0: \text{all } M_{\text{rank level } i} = M_{\text{rank level } j}, i \neq j$$

vs

H_A : at least one $M_{\text{rank level } i} \neq M_{\text{rank level } j}, i \neq j$
where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{rank level } i \text{ or } j}$ represents the median overall service quality rating of the applicable dimension for that particular rank level. A p-value < 0.05 means the alternate hypothesis is accepted and that there is a difference in overall service quality rating between the rank levels.

Hypothesis 9: There will be significant differences in the median MSA and MSS ratings for each dimension between the rank levels within a dining room.

$$H_0: \text{all } M_{\text{rank level } i} = M_{\text{rank level } j}, i \neq j$$

vs

$$H_A: \text{at least one } M_{\text{rank level } i} \neq M_{\text{rank level } j}, i \neq j$$

where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{rank level } i \text{ or } j}$

represents the median MSA or MSS rating (as applicable) for that particular dimension and rank level. A p-value < 0.05 means the alternate hypothesis is accepted and that there is a difference in MSA or MSS rating (as applicable) between the rank levels in the dining room.

Hypothesis 10: There will be significant differences between living-in members' and living-out members' overall service quality ratings for each dimension in each dining room.

$$H_0: M_{\text{member } i} = M_{\text{member } j}, i \neq j$$

vs

$$H_A: M_{\text{member } i} \neq M_{\text{member } j}, i \neq j$$

where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{member } i \text{ or } j}$ represents the median overall service quality rating of the applicable dimension for living-in and living-out members for a particular dining room. A p-value < 0.05 means the alternate hypothesis is accepted and that there is a difference in overall service quality rating between living-in and living-out members in a dining room.

Although not part of the SERVQUAL instrument, some questions are included in Part 3 of the questionnaire with respect to food quality, food quality for money, and service quality for money. Therefore the following hypotheses will be investigated:

Hypothesis 11: The quality ratings for overall food quality, food characteristics, food items, food quality for money, and service quality for money, will be rated average or above at each of the dining rooms.

$$H_0: M_{\text{dining room}} \geq 5 \text{ vs. } H_A: M_{\text{dining room}} < 5$$

where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{dining room}}$ represents the median rating of either overall food quality, food characteristics, food items, food quality for money or service quality for money, for the dining room in question. A p-value > 0.05 means the null hypothesis is not rejected and that the applicable rating is average (5) or above in the dining room.

Hypothesis 12: There will be significant differences between quality of service for money and overall service quality, and between quality of food for money and overall food quality,

at each of the dining rooms.

$$H_0: M_{\text{difference}} = 0 \text{ vs. } H_A: M_{\text{difference}} \neq 0$$

where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{difference}}$ represents the median difference between the quality of service for money (OSQ-\$) and overall service quality (OSQ), and between quality of food for money (OFQ-\$) and overall food quality (OFQ), for the dining room in question. The differences are determined by subtracting the OSQ-\$ from the OSQ, and OFQ-\$ from the OFQ. A p-value < 0.05 means the alternate hypothesis is accepted and that there is a difference between the two ratings in the dining room.

Hypothesis 13: There will be significant differences between the overall food quality rating calculated from the food characteristics' ratings and the overall food quality rating calculated from the food items' ratings at each of the dining rooms.

$$H_0: M_{\text{difference}} = 0 \text{ vs. } H_A: M_{\text{difference}} \neq 0$$

where H_0 and H_A are the null and alternate hypotheses, respectively. $M_{\text{difference}}$

represents the median difference between the overall food quality rating calculated from the food characteristics' ratings (OFQ-1) and the overall food quality rating calculated from the food items' ratings (OFQ-2) for the dining room in question. The difference is determined by subtracting the OFQ-1 from OFQ-2. A p-value < 0.05 means the alternate hypothesis is accepted and that there is a difference between the two ratings in the dining room.

CHAPTER 5 - RESULTS

5.1 Objectives of Study

The main objective of this research was to determine whether the SERVQUAL instrument could be used to accurately measure diner expectations and perceptions of service quality in DND Food Services dining rooms.

Specific goals towards fulfilling this objective included determining:

- (1) the overall service quality ratings for the five dimensions measured by SERVQUAL: tangibles, reliability, responsiveness, assurance and empathy at each of the dining rooms;
- (2) the diners' perceptions of service quality and zones of tolerance for each dimension at each of the dining rooms;
- (3) whether there are significant differences between overall service quality ratings for each dimension for the types of dining room service being provided;
- (4) whether there are significant differences in the median MSA and MSS ratings for each dimension among the types of dining room service being provided; and
- (5) the reliability and validity of the SERVQUAL instrument.

Chapter 3, Goals and Objectives of Study, should be referred to for further details on goals of study. Definitions are provided in List of Definitions, p. xviii.

5.2 General Analysis

Due to the success of the pre-testing at 17 Wg Winnipeg, the diner sample was analyzed as part of the research data. The findings are discussed under this section. For all Likert scale questions, those with "No Response", "No Opinion" or "No Recognizable Response" were not included as part of the analysis, with the exception of frequency tabulation and error rate calculations.

For any analysis of SERVQUAL when the dimensions were involved, if a dimension had two or more statements coded as "No Response", "No Opinion" or "No Recognizable Response" for responses, it was not included in the analysis for that respondent in the dining room.

The results for each dining room for all the Bases are described in the applicable sub-section. However, due to large quantities of data when there are numerous variables of a particular sub-section to report on (i.e. the overall service quality rating for each of the five SERVQUAL dimensions for all types of service, by dining room), only Gagetown data are presented in detail in these tables. As well, for analysis where differences are involved, only data showing significant differences are provided in the tables; the remaining data are contained in the applicable Appendix.

The specific data for the other Base dining rooms are in Appendices 5-A to 5-N. Gagetown was selected for demonstration as each of the Officers', SrNCOs' and JrNCOs' dining rooms are represented and sample sizes are sufficient for statistical significance.

Due to the low number of respondents in the Officers' dining room in Trenton, and the SrNCOs' dining rooms in Winnipeg and Halifax ($n \leq 11$), the results from these dining rooms are suspect and are not presented as part of the results. Results from differences among specific rank levels in the dining rooms are also suspect due to an insufficient number of respondents in the rank level; therefore, results for rank levels which have a small number of respondents are not presented in the results ($n \leq 10$). All data concerning rank levels are contained in Appendices 5-F, 5-G and 5-I.

The analysis of the data was limited to the hypotheses listed in section 4.8.1, with the exception of Hypothesis 10. For the latter, the sample sizes were too small for living-out members to determine differences with any statistical significance.

5.2.1 Descriptive Information

5.2.1.1 Description of Dining Room and Diner Characteristics

Refer to Appendix 4-A, Profiles of Base Dining Rooms, for detailed information on each dining room.

Respondents

Respondents consisted of a sample of random and volunteer diners. Only the data from the random sample were analyzed as part of the results. The distribution of the random sample and volunteers for each dining room are in Appendix 5-A.

French and English Questionnaires The majority of the respondents requested English questionnaires (77% or greater). Winnipeg was not included as the questionnaire was only in English for the pre-testing stage.

Dining Room Type Respondents in the study were dining in the Officers' dining rooms at all four Bases, the SrNCOs' and JrNCOs' dining rooms at all Bases excluding Trenton, the Mixed Jr/SrNCOs' dining room at Trenton and the All Ranks' dining room at Halifax. All the results were analyzed by dining room. Actual sample sizes analyzed are at Appendix 5-A. The number of respondents were the lowest for the Trenton Officers' dining room and the SrNCOs' dining rooms at Winnipeg and Halifax (n=9, 11, and 10, respectively). Basic dining room profiles are at Appendix 4-A.

Gender The majority of the diner respondents were male in all dining rooms (81% or greater). For females, the respondents ranged from zero to 19%; the latter percentage was in the Officers' dining room in Winnipeg. Actual percentages for specific age groups by dining room are in Appendix 5-A.

Age Group In general, the age group range which had the majority of respondents in the Officers' dining rooms was 21 to 40 years of age with 84%, 77%, 87% and 100% for Winnipeg, Trenton, Halifax and Gagetown, respectively. For the SrNCOs' dining rooms, the majority of the respondents were in the age range from 31 to 55 years of age with 90%, 90% and 85% for Winnipeg, Halifax and Gagetown, respectively. In the JrNCOs' dining rooms, the age group range which had the majority of respondents in Winnipeg (92%), Halifax (80%) and Gagetown (77%) was 21 to 35 years of age. For the Mixed Jr/SrNCOs' dining room in Trenton, the majority of the respondents ranged from 26 to 45 years of age (84%). In Halifax, the All Ranks' dining room had a majority of respondents in the age group range from 26 to 40 years of age (74%). Actual percentages for specific age groups by dining room are in Appendix 5-A.

Living Situation on Base For all dining rooms, the majority of respondents' were staying in single quarters at the Base in question. This characteristic ranged from 59 to 93% across the dining rooms. Actual percentages for the different living situations by dining room are in Appendix 5-A.

Membership Membership was divided into Regular Force, Reserve Force, Cadet Organization, Civilian and Other. For all dining rooms, the majority of diner respondents were in the Regular Force (ranging 64 to 100%). Actual percentages

for membership by dining room are in Appendix 5-A.

Rank Level In the Officers' dining rooms, the majority of respondents consisted of Lts and Capts with 41%, 67%, 82% and 96% for Winnipeg, Trenton, Halifax and Gagetown, respectively. In the SrNCOs' dining rooms, the majority of respondents were Sgts, with a percentage distribution of 64% (Winnipeg), 50% (Halifax), and 68% (Gagetown). For the JrNCOs' dining rooms, Trenton's Mixed Jr/SrNCOs' and Halifax' All Ranks' dining rooms, the dominant rank for respondents was Cpl (range of 38 to 69%), with the exception of Gagetown's JrNCOs' dining room. For the latter, the percentages of diner respondents were 39% Ptes and 33% Cpls. Actual percentages for rank levels by dining room are in Appendix 5-A.

Status on Base Status was defined as student, staff, visitor or other. The majority of the respondents were classified as students in all the Officers' dining rooms with the exception of Trenton, in the JrNCOs' and All Ranks' dining rooms in Halifax (61% and 41%, respectively), and in the JrNCOs' and SrNCOs' dining rooms in Gagetown (51% and 74%, respectively). The majority of respondents were staff members in the Officers' and Mixed Jr/SrNCOs' dining rooms in Trenton (56% and 64%, respectively), and the SrNCOs' dining rooms in Winnipeg (73%) and Halifax (80%). The JrNCOs' dining room in Winnipeg had a majority of respondents categorized as Other (56%). Actual percentages

for status on Base by dining room are in Appendix 5-A.

Reason on Base The majority of respondents were at their posted location for Winnipeg SrNCOs' and Trenton Mixed Jr/SrNCOs' dining rooms (64% and 60%, respectively).

Trenton's Officers' and Halifax' SrNCOs' dining rooms were evenly distributed for respondents at their posted location and on temporary duty (44/44%, 50/50%, respectively by Base). The Officers' dining rooms in Winnipeg, Halifax and Gagetown were 54%, 64%, and 90% temporary duty, respectively. The majority of respondents in the JrNCOs' dining rooms were on temporary duty (59% Winnipeg, 51% for Halifax and Gagetown). The majority of respondents were on temporary duty for Halifax' All Ranks' dining room (57%) and Gagetown's SrNCOs' dining room (74%). Actual percentages for reason on Base, by dining room, are in Appendix 5-A.

Length of Time in CF Generally, the majority of the respondents in the Officers' and JrNCOs' dining rooms had joined the CF between 1987-1996 and SrNCOs' dining room respondents had joined the CF between 1967-1986. For the Halifax All Ranks' and Trenton Mixed Jr/SrNCOs' dining room respondents, the majority had joined the CF between 1977-1991. The actual percentages for length of time in the CF, by dining room, are in Appendix 5-A.

Mode of Payment Mode of payment for meals was categorized as ration entitlement (paying), meal ticket purchase (paying), duty (not paying) and separation expense

(not paying). For the majority of respondents in the Officers' and SrNCOs' dining rooms, 50 to 64% were on duty, with the exception of the Trenton Officers' dining room where the majority also included those on separation expense. Gagetown's JrNCOs' dining room respondents were the only majority who were paying for ration entitlement. The majority of the Trenton Mixed Jr/SrNCOs' dining room respondents were a combination of on duty and paying for ration entitlement. The majority of the Halifax All Ranks' dining room respondents were a combination of on duty and meal ticket purchase. Actual percentages for mode of payment, by dining room, are in Appendix 5-A.

Length of Time dining in Dining Room In all dining rooms except for the JrNCOs' dining rooms in Winnipeg and Halifax and the SrNCOs' dining room in Halifax, the majority of respondents had been dining in the dining room for less than three months. The dining rooms listed as exceptions had the majority of respondents dining in the dining room for one week or less (Winnipeg JrNCOs'), more than 3 months but less than 6 months (Halifax JrNCOs'), and an even distribution between more than one week but less than 1 month, and more than 6 months (Halifax SrNCOs'). Actual percentages for length of time dining in dining room, by dining room type, are in Appendix 5-A.

Diner Consumption Patterns The diner consumption patterns concerned the frequency of meals taken in the dining room,

elsewhere, or not consuming the meal at all. Generally, breakfast from Monday to Friday was consumed in the dining rooms but at a lower percentage than lunch and supper. Breakfast in the dining room on the weekend tended to decrease, with a higher number of respondents not consuming breakfast at all. Lunch consumption patterns tended to be the highest in all the dining rooms every day of the week. Supper meal patterns were similar to the breakfast pattern, but the percentages were not as low as for breakfast. Gagetown's dining rooms showed a higher meal consumption pattern for all the dining rooms every day of the week, with the exception of breakfast for the JrNCOs' dining room, where diner consumption was distributed more evenly between eating breakfast in the dining room and not eating breakfast at all. Actual percentages for diner consumption patterns, by meal and dining room, are in Appendix 5-A.

Non-Respondents

There was a total of 140 non-respondents distributed as 11%, 13%, 39% and 37% for Winnipeg, Trenton, Halifax and Gagetown, respectively. Reasons for non-participation in the study were 'no time' (59%), 'no interest' (28%), 'don't feel like it' (3%), and 'not here long enough' (10%). A description of non-respondents with their reasons for non-participation are in Table 5-A. Gender and rank level were not included in the table; however, the majority of non-

respondents were male and rank equivalent reflective of the characteristics of the diners in the dining rooms.

Table 5-A Description of Non-Respondents.

CFB	Reason for Non-Participation									
	Total		No Time		No Interest		Don't Feel Like It		Not here Long enough	
	N	%	N	%	N	%	N	%	N	%
WINNIPEG	16	11	11	69	-	-	2	13	3	19
TRENTON	18	13	6	33	6	33	1	6	5	28
HALIFAX*	54	39	31	57	16	30	-	-	6	11
GAGETOWN	52	37	34	65	17	33	1	2	-	-
TOTAL	140	100	82	59	39	28	4	3	14	10

*Officers' dining room had 1 non-respondent who gave reason as 'Other' which is not included in table

5.2.1.2 Response Rates

A total number of 464 (93%) questionnaires were returned, and of these 444 (96%) were found to be useable and therefore coded into the database. Blank questionnaires were not included in the analysis. The response rates and percent useable were high for all dining rooms; the lowest response rate was in the All Ranks' dining room with 49 (78%) of the questionnaires returned. The number of questionnaires issued, returned and rejected, and percent useable are in Table 5-B for each of the dining rooms.

The overall response rate for the sample size in terms of the lunch plate count was 41%. If the diners who had said they would complete the questionnaire at the supper meal had participated (referred to as "No-Shows"), and if the questionnaires had been useable, the overall response rate would have been 45% of the lunch plate count. Response rates if "No-Show" respondents were included as part of the sample (expressed as percentage of lunch plate count), are in Table 5-C.

Table 5-B Response Rates for Diners from All Bases.

CFB	# Issued	# Returned	# Rejected	% Useable
<u>Winnipeg</u> Officers'	37	37	0	100
SrNCOs'	11	11	0	100
JrNCOs'	42	39	0	100
TOTAL	90	87	0	100
<u>Trenton</u> Officers'	10	10	1	90
Mixed Jr/SrNCOs'	55	54	4	93
TOTAL	65	64	5	92
<u>Halifax</u> Officers'	32	28	0	100
SrNCOs'	10	10	0	100
JrNCOs'	83	79	8	90
All Ranks'	63	49	3	94
TOTAL	188	166	11	93
<u>Gagetown</u> Officers'	49	49	1	98
SrNCOs'	36	34	0	100
JrNCOs'	70	64	3	95
TOTAL	155	147	4	97
OVERALL TOTAL	498	464	20	96

Table 5-C Response Rates As a Percentage of Lunch Plate Count and Response Rates if No-Show Respondents Included as Percentage of Lunch Plate Count.

CFB	Sample Size (n)	%Plate Count	Plate Count	#No-Shows	%Plate Count
Winnipeg Officers'	37	42	89	N/A	42
SrNCOs'	11	44	25	N/A	44
JrNCOs'	42	40	105	N/A	40
TOTAL	90	41	219	N/A	41
Trenton Officers'	10	59	17	0	59
Mixed Jr/SrNCOs'	55	36	153	3	38
TOTAL	65	38	170	3	40
Halifax Officers'	32	40	80	0	40
SrNCOs'	10	36	28	1	39
JrNCOs'	83	46	179	7	50
All Ranks'	63	42	151	3	44
TOTAL	188	43	438	11	45
Gagetown Officers'	49	45	108	6	51
SrNCOs'	36	41	87	8	51
JrNCOs'	70	37	191	14	44
TOTAL	155	40	386	28	47
OVERALL TOTAL	498	41	1213	42	45

N/A = not applicable as no diner requested to complete questionnaire at supper

5.3 Data Analysis

5.3.1 Service Quality Comments by Diners

Question #23, Part 2, was a two-part, open-ended question which asked the diners their opinion of the service quality in the dining room and whether there were any improvements that they would like to see made on quality of service. Frequency distributions of the two-part questions were completed. Response rates were computed to show the percentage of diners who completed the questionnaire and answered this question. To fit into this category, if the question had been answered only in part, it was classified as responding. Due to the low number of respondents in the Officers' dining room in Trenton, and the SrNCOs' dining rooms in Winnipeg and Halifax ($n \leq 11$), these results are not presented. Generally, the response rates were low for this question, with the Officers' dining rooms appearing to have the higher response rates (Tables 5-D and 5-E). However, the SrNCOs' dining room in Gagetown also had a high response rate.

Of the diners who responded to this question, there was a higher percentage of positive responses concerning service quality in the dining rooms. In Halifax, the Officers' dining room had a higher percentage of diners providing both positive and negative opinions on service quality (Table 5-D).

Of the diners who responded to this question, the

responses to whether the diners would like to see improvements appeared to be distributed between Yes responses, that they would like to see improvements on service quality, and Other responses, which were comments on requests for improvements in areas other than service quality (i.e. food variety, temperature, etc.) (Table 5-E).

Table 5-D Diner Opinion on Service Quality for Each Dining Room Based on Open-Ended Question.

CFB	DINING ROOM ¹	N	RESPONSE RATE %	SERVICE QUALITY LEVEL % ²			
				+VE ³	-VE ³	BOTH	OTHER
Wpg	Officers'	37	43	100	-	-	-
	JrNCOs'	39	21	38	13	25	25
Tre	Mixed Jr/SrNCOs'	50	28	71	14	14	-
Hfx	Officers'	28	46	39	8	54	-
	JrNCOs'	71	27	63	21	16	-
	All Ranks'	46	24	73	9	18	-
Gge	Officers'	48	38	61	17	22	-
	SrNCOs'	34	44	47	20	20	13
	JrNCOs'	61	18	64	27	9	-

N=Number of diners completing questionnaire

¹Due to small sample sizes in Trenton Officers' dining room and SrNCOs' dining rooms in Winnipeg and Halifax (n=11), these results are not presented.

²Percentage of those who responded

³+ve=positive, -ve=negative

Table 5-E Diner Opinion On Service Quality Improvements for Each Dining Room Based on Open-Ended Question.

CFB	DINING ROOM ¹	N	RESPONSE RATE %	IMPROVEMENTS % ²		
				YES	NO	OTHER
Wpg	Officers'	37	43	63	-	38
	JrNCOs'	39	21	25	-	75
Tre	Mixed Jr/SrNCOs'	50	28	40	-	60
Hfx	Officers'	28	46	39	8	54
	JrNCOs'	71	27	46	6	49
	All Ranks'	46	24	67	-	33
Gage	Officers'	48	38	91	5	5
	SrNCOs'	34	44	63	-	38
	JrNCOs'	61	18	67	-	33

N=Number of diners completing questionnaire

¹Due to small sample sizes in Trenton Officers' dining room and SrNCOs' dining rooms in Winnipeg and Halifax (n≤11), these results are not presented.

²Percentage of those who responded

5.3.2 SERVQUAL Analysis

5.3.2.1 Overall Service Quality (OSQ) Rating

The Overall Service Quality (OSQ) rating is based on Question #22, Part 2 of the questionnaire.

5.3.2.1.1 Median Overall Service Quality Rating

Analysis of the data using the Wilcoxon Signed Rank test showed that all dining rooms had a median OSQ rating greater than or equal to 5, at $p > 0.05$. The range of ratings is narrow, from 6 to 7.5. Table 5-F shows the median OSQ ratings for each dining room by Base and their respective p-values.

Table 5-F Median Overall Service Quality (OSQ) Ratings for Each Dining Room Rated Average 5 or Above.

CFB	N	DINING ROOM	MEDIAN OSQ RATING	P-VALUE
Wpg	35	Officers'	7.0000	1.000
	10	SrNCOs'	7.5000	N/A
	32	JrNCOs'	6.0000	1.000
Tre	7	Officers'	7.0000	N/A
	40	Mixed Jr/SrNCOs'	7.0000	1.000
Hfx	24	Officers'	7.0000	1.000
	10	SrNCOs'	7.5000	N/A
	61	JrNCOs'	6.5000	1.000
	38	All Ranks'	7.0000	1.000
Gge	43	Officers'	6.5000	1.000
	27	SrNCOs'	7.0000	1.000
	52	JrNCOs'	6.0000	1.000

Wpg=Winnipeg, Tre=Trenton, Hfx=Halifax, Gge=Gagetown
N/A=not applicable

5.3.2.1.2 Differences in Median OSQ Rating Between Types of Service and Between Rank Levels

Differences in Median OSQ Rating Between Types of Service

Each Base was tested for differences in median OSQ rating with respect to type of service being provided. If a significant difference was found among type of service for a particular Base, and if there were more than two different types of service being provided at a Base, the data were further analyzed to determine which types differed significantly. The Wilcoxon Rank Sum test was used when the Base had only two types of service, and the Kruskal-Wallis

test was used when the types of service were greater than two.

The range of medians for types of service was 6 to 7.5. For Winnipeg, a significant difference in median OSQ was found for types of service between modified table service and cafeteria service, at $p < 0.01$. Differences between the types of service in Trenton could not be determined due to the low number of respondents in the Officers' dining room ($n=7$). For Halifax, there was only a significant difference in the OSQ rating between modified service and cafeteria service, at $p < 0.05$. Even though it does appear that the two types are similar due to equivalent median OSQ ratings (both 7); the statistical test analyzes the sums of the ranks of all observations, not just the median. There were significant differences between limited table service and cafeteria service in Gagetown, at $p < 0.05$. The differences in median OSQ rating for types of service are in Table 5-G.

Table 5-G Differences in Median OSQ Rating For Types of Service By Base.

CFB	TYPE OF SERVICE	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.*
Winnipeg	Limited	10	7.50	<.0001	Yes. 3,4
	Modified	35	7.00		
	Cafeteria	32	6.00		
Trenton	Modified	7	7.00	N/A	N/A
	Cafeteria	40	7.00		
Halifax	Limited	10	7.50	0.0147	Yes. 3,4
	Modified	34	7.00		
	Cafeteria	88	7.00		
Gagetown	Limited	27	7.00	0.015	Yes. 2,4
	Modified	43	6.50		
	Cafeteria	52	6.00		

*In Column 6, 2=Limited table service, 3=Modified table service, 4=Cafeteria service.

N/A=not applicable due to small sample size

Differences in Median OSQ Rating by Rank Levels

Each dining room was tested for differences in median OSQ rating with respect to rank levels. Due to small representation of rank levels in the majority of dining rooms ($n \leq 10$), ranks were formed into larger groups, JrNCOs, SrNCOs, Officers and Other, within applicable dining rooms. If a significant difference was found among the rank levels, or among the groups, it was then determined as to which rank levels or groups differed significantly. The Kruskal-Wallis test was used to determine differences when the rank levels or groups were greater than two, and the Wilcoxon Rank Sum

test was used for all other cases. Only dining rooms that had a sufficient number of respondents in rank levels for comparisons ($n \geq 11$) are described in the Results chapter.

For Halifax and Gagetown, there were no significant differences in median OSQ rating between the rank levels in the JrNCOs' dining rooms. For Gagetown, the only significant difference in median OSQ rating was in the Officers' dining room, between Lieutenants and Captains, at $p < 0.01$ (Table 5-H). The median OSQ rating for rank levels and rank groups for Winnipeg, Trenton and Halifax are in Appendix 5-B.

Table 5-H Differences in Median OSQ Rating For Rank Levels within Dining Rooms For Gagetown.

DINING ROOM	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF. *
Officers'	2Lt	1	6.00	0.0072	Yes. 10,11
	Lt	14	7.00		
	Capt	27	6.00		
	Maj	1	6.00		
SrNCOs'	Sgt	20	7.00	0.1030	No.
	WO	6	8.00		
	MWO	1	9.00		
JrNCOs'	Pte	20	6.00	0.6706	No.
	Cpl	17	6.00		
	MCpl	11	6.00		
	Other	2	6.50		

*In Column 6, 10=Lt; 11=Capt

5.3.2.2 Overall Service Quality (OSQ) Rating for Perceptions-Only

5.3.2.2.1 Median OSQ for Each Dimension

The median overall service quality rating was computed for each dimension from the perceived quality ratings for each dining room, and tested whether or not each rating was equal to or greater than the average of 5. The Wilcoxon Signed Rank test determined that the median OSQ rating for each dimension in all dining rooms was greater than or equal to the average 5, at $p > 0.05$ (Table 5-I). The range of medians was from 6 to 8 among all dining rooms. Data for Winnipeg, Trenton and Halifax are contained in Appendix 5-C.

Table 5-I Median OSQ Rating for Each SERVQUAL Dimension Rated Average 5 or Above for Gagetown Dining Rooms.

DINING ROOM	DIMENSION	N	MEDIAN OSQ RATING	P-VALUE
Officers'	Reliability	45	7.0000	1.000
	Responsiveness	46	6.5000	1.000
	Assurance	40	6.5000	1.000
	Empathy	42	7.0000	1.000
	Tangibles	45	7.0000	1.000
SrNCOs'	Reliability	32	7.0000	1.000
	Responsiveness	33	7.5000	1.000
	Assurance	31	7.5000	1.000
	Empathy	33	7.0000	1.000
	Tangibles	33	7.0000	1.000
JrNCOs'	Reliability	53	6.0000	1.000
	Responsiveness	53	6.5000	1.000
	Assurance	51	7.0000	1.000
	Empathy	50	6.0000	1.000
	Tangibles	54	6.0000	1.000

5.3.2.2.2 Dimensions Into Statements by Median OSQ Rating

Appendix 5-D contains the median OSQ rating for each statement within the dimensions reliability, responsiveness, assurance, empathy and tangibles, as well as the lowest and highest median OSQ ratings for Winnipeg, Trenton and Halifax dining rooms. No separate analysis was completed to determine whether the ratings were significantly rated average or above. Table 5-J shows the lowest and highest

median OSQ ratings for each dining room in Gagetown by dimension and statement number. Only those statements that are the lowest and highest are given; statements with ratings between the lowest and highest are not presented.

For Winnipeg, the lowest and highest OSQ ratings for statements within the dimensions for the Officers' dining room were 7 and 8, respectively. The SrNCOs' and JrNCOs' dining rooms had 6 and 8 for the lowest and highest OSQ ratings, respectively.

For Trenton, the lowest OSQ rating for statements within the dimensions for the Officers' and Mixed Jr/SrNCOs' dining rooms was 6. The highest ratings were 8.5 and 7, respectively.

For Halifax, the highest OSQ rating for statements within the dimensions for each of the dining rooms was 8. The lowest OSQ ratings were 6.5, 6, 5.75 and 6 for the Officers', SrNCOs', JrNCOs' and All Ranks' dining rooms, respectively.

For Gagetown, the lowest OSQ ratings for statements within the dimensions were 6, 7, 5.5 for the Officers', SrNCOs' and JrNCOs' dining rooms, respectively. The highest OSQ ratings were 8 for the Officers' and SrNCOs' dining rooms and 7 for the JrNCOs' dining room.

Table 5-J Lowest and Highest Median OSQ Rating For Dimensions By Statement for Gagetown Dining Rooms.

DINING ROOM	LOWEST OSQ RATING	DIMENSION (Statement #)	HIGHEST OSQ RATING	DIMENSION (Statement#)
Officers' (n≥45)	6.00	Resp(5)	8.00	Assur(11)
SrNCOs' (n≥28)	7.00	All Statements except 7 and 11	8.00	Resp(7)
				Assur(11)
JrNCOs' (n≥48)	5.50	Tan(21)	7.00	Rel(3,4)
				Resp(5)
				Assur(10-12)
				Emp(17)
				Tan(18,20)

5.3.2.2.3 Differences in OSQ Rating, By Dimension, Between Types of Service

Each Base was assessed to find whether there were differences between types of service when looking at the overall service quality rating for each dimension. From initial analysis, if a significant difference was found between types of service, and if the number of types of dining service was greater than two, the actual types of service which differed significantly were determined. The Wilcoxon Rank Sums test was used to analyze the data when there were only two types of dining service. The Kruskal-Wallis test was used when the types of service were greater than two.

For Winnipeg, the OSQ ratings for the dimensions

responsiveness, assurance and tangibles differed significantly between modified table service and cafeteria service at $p < 0.05$. There were no differences for reliability and empathy. Appendix 5-E shows the median OSQ ratings for each dimension by type of service with their respective p-values.

For Trenton, differences between the types of service could not be determined due to the low number of respondents in the Officers' dining room ($n \leq 8$). Appendix 5-E shows the median OSQ ratings for each dimension by type of service.

For Halifax, the OSQ ratings for the dimensions responsiveness, assurance and empathy differed significantly between modified table service and cafeteria service at $p < 0.05$. Appendix 5-E shows the median OSQ ratings for each dimension by type of service with applicable p-values.

For Gagetown, only the dimensions responsiveness and empathy differed significantly for the OSQ ratings between limited table service and cafeteria service at $p < 0.05$. No differences were found with the other three dimensions nor with modified table service. Table 5-K shows the median OSQ ratings for each dimension by type of service with their respective p-values.

Table 5-K Differences in OSQ Rating, By Dimension, Between Types of Service for Gagetown Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.*
Reliability	Limited	32	7.00	0.2435	No.
	Modified	45	7.00		
	Cafeteria	53	6.00		
Responsiveness	Limited	33	7.50	0.0172	Yes. 2,4
	Modified	46	6.50		
	Cafeteria	53	6.50		
Assurance	Limited	31	7.50	0.2984	No.
	Modified	40	6.50		
	Cafeteria	51	7.00		
Empathy	Limited	33	7.00	0.0495	Yes. 2,4
	Modified	42	7.00		
	Cafeteria	50	6.00		
Tangibles	Limited	33	7.00	0.0661	No.
	Modified	45	7.00		
	Cafeteria	54	6.00		

*In Column 6, 2=Limited table service, 4=Cafeteria service

5.3.2.2.4 Differences in OSQ Rating, By Dimension, Between the Rank Levels Within the Dining Rooms

Each dining room was tested for differences in median OSQ rating by dimension with respect to rank levels. Due to small representation of rank levels in the majority of dining rooms ($n \leq 10$), ranks were formed into larger groups, JrNCOs, SrNCOs, Officers and Other, within applicable dining rooms. If a significant difference was found among the rank

levels, or among the groups, it was then determined as to which rank levels or groups differed significantly. The Kruskal-Wallis test was used to determine differences when the rank levels or groups were greater than two, and the Wilcoxon Rank Sum test was used for all other cases. Only dining rooms that had a sufficient number of respondents in the rank levels for analysis of differences ($n \geq 11$) are described for results (Trenton Mixed Jr/SrNCOs', Halifax JrNCOs', and Gagetown JrNCOs' and Officers' dining rooms only).

For Trenton, the OSQ rating for assurance showed that there were significant differences between Cpls and MCpls at $p < 0.05$, in the Mixed Jr/SrNCOs' dining room.

For Halifax, there were no differences for all dimensions between Ptes, Cpls and MCpls in the JrNCOs' dining room.

For Gagetown, there were no significant differences in the OSQ ratings for all dimensions between Lts and Cpts in the Officers' dining room. For the JrNCOs' dining room, there were no significant differences for reliability between Ptes, Cpls and MCpls. Appendix 5-F contains the median OSQ values by rank for the dining rooms at all Bases.

5.3.2.3 Zones of Tolerance

In this section, the diners' perceived level of service quality in the dining rooms is compared to their zones of tolerance for each dimension. The zone of tolerance can be

defined as "the range of acceptance a [diner] has for the level of service quality" provided in the dining room (Zeithaml et al., 1993). This range has two boundaries; the lower boundary is the minimum or adequate service level that the diner finds acceptable, and the upper boundary is the desired level of service quality that the diner would like to have. The diner's perception of the actual service quality level of a dining room is compared to this zone of tolerance to see whether the quality of service provided is fitting into the diner's zone of tolerance.

5.3.2.3.1 Differences in Perceptions of Actual Service Levels Relative to Adequate Service (MSA), By Dimension For Rank Levels and Types of Service

The MSA, or, Measure of Service Adequacy, is the difference between the perceived service quality rating (Column 3 of Part 2 in the questionnaire) and the adequate (or minimum) service quality rating, which is calculated for each of the five dimensions. A positive MSA value means that the OSQ rating that the diners perceive the service quality level to be, is greater than their adequate service quality level for that dimension. A negative MSA value means that the OSQ rating for what the diners perceive the level of service quality to be in the dining room, is less than the diners' adequate service quality level for that dimension. A value of zero means that the OSQ rating that the diners perceive the service quality to be, is equivalent to the diners' adequate service level for that dimension.

Differences by Rank

Each dining room was tested for differences in median MSA rating by dimension with respect to rank levels. Due to small representation of rank levels in the majority of dining room samples ($n \leq 10$), ranks were formed into larger groups, JrNCOs, SrNCOs, Officers and Other, within applicable dining rooms. If a significant difference was found among the rank levels, or among the groups, it was further analyzed to determine which rank levels or groups differed significantly. The Kruskal-Wallis test was used to determine differences when the rank levels or groups were greater than two, and the Wilcoxon Rank Sum test was used for all other cases. Only dining rooms that had sufficient respondent numbers ($n \geq 11$) are described for results (Trenton Mixed Jr/SrNCOs', Halifax JrNCOs', and Gagetown JrNCOs' and Officers' dining rooms only).

For Trenton, there were significant differences in the MSA rating for reliability, assurance and empathy between Cpls and MCpls at $p < 0.05$. There were no significant differences between these two rank levels for responsiveness and tangibles. The MSA ratings were positive except for the Cpl rank for responsiveness, assurance and empathy, which were rated at zero.

For Halifax, there were no significant differences between the rank levels of Pte, Cpl and MCpl for the MSA ratings by dimension in the JrNCOs' dining room. For the

JrNCOs' dining room, there were few positive MSA ratings. Reliability and assurance were given a zero MSA rating, with the exception of the Cpl rank rating which was positive. Responsiveness was rated negative by Ptes and MCpls, and positive by Cpls. Empathy was given a negative MSA rating by MCpls, a positive rating by Cpls, and a zero rating by Ptes. Tangibles was rated by Ptes as negative, by Cpls as positive and by MCpls as zero.

For Gagetown, there were no significant differences in the MSA ratings for the dimensions between Lts and Capts or Ptes and Cpls in their respective dining rooms. For the Officers' dining room, the MSA rating for reliability was positive for Lts and zero for Capts. Responsiveness, assurance, empathy and tangibles were rated positive by Lts and Capts. Ptes and Cpls rated all dimensions as zero, with the exception of responsiveness, which was rated negative by Ptes. Appendix 5-G contains the median MSA value and differences by rank for the dining rooms of all the Bases.

Differences by Types of Service

Each Base was analyzed to determine whether there were any significant differences in perceptions of actual service levels relative to adequate service (MSA), by dimension, for the types of service. If a significant difference was found among type of service for a particular Base, and if there were more than two different types of service being provided at a Base, the data was further analyzed to determine which

types differed significantly. The Wilcoxon Rank Sum test was used when the Base had only two types of service, and the Kruskal-Wallis test was used when the types of service were greater than two.

For Winnipeg, reliability, responsiveness and tangibles were significantly different in median MSA ratings between modified table service and cafeteria service at $p < 0.05$. All the MSA ratings for the dimensions for each type of service were positive. Appendix 5-H provides the median MSA ratings for types of service by dimension with their applicable p-values.

For Trenton, differences between the types of service could not be determined due to the small sample size in the Officers' dining room ($n \leq 8$). All the MSA ratings for the dimensions for each type of service were positive. Appendix 5-H provides the median MSA ratings for each type of service by dimension.

For Halifax, all dimensions excluding reliability were significantly different in median MSA ratings between modified table service and cafeteria service at $p < 0.05$. The MSA ratings for all dimensions for each type of service were positive, with the exception of responsiveness, assurance and empathy for cafeteria service, which were rated by the diners as zero. Appendix 5-H provides the median MSA ratings for type of service by dimension with applicable p-values.

For Gagetown, assurance, empathy and tangibles were significantly different in median MSA ratings between modified table service and cafeteria service at $p < 0.05$. The only significant difference between limited table service and cafeteria service for the MSA rating was for empathy at $p < 0.01$. It did appear that there may have been a difference between types of service for the MSA rating for responsiveness; however, when a comparison of the pairs was completed to discern which types of service were different, no pairs showed a significant difference. The MSA ratings were positive for all the dimensions for limited and modified table service, but were zero for all dimensions for cafeteria service. Table 5-L provides the median MSA ratings for type of service by dimension with their applicable p-values.

Table 5-L Differences in MSA Rating, By Dimension, Between Types of Service for Gagetown Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.*
Reliability	Limited	26	0.50	0.3117	No.
	Modified	45	0.50		
	Cafeteria	48	0.00		
Responsiveness	Limited	31	0.50	0.0433	No.
	Modified	46	0.50		
	Cafeteria	44	0.00		
Assurance	Limited	27	0.50	0.0379	Yes. 3,4
	Modified	40	1.00		
	Cafeteria	44	0.00		
Empathy	Limited	29	1.00	0.0012	Yes. 2,4 3,4
	Modified	42	1.00		
	Cafeteria	44	0.00		
Tangibles	Limited	31	0.50	0.0097	Yes. 3,4
	Modified	45	1.00		
	Cafeteria	50	0.00		

*In Column 6, 2=Limited table service, 3=Modified table service, 4=Cafeteria service.

5.3.2.3.2 Differences in Perceptions of Actual Service Levels Relative to Desired Service (MSS) By Dimension for Rank Levels and Types of Service

The MSS, or, Measure of Service Superiority, is the difference between the perceived service quality rating (Column 3 of Part 2 in the questionnaire) and the desired service quality rating, which is calculated for each of the five dimensions. A negative MSS value means that the OSQ rating for what the diners perceive the level of service

quality to be in the dining room, is less than the diners' desired service quality level for that dimension. A positive MSS value means that the OSQ rating that the diners perceive the service quality level to be, is greater than their desired service quality level for that dimension. A value of zero means that the OSQ rating that the diners perceive the service quality to be, is equivalent to the diners' desired service level for that dimension.

Differences by Rank

Each dining room was tested for differences in median MSS rating by dimension with respect to rank levels. Due to small representation of rank levels in the majority of dining rooms ($n \leq 10$), ranks were formed into larger groups, JrNCOs, SrNCOs, Officers and Other, within applicable dining rooms. If a significant difference was found among the rank levels, or among the groups, it was further analyzed to determine which rank levels or groups differed significantly. The Kruskal-Wallis test was used to determine differences when the rank levels or groups were greater than two, and the Wilcoxon Rank Sum test was used for all other cases. Only dining rooms that had sufficient respondent numbers ($n \geq 11$) are described for results (Trenton Mixed Jr/SrNCOs', Halifax JrNCOs', and Gagetown JrNCOs' and Officers' dining rooms only).

For Trenton, there were no significant differences between Cpls and MCpls for the median MSS ratings for any

dimension in the Mixed Jr/SrNCOs' dining room. All the dimensions were rated negative by Cpls and MCpls, with the exceptions of reliability, responsiveness and assurance, which were rated zero by MCpls.

For Halifax, there were no significant differences in the MSS rating for the dimensions between Ptes, Cpls and MCpls in the JrNCOs' dining room. The MSS ratings for all the dimensions were negative for Ptes, Cpls and MCpls.

For Gagetown, there were no significant differences in the MSS ratings for the dimensions between Lts and Capts in the Officers' dining room. For the JrNCOs' dining room, there were no significant differences in the MSS ratings between Ptes and Cpls for responsiveness, assurance, empathy and tangibles, and no significant differences between Ptes, Cpls and MCpls for reliability. In both the Officers' and JrNCOs' dining rooms, all dimensions were rated as negative by Lts and Capts, and Ptes, Cpls and MCpls, respectively. Appendix 5-I contains the median MSS values and differences by rank for the dining rooms for each Base.

Differences by Types of Service

Each Base was analyzed to determine whether there were any significant differences in perceptions of actual service levels relative to desired service (MSS), by dimension, for the types of service. If a significant difference was found among type of service for a particular Base, and if there were more than two different types of service being provided

at a Base, the data was further analyzed to determine which types differed significantly. The Wilcoxon Rank Sum test was used when the Base had only two types of service, and the Kruskal-Wallis test was used when the types of service were greater than two.

For Winnipeg, responsiveness and tangibles were significantly different in median MSS ratings between modified table service and cafeteria service at $p < 0.05$. There were no significant differences in types of service for MSS ratings for reliability, assurance and empathy. All the MSS ratings were negative for all types of service except for assurance, empathy and tangibles for modified table service, which were rated as zero. Appendix 5-J provides the median MSS ratings for type of service by dimension with applicable p-values.

As stated previously, Trenton could not be analyzed for differences between types of service due to the small sample size in the Officers' dining room ($n \leq 8$). For cafeteria service, all the dimensions were given negative ratings. Appendix 5-J provides the median MSS ratings for each type of service by dimension.

For Halifax, all dimensions were significantly different in median MSS ratings between modified table service and cafeteria service at $p < 0.05$. Reliability was rated negative by diners for both modified and cafeteria service. The other four dimensions were given negative

ratings for cafeteria service, and zero ratings for modified table service. Appendix 5-J provides the median MSS ratings for type of service by dimension with applicable p-values.

For Gagetown, responsiveness, empathy and tangibles were significantly different in median MSS ratings between limited table service and cafeteria service at $p < 0.05$. There were no significant differences in MSS ratings for reliability and assurance for types of service. The only significant difference between modified table service and cafeteria service for MSS rating was for tangibles at $p < 0.05$. Even though it does appear that the two types are similar due to equivalent median MSS ratings (both -1); the statistical test analyzes the sums of the ranks of all observations, not just the median. The MSS ratings for all dimensions were rated as negative for all types of service, with the exceptions of responsiveness and empathy, which were given zero ratings for limited table service. Table 5-M provides the median MSS ratings for each type of service by dimension with their applicable p-values.

Table 5-M Differences in MSS Rating, By Dimension, Between Types of Service for Gagetown Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.*
Reliability	Limited	26	-0.500	0.1625	No.
	Modified	45	-1.000		
	Cafeteria	49	-1.000		
Responsiveness	Limited	31	0.000	0.0069	Yes. 2,4
	Modified	46	-1.000		
	Cafeteria	45	-1.000		
Assurance	Limited	27	-1.000	0.4300	No.
	Modified	40	-1.000		
	Cafeteria	44	-1.000		
Empathy	Limited	30	0.000	0.0043	Yes. 2,4
	Modified	42	-1.000		
	Cafeteria	44	-1.250		
Tangibles	Limited	31	-0.500	0.0128	Yes. 2,4 3,4
	Modified	45	-1.000		
	Cafeteria	50	-1.000		

*In Column 6, 2=Limited table service, 3=Modified table service, 4=Cafeteria service.

5.3.2.3.3 Median Overall Service Quality Perceptions Relative to Zones of Tolerance By Dimension

The diners' perceptions of the actual overall service quality (perceptions-only rating) in the dining rooms were assessed according to their zones of tolerance for a particular dimension by dining room. The median perceptions-only rating was evaluated relative to the two boundaries for the zones of tolerance for each dimension;

the boundaries were the median adequate and median desired service quality levels.

For all the dining rooms, the median perceptions-only ratings for all dimensions were within their respective zones of tolerance, which are denoted by negative and zero MSS values, and by positive and zero MSA values. Appendix 5-K contains the perceptions-only, desired and adequate service levels with their MSS and MSA values, by dimension for Winnipeg, Trenton and Halifax dining rooms. Table 5-N and Figure 5-A contain Gagetown's data and illustrations of the zones of tolerance by dimension for each dining room.

For Winnipeg, in the Officers' dining room, the perceptions'-only scores were equivalent to the desired levels for assurance, empathy and tangibles. In the SrNCOs' dining room, the perceptions-only scores were the same as the desired levels for responsiveness and tangibles. For the other dimensions in these dining rooms, and as well as for the JrNCOs' dining room, the perceptions-only scores fell between the adequate and desired service quality levels.

For Trenton, in the Officers' dining room, the perceptions'-only scores were equivalent to the desired service levels for assurance, empathy and tangibles. For the other two dimensions in this dining room, and as well as for the Mixed Jr/SrNCOs' dining room, the perceptions-only scores fell between the adequate and desired service levels.

For Halifax, in the Officers' dining room, the perceptions'-only scores were equivalent to the desired levels for responsiveness and tangibles. In the SrNCOs' dining room, the perceptions-only scores were the same as the desired levels for all dimensions except for responsiveness. For the JrNCOs' dining room, the perceptions-only scores for all dimensions were equivalent to the adequate service levels. For the other dimensions in these dining rooms, and as well as for the All Ranks' dining room, the perceptions-only scores fell between the adequate and desired service levels.

For Gagetown, in the SrNCOs' dining room, the perceptions'-only scores were equivalent to the desired levels for responsiveness and empathy. For the JrNCOs' dining room, the perceptions-only scores for all dimensions were equivalent to the adequate service levels. For the other dimensions in these dining rooms, and as well as for the Officers' dining room, the perceptions-only scores fell between the adequate and desired service levels (Table 5-N).

Table 5-N Median Perceptions-Only, Desired and Adequate Overall Service Quality Ratings with MSS and MSA Values for SERVQUAL Dimensions for Gagetown Dining Rooms.

DIMENSION ¹	N ²	ADEQUATE	MSA	P-ONLY ³	MSS	DESIRED
Officers'						
Rel	45	6.500	0.500	7.000	-1.000	8.000
Res	46	6.000	0.500	6.500	-1.000	7.500
Assur	40	5.500	1.000	6.500	-1.000	7.500
Emp	42	6.000	1.000	7.000	-1.000	8.000
Tan	45	6.000	1.000	7.000	-1.000	8.000
SrNCOs'						
Rel	≥26	6.500	0.500	7.000	-0.500	7.500
Res	≥31	7.000	0.500	7.500	0.000	7.500
Assur	≥27	7.000	0.500	7.500	-1.000	8.500
Emp	≥29	6.000	1.000	7.000	0.000	7.000
Tan	≥31	6.500	0.500	7.000	-0.500	7.500
JrNCOs'						
Rel	≥48	6.000	0.000	6.000	-1.000	7.000
Res	≥44	6.500	0.000	6.500	-1.000	7.500
Assur	≥44	7.000	0.000	7.000	-1.000	8.000
Emp	≥44	6.000	0.000	6.000	-1.250	7.250
Tan	≥54	6.000	0.000	6.000	-1.000	7.000

¹ Rel=Reliability, Res=Responsiveness, Assur=Assurance, Emp=Empathy, Tan=Tangibles

² N varies for SrNCOs' and JrNCOs' dining rooms, by dimension, for p-only, MSS and MSA ratings

³ Perceptions-Only

Figure 5-A indicates the zones of tolerance for the dimensions for each Gagetown dining room. The upper horizontal line of the box represents the median desired service quality level, the lower line represents the median adequate level, and the dot indicates the median service quality rating that the diners perceive the actual service quality level in the dining room to be.

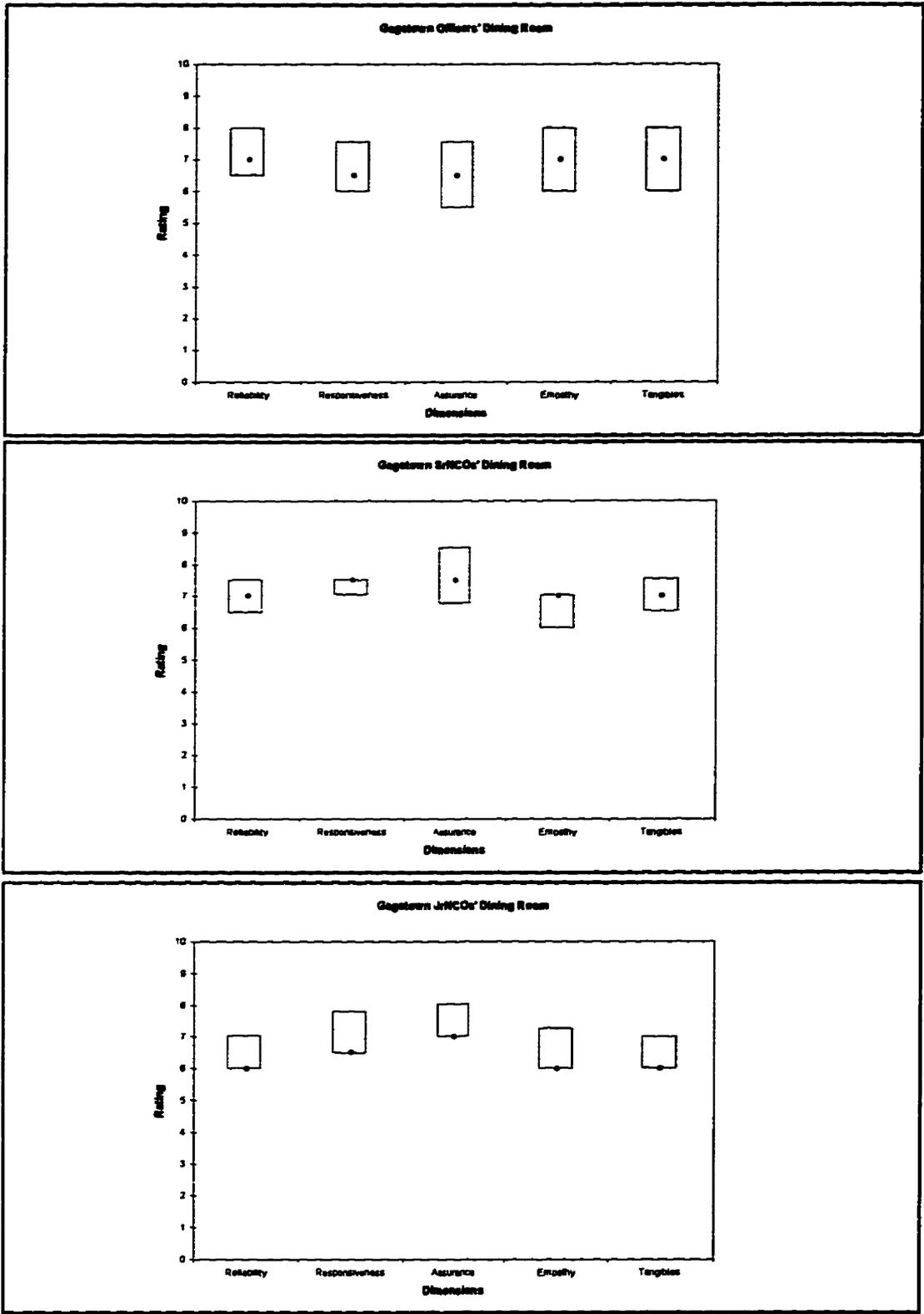


Figure 5-A Overall Median Perceived Service Quality Ratings Relative to Zones of Tolerance, By Dimension, for Gagetown Dining Rooms.

5.3.2.3.4 Confidence Intervals for Medians of Perceived Service Quality, MSA and MSS Ratings for Each Dimension

Confidence intervals, with confidence coefficient γ , were calculated for the perceived service quality ratings, and MSA and MSS scores. Table 5-0 contains the data for Gagetown; Appendix 5-L has the data for the other three Bases.

For Winnipeg, the diners sampled in the Officers' dining room rated all the dimensions of service quality as better than adequate; the service quality may actually be attaining their desired levels for all the dimensions, at confidence level of 0.95. For the JrNCOs' dining room, reliability and responsiveness may have equalled the adequate service levels ($\gamma = 0.95$); however, for all the dimensions excluding reliability, the perceived service may have met the desired service levels ($\gamma = 0.95$).

For the Trenton Mixed Jr/SrNCOs' dining room, all the dimensions except reliability may have met the adequate service quality level; however, all the dimensions except tangibles may also have attained the diners' expectations for desired service ($\gamma = 0.95$).

For Halifax, in the Officers' dining room, all the dimensions were rated by the diners as possibly meeting their adequate service level, with the exception of tangibles which was rated as above their adequate service expectations ($\gamma = 0.95$). However, all the dimensions may

have attained the diners' desired service levels ($\gamma = 0.95$). For the JrNCOs' dining room, the perceived service quality levels for all dimensions were rated as equivalent to the diners' adequate levels; the perceived ratings were less than their desired levels of service ($\gamma = 0.95$). For the All Ranks' dining room, all the dimensions were rated as meeting the diners' adequate service levels, with the exception of tangibles, which exceeded this level ($\gamma = 0.95$). For assurance, empathy and tangibles, the diners' perceived service quality levels may have met the desired levels ($\gamma = 0.95$).

For Gagetown, the perceived service quality ratings in the Officers' dining room met the adequate levels, except for assurance and tangibles which exceeded the levels ($\gamma = 0.95$ for all except MSS for empathy $\gamma = 0.99$). Assurance and empathy ratings may have attained the diners' desired expectation levels for service ($\gamma = 0.95$). In the SrNCOs' dining room, diners rated the service for all the dimensions as low as their adequate service levels; however, the dimensions may have been rated as reaching the diners' desired expectation levels ($\gamma = 0.95$). For the JrNCOs' dining room, responsiveness, empathy and tangibles were rated as below the diners' adequate levels, while reliability and assurance met these levels ($\gamma = 0.95$ for all except MSA for empathy $\gamma = 0.99$). The diners' perceived quality ratings for all the dimensions did not meet their

desired expectation levels ($\gamma = 0.95$).

Table 5-0 Confidence Coefficients and Intervals for Perceptions-Only, MSS and MSA Ratings for Gagetown Dining Rooms.

Dimension ¹	Conf. Coef ²	Interval					
		P-Only ³		MSA		MSS	
Officers' (n=40)							
Rel	.95	6.50	7.00	0.00	1.00	-1.25	-1.00
Res	.95	6.50	7.00	0.00	1.00	-1.50	-0.50
Assur	.95	6.00	7.00	0.50	1.00	-1.00	0.00
Emp	.95	6.00	7.00	0.00	1.00	-1.50 ⁴	0.00 ⁴
Tan	.95	6.50	7.00	0.50	1.00	-1.00	-0.50
SrNCOs' (n=26)							
Rel	.95	6.50	7.50	0.00	1.00	-1.50	0.00
Res	.95	7.00	8.00	0.00	1.00	-0.50	0.00
Assur	.95	6.50	8.00	0.00	1.50	-2.00	0.00
Emp	.95	6.00	8.00	0.00	1.00	-1.00	0.00
Tan	.95	6.50	7.50	0.00	1.50	-1.00	0.00
JrNCOs' (n=44)							
Rel	.95	5.50	7.00	0.00	0.50	-2.00	-1.00
Res	.95	5.50	7.00	-0.50	0.50	-2.50	-0.50
Assur	.95	6.00	7.00	0.00	0.50	-1.50	-0.50
Emp	.95	5.50	7.00	-0.50 ⁴	0.50 ⁴	-2.00	-1.00
Tan	.95	5.50	7.00	-0.50	0.50	-2.00	-1.00

¹ Rel=Reliability, Res=Responsiveness, Assur=Assurance, Emp=Empathy, Tan=Tangibles

² Confidence coefficient

³ Perceptions-Only

⁴ Confidence coefficient = .99

5.3.2.4 Reliability and Validity of SERVQUAL

5.3.2.4.1 Internal Reliability

The internal reliability of the SERVQUAL instrument was assessed using two methods; 1) the internal consistency method, and 2) a comparison of the OSQ rating (Q#22) with the OSQ rating calculated from questions #1-21.

Internal Consistency Method

The internal reliability was measured by determining Cronbach's alpha for each dimension. For the Trenton Officers', Winnipeg SrNCOs' and Halifax SrNCOs' dining rooms, the Cronbach's alphas were not included due to the extremely small number of respondents. The alpha values are high, exceeding 0.80 for each dimension, across each Base and each dining room with few exceptions (Table 5-P). In Winnipeg, the alpha values for responsiveness and assurance in the Officers' dining room are less than 0.80 but greater than 0.70. For the JrNCOs' dining room in Halifax, the alpha value for tangibles is 0.79. For Gagetown's Officers' dining room, the alpha values for reliability, responsiveness and tangibles are less than 0.80 but greater than 0.60.

Table 5-P Cronbach Alphas for Reliability for Each Dimension by Dining Room.

DINING ROOM	NO. OF ITEMS	DIMENSION	N	CRONBACH'S ALPHA
Winnipeg Officers'	4	Reliability	33	0.81
	4	Responsiveness	36	0.71
	4	Assurance	29	0.75
	5	Empathy	35	0.84
	4	Tangibles	37	0.82
JrNCOs'	4	Reliability	29	0.83
	4	Responsiveness	30	0.83
	4	Assurance	26	0.84
	5	Empathy	29	0.89
	4	Tangibles	30	0.84
Trenton Mixed Jr/SrNCOs'	4	Reliability	33	0.82
	4	Responsiveness	33	0.81
	4	Assurance	27	0.82
	5	Empathy	35	0.91
	4	Tangibles	34	0.83
Halifax Officers'	4	Reliability	20	0.90
	4	Responsiveness	24	0.93
	4	Assurance	19	0.95
	5	Empathy	21	0.88
	4	Tangibles	18	0.83
JrNCOs'	4	Reliability	58	0.92
	4	Responsiveness	60	0.87
	4	Assurance	52	0.88
	5	Empathy	53	0.88
	4	Tangibles	49	0.79

DINING ROOM	NO. OF ITEMS	DIMENSION	N	CRONBACH'S ALPHA
Halifax All Ranks'	4	Reliability	36	0.86
	4	Responsiveness	36	0.92
	4	Assurance	31	0.86
	5	Empathy	36	0.93
	4	Tangibles	34	0.89
Gagetown Officers'	4	Reliability	42	0.78
	4	Responsiveness	43	0.67
	4	Assurance	28	0.81
	5	Empathy	39	0.85
	4	Tangibles	36	0.61
SrNCOs'	4	Reliability	31	0.96
	4	Responsiveness	32	0.94
	4	Assurance	23	0.95
	5	Empathy	30	0.93
	4	Tangibles	30	0.87
JrNCOs'	4	Reliability	47	0.85
	4	Responsiveness	49	0.85
	4	Assurance	43	0.87
	5	Empathy	47	0.87
	4	Tangibles	49	0.83

Comparison of OSQ Rating (Q#22) with OSQ Rating Calculated from Questions #1-21

The second measurement of internal reliability of SERVQUAL was determined by calculating whether there was a significant difference between the OSQ rating from question #22, and the OSQ rating derived from the perceived quality ratings from SERVQUAL statements #1 to 21, in Part 2 of the questionnaire. The Wilcoxon Signed-Rank test was used to determine whether there were any significant differences.

Of all the dining rooms, the only significant differences between the OSQ rating (Q#22) and the OSQ rating derived from the perceived quality ratings (Q#1-21) were the JrNCOs' dining room in Halifax and the Mixed Jr/SrNCOs' dining room in Trenton, at $p < 0.05$. Refer to Table 5-Q for specific p-values for each dining room. Even though the median ratings were the same for the Trenton Mixed Jr/SrNCOs' dining room (both 7 in Table 5-Q), the statistical test calculated the difference between the OSQ rating (Q#22) that the respondent provided (not the median) and the median OSQ rating derived from all the median perceived ratings (Q#1-21), which concluded that there was a difference between the ratings at $p=0.033$.

Table 5-Q Differences Between OSQ Rating (Q#22) and OSQ Rating Derived from Perceived Quality Rating (Q#1-21) by Dining Room.

CFB	DINING ROOM	N	MEDIAN OSQ RATING (Q#22)	MEDIAN OSQ RATING (Q#1-21)	P-VALUE
Wpg	Officers'	33	7.0000	7.5000	0.903
	SrNCOs'	9	7.5000	7.5000	N/A
	JrNCOs'	27	6.0000	6.5000	0.551
Tre	Officers'	7	7.0000	7.2500	N/A
	Mixed Jr/SrNCOs'	40	7.0000	7.0000	0.033
Hfx	Officers'	17	7.0000	7.0000	0.332
	SrNCOs'	8	7.5000	6.7500	N/A
	JrNCOs'	52	6.5000	6.8750	0.027
	All Ranks'	34	7.0000	7.0000	0.217
Gge	Officers'	35	6.5000	7.0000	0.122
	SrNCOs'	25	7.0000	7.5000	0.583
	JrNCOs'	44	6.0000	6.2500	0.301

Wpg=Winnipeg, Tre=Trenton, Hfx=Halifax, Gge=Gagetown
N/A=not applicable due to low number of respondents

5.3.2.4.2 Validity

Response Error

Response error was determined for each statement under the dimensions in Part 2, Service Quality, of the questionnaire, as part of the assessment for the SERVQUAL instrument's validity. The definition of response error is described in Statistical Analysis, Section 4.8.

Analyses of the percent mean error rates of each

statement indicate that statements 9, 10 and 18 appeared to differ from all the other statements with respect to their mean error rate (Figure 5-C). Figure 5-B explains what the diamond shapes in Figure 5-C represent.

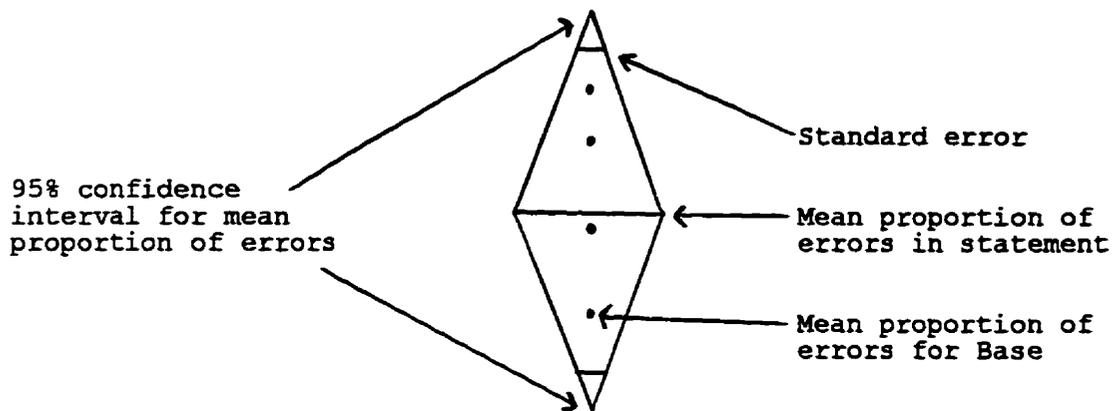


Figure 5-B Explanation of Figure 5-C Components

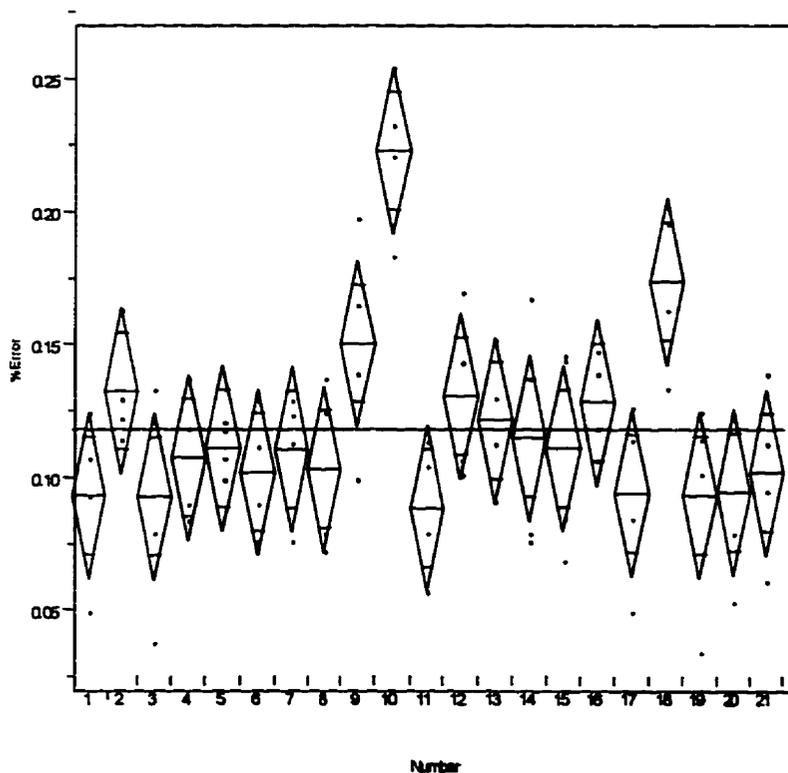


Figure 5-C Percent Error Rate by Statement.

However, results from the Pearson Chi Square Test of Homogeneity of Proportions determined that only statements 10 and 18 are significantly different from the other statements, with higher error rates. Since the confidence interval for statement 9 contains zero, it can be concluded that statement 9 is not significantly different from the other statements at $\alpha=0.05$. However, the confidence intervals for statements 10 and 18 do not contain zero, which means they differ significantly from the other statements with respect to response error ($\alpha=0.05$) (Table 5-R). Results indicate that all Bases are considered equal with respect to the proportion of errors per statement.

Table 5-R Response Error Rate with Confidence Interval for Estimated Differences For Statements 9, 10 and 18 Between Other Statements.

Statement	N	Estimated Error Rate	Standard Error	Confidence Interval for Estimated Difference
9	197	.15	.01	-0.49 ± 0.66
10	296	.22	.01	-2.05 ± 0.76
18	242	.18	.01	-1.20 ± 0.71

Predictive Validity by Reliability Coefficient (Adjusted R²)

The predictive validity of the SERVQUAL instrument was measured by determining the reliability coefficient (adjusted R²) by regressing the OSQ rating (Q#22) across the dimensions for MSS, MSA and perceptions-only. Table 5-S shows the adjusted R² value for each of MSS, MSA and perceptions-only, for each dining room.

The adjusted R² values for the Officers' dining room in Trenton, and the SrNCOs' dining rooms in Winnipeg and Halifax were not calculated due to the low number of respondents ($n \leq 11$). The adjusted R² values for MSS and MSA ranged from 0.19 to 0.61 and 0.13 to 0.61, respectively, for all dining rooms, excluding the MSA and MSS ratings for the JrNCOs' dining room and the MSA rating for the Officers' dining room in Winnipeg. The adjusted R² values for MSA for both Winnipeg dining rooms and for MSS for the Officers' dining room were calculated to be 0.00. The predictive validity was determined to be the highest for perceptions-only. The adjusted R² values for perceptions-only for the Officers' dining room in Winnipeg and the dining rooms in Trenton, Halifax and Gagetown ranged from 0.48 to 0.84, with Winnipeg having the lowest value. The R² adjusted values for the JrNCOs' dining room in Winnipeg were also at 0.00 for perceptions-only.

Table 5-S Proportion of Variance (Adjusted R²) in Overall Service Quality Ratings Explained by MSS, MSA and Perceptions-Only (P-Only) Scores on the SERVQUAL Dimensions By Dining Room.

CFB	DINING ROOM	N ¹	MSS	MSA	P-ONLY ²
Winnipeg	Officers'	≥31	0.19	0.00	0.48
	JrNCOs'	≥22	0.00	0.00	0.00
Trenton	Mixed Jr/SrNCOs'	40	0.41	0.19	0.84
Halifax	Officers'	17	0.42	0.54	0.82
	JrNCOs'	≥47	0.61	0.44	0.82
	All Ranks'	≥30	0.26	0.13	0.67
Gagetown	Officers'	35	0.42	0.61	0.81
	SrNCOs'	≥19	0.61	0.51	0.80
	JrNCOs'	≥35	0.44	0.23	0.64

¹N varies for some dining rooms for p-only, MSS and MSA ratings

²perceptions-only

5.3.3 Food Quality Analysis

5.3.3.1 Overall Median Ratings for Quality of Each Food Characteristic With Median Food Quality Rating

The quality ratings of food characteristics were analyzed for each dining room and the median food quality rating calculated from the median characteristics' ratings. Each rating for food characteristics was tested using the Wilcoxon Signed-Rank test, to determine whether the median rating was average of 5 or above.

For Winnipeg, the overall food quality ratings were 8 and 6.25 for the Officers' and JrNCOs' dining rooms, respectively. Each food characteristic in both dining rooms was rated average or above at $p > 0.05$. Appendix 5-M

contains the p-values for determining whether the median quality rating of each food characteristic was average 5 or above, as well as the median ratings for quality of each food characteristic and the overall food quality rating determined from these characteristics.

For Trenton, the overall food quality rating was 7 for the Mixed Jr/SrNCOs' dining room. Each food characteristic in each of the dining room was rated average or above at $p > 0.05$ (Appendix 5-M).

For Halifax, the overall food quality ratings were 7 for the Officers' and All Ranks' dining rooms, with the exception of the JrNCOs', which had a rating of 6. Each food characteristic in each of the dining rooms was rated average or above at $p > 0.05$ (Appendix 5-M).

For Gagetown, the overall median food quality ratings were 6, 7, and 6 for the Officers', SrNCOs' and JrNCOs' dining rooms, respectively. Each food characteristic in each of the dining rooms was rated average or above at $p > 0.05$. Tables 5-T and 5-U contain the p-values for determining whether the median quality rating of each food characteristic was the average of 5 or above, as well as the median ratings for quality of each food characteristic and the overall food quality rating determined from these characteristics.

Table 5-T Overall Median Ratings for Quality of Each Food Characteristic Rated Average 5 or Above for Gagetown Dining Rooms.

DINING ROOM	FOOD CHARACTERISTIC	MEDIAN RATING	P-VALUE
Officers' (n≥42)	Appearance	6.0000	1.000
	Taste	7.0000	1.000
	Freshness	6.0000	1.000
	Texture	6.0000	1.000
	Temperature	6.0000	1.000
	Nutritional Value	6.0000	0.997
	Variety	5.5000	0.980
SrNCOs' (n≥31)	Appearance	7.0000	1.000
	Taste	7.0000	1.000
	Freshness	7.0000	1.000
	Texture	7.0000	1.000
	Temperature	7.0000	0.998
	Nutritional Value	7.0000	0.998
	Variety	7.0000	0.997
JrNCOs' (n≥49)	Appearance	6.0000	0.998
	Taste	6.0000	1.000
	Freshness	7.0000	1.000
	Texture	6.0000	1.000
	Temperature	7.0000	1.000
	Nutritional Value	6.0000	0.996
	Variety	6.0000	0.994

Table 5-U Overall Median Ratings for Quality of Each Food Characteristic With Median Food Quality Rating for Gagetown Dining Rooms.

Food Characteristic	Officers' (n=46)	SrNCOs' (n=32)	JrNCOs' (n=55)
Appearance	6.0000	7.0000	6.0000
Taste	7.0000	7.0000	6.0000
Freshness	6.0000	7.0000	7.0000
Texture	6.0000	7.0000	6.0000
Temperature	6.0000	7.0000	7.0000
Nutritional Value	6.0000	7.0000	6.0000
Variety	5.5000	7.0000	6.0000
OVERALL FOOD QUALITY	6.0000	7.0000	6.0000

5.3.3.2 Overall Median Ratings for Quality of Each Food Item With Median Food Quality Rating

For Winnipeg, the overall median food quality rating was 7 for both dining rooms. All the food items in the dining rooms were rated average or above at $p > 0.05$. Appendix 5-N contains the p-values for determining whether the median quality rating of each food item was the average of 5 or above, as well as the median ratings for quality of each food item and the overall food quality rating determined from these items.

For Trenton, the overall food quality ratings was 7 for the Mixed Jr/SrNCOs' dining room. All the food items in the dining room were rated average or above at $p > 0.05$ (Appendix 5-N). For Halifax, the overall food quality ratings were 7 for all the dining rooms. All the food items

in the dining rooms were rated average or above at $p > 0.05$ (Appendix 5-N).

For Gagetown, the overall median food quality ratings were 6, 7, and 7 for the Officers', SrNCOs' and JrNCOs' dining rooms, respectively. All food items in each of the dining rooms were significantly rated average or above at $p > 0.05$. Table 5-V contains the p-values for determining whether the median quality rating of each food item was average 5 or above. The median ratings for quality of each food item and the overall food quality rating determined from these items are in Table 5-W for the Gagetown dining rooms.

Table 5-V Overall Median Ratings for Quality of Each Food Item Rated Average 5 or Above for Gagetown.

DINING ROOM	FOOD ITEM	MEDIAN RATING	P-VALUE
Officers' (n≥38)	Salads	7.0000	1.000
	Soups	7.0000	1.000
	Cooked Vegetables	5.0000	0.993
	Potatoes or Substitutes	6.0000	1.000
	Sauce or Gravy	6.0000	1.000
	Meat, Poultry and Fish	6.0000	1.000
	Breads and Cereals	6.0000	0.996
	Desserts	6.0000	1.000
	Beverages	7.0000	1.000
SrNCOs' (n≥28)	Salads	8.0000	1.000
	Soups	7.0000	1.000
	Cooked Vegetables	7.0000	1.000
	Potatoes or Substitutes	7.0000	1.000
	Sauce or Gravy	7.0000	1.000
	Meat, Poultry and Fish	7.0000	1.000
	Breads and Cereals	8.0000	1.000
	Desserts	7.5000	1.000
	Beverages	8.0000	1.000
JrNCOs' (n≥40)	Salads	7.0000	1.000
	Soups	6.0000	1.000
	Cooked Vegetables	6.0000	0.994
	Potatoes or Substitutes	6.0000	0.999
	Sauce or Gravy	7.0000	1.000
	Meat, Poultry and Fish	7.0000	1.000
	Breads and Cereals	8.0000	1.000
	Desserts	7.0000	1.000
	Beverages	8.0000	1.000

Table 5-W Overall Median Ratings for Quality of Each Food Item With Median Food Quality Rating for Gagetown Dining Rooms.

Food Item	Officers' (n=46)	SrNCOs' (n=32)	JrNCOs' (n=55)
Salads	7.0000	8.0000	7.0000
Soups	7.0000	7.0000	6.0000
Cooked Vegetables	5.0000	7.0000	6.0000
Potatoes or Substitutes	6.0000	7.0000	6.0000
Sauce or Gravy	6.0000	7.0000	7.0000
Meat, Poultry and Fish	6.0000	7.0000	7.0000
Breads and Cereals	6.0000	8.0000	8.0000
Desserts	6.0000	7.5000	7.0000
Beverages	7.0000	8.0000	8.0000
OVERALL FOOD QUALITY	6.0000	7.0000	7.0000

5.3.3.3 Comparison of Overall Median Rating of Food Quality by Food Characteristics to Overall Median Rating of Food Quality by Food Items

A comparison was made between the overall median food quality rating from food characteristics and the overall median food quality rating from food items, for differences between the two ratings. The difference was determined by subtracting the one rating from the other, and tested for a significant difference from zero using the Wilcoxon Signed Rank test. If there was no difference between the two ratings (the median difference was not significantly different from zero), it was assumed that both measures were equal.

There were significant differences between the two

measures for the JrNCOs' and SrNCOs' dining rooms in Gagetown at $p < 0.01$, and for the All Ranks' and JrNCOs' dining rooms in Halifax at $p < 0.05$ (Table 5-X). For all the other dining rooms, there were no significant differences.

Table 5-X Comparison of Overall Rating of Food Quality by Food Characteristics vs. Overall Rating of Food Quality by Food Items by Dining Room.

CFB	DINING ROOM	N	MEDIAN DIFFERENCE	P-VALUE
Winnipeg	Officers'	37	0.0000	0.179
	JrNCOs'	34	0.0000	0.147
Trenton	Mixed Jr/SrNCOs'	47	0.0000	0.075
Halifax	Officers'	26	0.0000	0.117
	JrNCOs'	59	-1.0000	0.000
	All Ranks'	40	-0.2500	0.003
Gagetown	Officers'	46	0.0000	0.158
	SrNCOs'	31	0.0000	0.001
	JrNCOs'	55	0.0000	0.000

5.3.3.4 Overall Food Quality Rating From Combination of Food Quality Ratings of Food Characteristics and Food Items

The overall median food quality rating for each dining room was calculated by combining the food quality rating from the food characteristics and the rating from the food items. Each overall food quality rating was then tested to discern whether it was significantly rated average 5 or above using the Wilcoxon Signed Rank test. Analysis of the

data showed that all dining rooms had an overall median food quality rating greater than or equal to 5, at $p > 0.05$.

Table 5-Y shows the median food quality ratings for each dining room by Base and their applicable p-values.

Table 5-Y Overall Median Food Quality Rating From Combination of Food Quality Ratings of Food Characteristics and Food Items Rated Average 5 Or Above by Dining Room.

CFB	DINING ROOM	N	OVERALL FOOD QUALITY RATING	P-VALUE
Winnipeg	Officers'	37	7.2500	1.000
	JrNCOs'	34	7.0000	1.000
Trenton	Mixed Jr/SrNCOs'	47	6.5000	1.000
Halifax	Officers'	26	7.0000	1.000
	JrNCOs'	59	6.0000	1.000
	All Ranks'	40	6.7500	1.000
Gagetown	Officers'	46	6.0000	1.000
	SrNCOs'	32	7.0000	1.000
	JrNCOs'	55	6.5000	1.000

5.3.4 Value for Money

The ratings for the median quality of food for money and quality of service for money were computed for each dining room, and tested whether or not each rating was equal to or greater than the average of 5. The Wilcoxon Signed-Rank test was used to determine whether the median ratings were greater than or equal to the average of 5. A p-value greater than 0.05 means that the ratings were significantly greater than or equal to the average.

Comparisons were made between the overall median food quality rating for money and the overall median food quality rating; and between the overall median service quality rating for money and the overall median service quality rating, for differences between the two ratings. The difference was determined by subtracting the one rating from the other, and then testing for a significant difference from zero using the Wilcoxon Signed-Rank test. If there was no difference between the two ratings (the median difference was not significantly different from zero), it was assumed that both measures were equal.

5.3.4.1 Food Quality

5.3.4.1.1 Median Quality of Food For Money

For all the dining rooms, the median 'food quality for money' rating was average or above at $p > 0.05$. Table 5-Z provides details on the median food quality rating for money and its applicable p-value by dining room.

Table 5-Z Median Quality of Food For Money Rated Average 5 or Above for Each Dining Room.

CFB	DINING ROOM	N	MEDIAN FOOD QUALITY RATING	P-VALUE
Winnipeg	Officers'	35	8.0000	1.000
	JrNCOs'	31	7.0000	1.000
Trenton	Mixed Jr/SrNCOs'	47	7.0000	1.000
Halifax	Officers'	26	7.0000	1.000
	JrNCOs'	57	6.5000	0.998
	All Ranks'	36	7.0000	1.000
Gagetown	Officers'	40	6.0000	1.000
	SrNCOs'	30	7.5000	1.000
	JrNCOs'	50	6.0000	0.998

5.3.4.1.2 Difference Between Overall Median Rating of Food Quality For Money and Overall Median Rating of Food Quality

There were significant differences between the overall median rating of food quality for money and the overall median rating of food quality only for the Officers' dining room at Winnipeg and the JrNCOs' dining room at Gagetown, at $p < 0.05$. All other dining rooms did not have differences between these two ratings. Table 5-AA provides details on

the difference between the two ratings and its applicable p-value by dining room.

Table 5-AA Difference Between Overall Median Rating of Food Quality For Money and Overall Median Rating of Food Quality for Each Dining Room.

CFB	DINING ROOM	N	MEDIAN DIFFERENCE	P-VALUE
Winnipeg	Officers'	35	0.0000	0.019
	JrNCOs'	31	0.0000	0.439
Trenton	Mixed Jr/SrNCOs'	44	-0.2500	0.486
Halifax	Officers'	26	0.2500	0.192
	JrNCOs'	56	0.0000	0.219
	All Ranks'	36	0.0000	0.415
Gagetown	Officers'	40	0.0000	0.958
	SrNCOs'	30	0.0000	0.125
	JrNCOs'	50	0.0000	0.005

5.3.4.2 Service Quality

5.3.4.2.1 Median Quality of Service For Money

For all the dining rooms, the median 'service quality for money' rating was average or above at $p > 0.05$. Table 5-BB provides details on the median service quality rating for money and its applicable p-value by dining room.

Table 5-BB Median Quality of Service For Money Rated Average or Above for Each Dining Room.

CFB	DINING ROOM	N	MEDIAN SERVICE QUALITY RATING	P-VALUE
Winnipeg	Officers'	36	7.5000	1.000
	JrNCOs'	32	6.5000	1.000
Trenton	Mixed Jr/SrNCOs'	47	7.0000	1.000
Halifax	Officers'	26	7.0000	1.000
	JrNCOs'	57	6.0000	0.996
	All Ranks'	35	7.0000	1.000
Gagetown	Officers'	41	7.0000	1.000
	SrNCOs'	30	8.0000	1.000
	JrNCOs'	50	6.0000	1.000

5.3.4.2.2 Difference Between Median Rating of Service Quality For Money and Overall Rating of Service Quality

There were significant differences between the overall median rating of service quality for money and the overall median rating of service quality only for the Mixed Jr/SrNCOs' dining room at Trenton and the SrNCOs' dining room at Gagetown, at $p < 0.05$. All other dining rooms did not have differences between these two ratings. Table 5-CC

provides details on the difference between the two ratings and its applicable p-value by dining room.

Table 5-CC Difference Between Median Rating of Service Quality For Money and Overall Rating of Service Quality for Each Dining Room.

CFB	DINING ROOM	N	MEDIAN DIFFERENCE	P-VALUE
Winnipeg	Officers'	34	0.0000	0.725
	JrNCOs'	27	0.0000	0.378
Trenton	Mixed Jr/SrNCOs'	40	0.0000	0.008
Halifax	Officers'	23	0.0000	0.652
	JrNCOs'	55	0.0000	0.091
	All Ranks'	34	0.0000	0.373
Gagetown	Officers'	38	0.0000	0.094
	SrNCOs'	24	0.0000	0.047
	JrNCOs'	47	0.0000	0.620

5.3.4.3 Non-Military Food Outlet/Restaurant Providing Best Service For Money

The diners responded to a question which asked them when they eat out (at a non-military location), where they do they get the best service for their money. Percentage of No Opinion and No Response answers were high for this question, with a combined average total of 60% for diners who filled out a questionnaire. For the majority of the diners' responses which stated a non-military food outlet or restaurant as a place they dine, which offers the best service for money, family-style and informal or casual dining establishments were the most frequent responses.

Table 5-DD shows the percentages for each type of dining establishment for each Base.

Table 5-DD Percentage of Non-Military Food Outlet/Restaurant Offering Best Service for Money by Base.

CFB ¹	N	1*	2*	3*	4*	5*	6*	7*	8*	9*
Wpg	87	7	17	13	1	-	-	53	2	7
Tre	59	10	9	14	2	-	9	44	2	12
Hfx	153	7	12	15	2	-	3	44	1	18
Gge	143	11	11	17	-	-	3	42	1	17
Tot Avg	-	9	12	15	2	-	5	46	2	14

¹Wpg=Winnipeg, Tre=Trenton, Hfx=Halifax, Gge=Gagetown, Avg=Average %

*Codes for Non-Military Dining Establishments:

- 1=Fast Food/Drive-In
- 2=Family-Style
- 3=Informal/Casual dining
- 4=Formal dining
- 5=Coffee/Donut shop
- 6=Other
- 7=No Opinion
- 8=No Recognizable Response
- 9=No Response

The responses for non-military dining outlet choices were investigated for differences by rank level and type of dining service. Chi square analysis using cross tabulations indicated there were no differences; however, the counts in the cross tabulation cells were too small to discern the significance of these results.

CHAPTER 6 - DISCUSSION

6.1 Introduction

The main objective of this research was to determine whether the SERVQUAL instrument could be used to accurately measure diner expectations and perceptions of service quality in DND Food Services dining rooms. However, the scope of the study went beyond that of just the use of the SERVQUAL instrument in the dining rooms. The study consisted of several different parts: demographics of diners, quality of service using the SERVQUAL instrument, general comments from the diners on service quality, quality of food, value for money with respect to quality of service and food, and best service for money at non-military food establishments.

When it comes to customer satisfaction with food services, it is very difficult to limit a study to service quality alone. Diners do not come for only the quality service; they come for the food and value. In a study on food service attributes and return patronage, the complexity of food service was captured in a list of attributes which included food quality, menu variety, food quality consistency, waiting time, staff attentiveness and helpfulness, and dining room atmosphere (Dubé et al., 1994). In the fast-growing food services industry, Pizzico's "Foodservicing Fab Five" consists of the essentials for customer satisfaction, quality, value, convenience, service

and competitive prices, in order to maximize repeat business (Pizzico 1996).

However, keeping this multi-dimensional food service world in mind, the focus of this discussion will be on the SERVQUAL instrument.

6.2 Demographics of Diners

Frequency distributions for the diners were typical of the military members who dine in CF dining rooms (Appendix 5-A). Generally, the diners largely consisted of Regular Force males who were staying in single quarters. The respondents' status as a student or staff member, and reason on Base largely depend on the roles and operations at a particular Base. Each Base is different, even within the same element. The age group, rank level and length of time in the CF were the same across the Bases. Rank level usually tends to be related to length of time in service and age. Capts and Lts, Sgts, and Cpls were the rank levels with the largest percentage of representation in their respective dining rooms. The Bases surveyed are primarily training Bases, where the Jr Officers and NCOs are undergoing career training. This stage is consistent with normal professional development for these rank levels. Gagetown had the highest percentage of Ptes of all the Bases due to the presence of an 800 man infantry battalion, the majority of Ptes who live in quarters.

The majority of the respondents were dining in the dining rooms for less than three months, which is usually attributed to personnel on temporary duty for courses. For mode of payment for meals, the majority of diners were on duty and therefore not paying for meals. The only dining room which had a greater percentage of diners paying for meals was the JrNCOs' dining room in Gagetown. This trend is due to the battalion NCOs who are working in the area who decide to eat in the dining room at their own cost. Diner consumption patterns were usual for the patterns seen across the CF dining rooms. Generally, lunch is the meal which has the largest percentage of diners every day of the week, breakfast consumption decreases substantially on the weekends, and more diners eat their meals elsewhere on the weekends.

6.3 Response Rate

The reason for non-participation given most frequently by non-respondents was that they had no time (59%) (Table 5-A). The majority of respondents were on course, which meant limited time during the lunch meal to complete a questionnaire and eat their meal. Some respondents did agree to participate in the study during the supper hour, when they would have more "free" time.

A very high percentage of questionnaires was returned (93%), and of those, found useable (96%) (Table 5-B). It is

possible that the presence of the researcher, which emphasized the importance of the research and allowed direct communication, was the main cause for this high rate. The All Ranks' dining room in Halifax had the lowest response rate (78%) of all the dining rooms. This low rate may have been due to fact that due to an unforeseen temporary absence of the dining room manager, information posters and letters to the diners which were to generate interest in the study, were not posted or placed on tables. The overall response rate was much greater than the response rate achieved by Parasuraman et al. (1994), where alternative SERVQUAL formats were sent out to customers as a mail survey (24% for the 3-column format).

The goal for the sample size was 40-50% of the lunch plate count. This goal was achieved with an overall response rate of 41% (Table 5-C). However, sample sizes for the Officer's dining room in Trenton and the SrNCOs' dining rooms in Winnipeg and Halifax were very small ($n \leq 11$); therefore, results from any analysis could not be deemed statistically sound. Although results were not presented, data are provided on these dining rooms in Appendix 5-B to 5-N.

These small sample sizes are not unusual in the SrNCOs' dining rooms. SrNCOs' dining rooms tend to have fewer diners on ration strength. Basically "being on ration strength" means having an entitlement to dine in a dining

room because the diner has chosen to eat there and is paying for meals, or, the diner has been put on ration strength for a specific reason (i.e. duty, etc.), and is not paying for meals. The number of diners on ration strength for the applicable day of the survey were 35 and 73 for Winnipeg and Halifax SrNCOs' dining rooms, respectively (Appendix 4-A). If a diner is on ration strength, that does not mean he/she will always be eating in the dining room, hence plate counts are a more accurate measurement for actual number of diners during a meal period. For the Officers' dining room in Trenton, although the daily ration strength on the day of data collection was 114, the lunch plate count in the dining room was only 17 (Appendix 4-A). This extreme difference is due to Officers choosing the option to use the sandwich bar, which is set up for lunch in another area of the Officers' Mess.

6.4 Quality of Service

The response rate was low ($\leq 46\%$) for the open-ended two-part question asking for the diners' opinions on service quality in the dining room, and whether there were any improvements on service quality that the diners would like (Tables 5-D and 5-E). Open-ended questions require more effort for respondents and therefore can reduce participation (Touliatos and Compton, 1992). All diners' comments were consolidated for each dining room and

forwarded to the Food Services Officers at the applicable Base for practical assessment.

6.4.1 Service Quality

6.4.1.1 Median Overall Service Quality Rating

Question #22 asked the diner to rate the overall service quality (OSQ) level of the dining room. All dining rooms had a median OSQ rating greater than or equal to 5, at $p > 0.05$. The range for all dining rooms was very narrow, from 6 to 7.5. Therefore, these results indicate that overall, for each dining room, the respondents' perceptions of the actual service quality levels were greater than or equal to 5 (Table 5-F).

Differences by Type of Service

Differences between types of service in Trenton could not be determined due to the small sample size in the Officers' dining room ($n=9$). For Winnipeg and Halifax, there were significant differences in the median OSQ rating between modified table service and cafeteria service, at $p < 0.01$ and $p < 0.05$, respectively, with modified being rated higher than cafeteria service. For Gaagetown, the median OSQ rating for limited table service was significantly higher than cafeteria service at $p < 0.05$ (Table 5-G). Since there is a greater contrast between modified table service and cafeteria service, it was

expected to see differences between these two types of service at all Bases. Interestingly, in Gagetown, there was no significant difference in ratings between modified and cafeteria service. Modified table service does not require the diner to return his/her dishes to a cart or dishroom. For limited table service, the table is set; however, the diner is required to clear his/her dishes from the table, making this type of service similar to cafeteria service.

Differences By Rank Levels

Due to small sample sizes of most rank levels ($n \leq 10$), results of data analysis could not be deemed as statistically significant for most rank levels. Table 6-A shows the rank levels which could be analyzed for statistical differences. Note that even sample sizes for individual ranks listed in Table 6-A varied depending on dimension and rating. For example, for median OSQ rating, the sample size of the MCpl for Trenton was too small (≤ 11) to test for any comparisons between MCpls and Cpls.

Table 6-A Rank Levels Analyzed for Statistical Differences in Service Quality Ratings.

DINING ROOM	N	RANK LEVELS
Trenton Mixed Jr/SrNCOs'	≥ 11	Cpl, MCpl
Halifax JrNCOs'	≥ 12	Pte, Cpl, MCpl
Gagetown JrNCOs'	≥ 11	Pte, Cpl, MCpl
Gagetown Officers'	≥ 14	Lt, Capt

The only significant difference in median OSQ rating was between Lts and Capts in the Gagetown Officers' dining room, at $p < 0.01$, where Capts rated the OSQ lower than Lts (Table 5-H). Generally, Capts have been in the CF for a longer period of time, and have not only experienced food service at several Bases, but have lived off Base enjoying meals at home; Lts are usually at their first "permanent" Base of their career, with limited contact with CF Food Services dining rooms, and probably are away from home fending for themselves for the first time. These experiences may make Capts more critical of the service, and Lts more appreciative.

6.4.2 SERVQUAL

6.4.2.1 Zone of Tolerance for Each Dimension

Median OSQ for Each Dimension (Perceptions-Only)

The median overall service quality rating for perceptions-only for each dimension in all dining rooms was greater than or equal to the average of 5, at $p > 0.05$, with the range from 6 to 8 (Table 5-I).

Zone of Tolerance

For all the dining rooms, the median OSQ perceived by the diners for each dimension was within their applicable zone of tolerance (Table 5-N and Appendix 5-K). The lower boundary of the zone, adequate service, was denoted by an MSA score of positive or zero, meaning that for the

dimension in question, the perceived levels of actual service in the dining rooms were above or equal to the diners' adequate service level. The confidence intervals of the median OSQ (perceptions-only) and MSA ratings differed for each dimension for each dining room, with the confidence coefficients ranging from $\gamma = 0.875$ to 0.95 (the majority of all intervals was $\gamma = 0.95$). The upper boundary of the zone, desired service, was denoted by an MSS score of negative or zeros, meaning that for the dimension in question, the perceived levels of actual service in the dining rooms were below or equal to the diners' desired service level. The confidence intervals of the MSS ratings differed for each dimension for each dining room, with the confidence coefficients ranging from $\gamma = 0.875$ to 0.9786 (the majority of all the intervals was $\gamma = 0.95$). Figure 5-A and the illustrations in Appendix 5-K represent the zones of tolerance for each dimension by Base.

6.4.2.2 Differences in Median Overall Perceptions-Only, Adequate and Desired Service Quality Ratings By Dimension for Types of Service

Types of dining room service within a Base were compared for differences; however, this analysis was completed more for an interest purpose and for a starting point towards ideas for future analysis, and not for statistical significance. A recent SERVQUAL study on food services outlets attempted to assess differences in service quality among nine outlets (Johns and Tyas, 1996). The

researchers concluded that it was possible to discriminate SERVQUAL dimensions between the outlets; however, sample sizes were small for six of the nine outlets ($n \leq 15$), therefore it could not be claimed that the samples were independently and normally distributed.

In this study, differences between types of service in Trenton could not be determined due to the small sample size in the Officers' dining room ($n \leq 8$).

Perceptions-Only Service Quality Rating

For Winnipeg, the OSQ ratings for only the dimensions responsiveness, assurance and tangibles differed significantly between modified table service and cafeteria service at $p < 0.05$. For Halifax, the OSQ ratings for only the dimensions responsiveness, assurance and empathy differed significantly between modified table service and cafeteria service at $p < 0.05$ (Appendix 5-E). For Gaagetown, only the dimensions responsiveness and empathy differed significantly for the OSQ ratings between limited table service and cafeteria service at $p < 0.05$, with limited service being higher than cafeteria service in both dimensions. No differences were found between these and modified table service (Table 5-K).

Depending on the Base, specific dimensions are rated significantly different between modified table service and cafeteria service, and limited table service and cafeteria service. These differences may be due to the fact that

cafeteria service is provided in the JrNCOs' dining rooms, where the ration strength is much larger, and therefore staff-diner contact time is much less than the other dining rooms.

Perceptions-Only Service Quality Rating Relative to MSA Score

For all the Bases, the MSA scores for all the dimensions for each type of service were positive, with some exceptions (Table 5-L and Appendix 5-H). These results mean that the diners' perceptions of actual service quality were greater than their adequate (minimum) service quality levels. The exceptions include Halifax, where responsiveness, assurance and empathy for cafeteria service were rated by diners as zero; and Gagetown, where all the dimensions for cafeteria service were rated as zero. These results mean that the diners' perceptions of actual service quality for cafeteria service just met their adequate service levels.

For all Bases, most of the dimensions were significantly different in median MSA ratings between modified table service and cafeteria service at $p < 0.05$ (Table 5-L and Appendix 5-H). These results indicate that for most dimensions, the adequate service quality level was higher for modified table service than cafeteria service. There were no significant differences in MSA rating between types of service for assurance and empathy for Winnipeg,

reliability and responsiveness for Gagetown, and reliability for Halifax. The only significant difference between limited table service and cafeteria service for the MSA rating was in Gagetown, where empathy was rated significantly higher for limited table service than cafeteria service at $p < 0.01$. This result indicates that the adequate service level for empathy was higher for limited table service than cafeteria service.

Perceptions-Only Service Quality Rating Relative to MSS Score

For all the Bases, the MSS scores for all the dimensions for each type of service were negative, with some exceptions (Table 5-M and Appendix 5-J). These results mean that the diners' perceptions of actual service quality were less than their desired service quality levels. The exceptions include the MSS ratings for Winnipeg where assurance, empathy and tangibles for modified table service, and responsiveness and tangibles for limited table service were rated as zero; for Halifax, where responsiveness, assurance, empathy and tangibles for modified table service, and reliability, assurance, empathy and tangibles for limited table service, were rated as zero; and for Gagetown, where responsiveness and empathy were rated as zero for limited table service. These ratings of zero mean that the diners' perceptions of actual service quality for the dimensions specified reached their desired service levels.

For all Bases, most of the dimensions were significantly different in median MSS ratings between modified table service and cafeteria service at $p < 0.05$ (Table 5-M and Appendix 5-J). These results indicate that for most dimensions, the desired service quality level was higher for modified table service than cafeteria service. In other words, the diners had higher standards for quality with modified service than with cafeteria service. There were no significant differences in MSS rating between modified table service and cafeteria service for reliability, assurance and empathy for Winnipeg, and for all dimensions for Gagetown, excluding tangibles.

There were no significant differences between limited table service and cafeteria service for the MSS rating except for responsiveness in Winnipeg, and for responsiveness, empathy and tangibles in Gagetown, where these dimensions were rated significantly higher for limited table service than cafeteria service at $p < 0.05$ (Table 5-M). These results indicate that the desired service level for these dimensions was higher for limited table service than cafeteria service.

6.4.2.3 Differences in Median Overall Perceptions-Only, Adequate and Desired Service Quality Ratings By Dimension for Rank Levels

Sample sizes for rank levels are described under subsection 6.4.1.1, Differences By Rank Levels.

Perceptions-Only Service Quality Rating

From analysis of the data, the only significant difference for the overall perceived service quality rating by dimension for rank levels was in Trenton. Here, the OSQ rating for assurance was rated significantly higher by MCpls than by Cpls at $p < 0.05$ (Appendix 5-F).

Perceptions-Only Service Quality Rating Relative to MSA Score

For differences in MSA score by dimension between the rank levels, significant differences were only found between Cpls and MCpls for reliability, assurance and empathy in Trenton, at $p < 0.05$ (Appendix 5-G). These results indicate that the perceived service quality levels were higher than the adequate service quality levels for these dimensions for MCpls than Cpls.

There were variations among the dimensions and rank levels as to whether a dimension was rated positive, negative or zero for the dining rooms which had sufficiently large sample sizes (Table 5-L and Appendix 5-G). Of interest were the MSA ratings in the JrNCOs' dining rooms in Halifax and Gagetown. Here, the majority of the MSA ratings tended to be zero or negative, which means the rank levels were perceiving the actual service in the dining room to be below or just attaining their adequate service level. These lower ratings should undergo further investigation to assess whether improvements can be made to increase customer

satisfaction.

Perceptions-Only Service Quality Rating Relative to MSS Score

There were no significant differences in the MSS score by dimension between any of the rank levels (Table 5-M and Appendix 5-I). Of the rank levels with sufficient sample sizes, the majority of the dimensions were given a negative MSS rating by each rank level, with the exception of reliability, responsiveness and assurance, which were rated zero by MCpls in Trenton. These results indicate that the desired service levels for the rank levels were not attained by the majority of diners. In Trenton, the MCpls' desired levels may have been attained.

6.5 Quality of Food

Each median food characteristic and food item in all the dining rooms were rated by the diners as average 5 or above at $p > 0.05$ (Tables 5-T & 5-V, Appendix 5-M & 5-N). From each of these, an overall median food quality rating was determined from the food characteristics and from the food items and these two ratings were then compared for differences. Significant differences were determined between these two ratings for the JrNCOs' and SrNCOs' dining rooms in Gagetown, at $p < 0.01$, and for the JrNCOs' and All Ranks' dining rooms in Halifax, at $p < 0.05$ (Table 5-X).

From these results, food quality assessed from characteristics of food as a whole was rated higher in these

dining rooms. Cardello (1995) explains that food quality is a complex definition which is related to person, place and time, and that it encompasses "perception of all characteristics of the food, not simply its sensory attributes," i.e., its safety, cost, value, convenience, etc., hence the difference in interpretation of food quality discerned from rating a product, and food quality from rating specific characteristics of food in general.

Despite the key focus on service quality in this research, it had been acknowledged that diners come to a dining room for the food as well as the service. Food quality rated above all other attributes of food services in a study which measured customer satisfaction (Dubé et al., 1994). However, it only accounted for approximately 37% of the diners' final decision to repeat a visit; other dimensions of food services were also important. In a study on comparison of perceptions relating to the effectiveness of CF dining halls (Robinson 1990), principal component analysis indicated that food services dimensions combined food, service and setting attributes.

The questions asked of the diners concerning food quality dealt specifically with their perceptions of actual food quality. In order to satisfy the diner, management needs to know what the diners' expectation levels are with respect to food quality, similar to what was done for service quality in this study. Cardello et al. (1996)

concluded from a series of studies on institutional food service, including the military, that diner expectations of food acceptability can affect the diner's actual perception of a food when eaten; "lowering its acceptance when expectations are low and raising its acceptance when expectations are high". Both Dubé et al. (1994) and Johns and Tyas (1996) have attempted to incorporate this concept in their studies.

6.6 Value for Money

6.6.1 Quality of Food and Service for Money

For all dining rooms, ratings for quality of food and quality of service for money were rated average 5 or above at $p < 0.05$ (Tables 5-Z and 5-BB). Further analysis involved comparing the overall median food quality rating for money with the overall median food quality rating; and comparing the overall median service quality rating for money with the overall median service quality rating, to assess whether there were differences between the ratings.

Significant differences were determined between the overall median rating of food quality for money and the overall median rating of food quality, only for the Officers' dining room at Winnipeg, at $p < 0.05$, and the JrNCOs' dining room at Gagetown, at $p < 0.01$ (Table 5-AA). Significant differences were also found between the overall median rating of service quality for money and the overall median rating of service quality, only for the Mixed

Jr/SrNCOs' dining room at Trenton, at $p < 0.01$, and the SrNCOs' dining room at Gagetown, at $p < 0.05$ (Table 5-CC).

Obviously in these dining rooms diners rated the quality of food and service differently when value for money was involved, confirming the concept that value is an attribute that is a part of food services (Cardello, 1995), and must be assessed to determine the level of customer satisfaction with the value of food and service. Johns and Tyas (1996) included value for money as an item within their modified SERVQUAL questionnaire, after catering managers in focus groups specifically stated that value was important to their customers.

The majority of the diners were not paying for their meals or service. Several non-paying diners commented that if they had been paying for the meals and service, their ratings would have decreased. Future analysis of this area could determine whether there are differences between diners who are paying for their meals and service versus those who are not paying.

6.6.2 Best Service Quality for Money in a Non-Military Food Establishment

Response rate on the open-ended question which asked what non-military food outlet/restaurant the diners frequented that they felt gave them the best service quality for money was low (52%). Of the responses, the most frequent responses were family-style and informal/casual

dining establishments (Table 5-DD). The responses were classified according to the description of eating places provided by the Canadian Restaurant and Food Services Association from Consumer Restaurant Eating Share Trends (CREST) Canada database (Appendix 6-A). These descriptions are used by food services management to classify their establishments.

6.7 Usefulness of SERVQUAL Instrument - Reliability and Validity

Reliability

The internal reliability of the SERVQUAL instrument was measured by determining coefficient alpha (Cronbach's alpha) for each dimension, which is a good estimate of reliability (Carmines and Zeller, 1991; Nunnally 1967; Nunnally and Bernstein, 1994). Sample sizes for the Trenton Officers', Winnipeg SrNCOs' and Halifax SrNCOs' dining rooms were too small to assess the reliability of SERVQUAL. The coefficient alphas are high, exceeding 0.80 for each dimension, across each Base and each dining room with few exceptions (Table 5-P). Similar results were obtained by other researchers using SERVQUAL (Johns and Tyas 1996; Triplett et al., 1994), including the study by Parasuraman et al. (1994) which assessed the three-column SERVQUAL format.

A second measurement of internal reliability was calculated for this study which determined whether there was

a significant difference between the OSQ rating from question #22, and the OSQ rating derived from the perceived quality ratings from SERVQUAL statements #1 through 21, in Part 2 of the questionnaire. Of all the dining rooms, significant differences between the OSQ rating and the OSQ rating derived from the perceived quality ratings were found for only the JrNCOs' dining room in Halifax and the Mixed Jr/SrNCOs' dining room in Trenton, at $p < 0.05$ (Table 5-Q). This form of measurement is not as statistically significant as the reliability coefficient as it basically compares an overall rating, which is not a separate SERVQUAL dimension, to the median of ratings calculated from separate SERVQUAL statements across dimensions. Differences between these ratings could be due to respondents answering the overall service quality question with a positive or negative service experience in mind. For the separate ratings on dimensions (Q#1-21), this experience would only be reflected in the applicable statement.

Validity

The predictive validity of the SERVQUAL instrument was measured by determining the reliability coefficient (adjusted R^2) by regressing the OSQ rating (Q#22) across the dimensions for MSS, MSA and perceptions-only, which was the statistical analysis method used by Parasuraman et al. (1994) to assess the validity of the three-column format. Table 5-S shows the adjusted R^2 value for each of MSS, MSA

and perceptions-only, for each dining room.

As for reliability, the adjusted R^2 values for the Officers' dining room in Trenton, and the SrNCOs' dining rooms in Winnipeg and Halifax were not calculated due to small sample sizes ($n \leq 11$). Generally, across most dining rooms, the adjusted R^2 values for MSS and MSA were low and variable, ranging from 0.13 to 0.61. These adjusted R^2 values for Winnipeg dining rooms were calculated to be 0.00. Predictive validity was determined to be the highest for perceptions-only, with the adjusted R^2 values ranging from 0.48 to 0.84, with Winnipeg Officers' dining room having the lowest value. The R^2 adjusted value for the Winnipeg JrNCOs' dining room was 0.00 for perceptions-only, similar to the MSA and MSS results.

The lower values for Winnipeg may be explained by the fact that it was the pre-test site. Adjustments were made to the format and instructions of the SERVQUAL instrument as a result of the pre-testing in Winnipeg dining rooms. For example, the instructions were modified to stress that the adequate rating should be equal to or lower than the desired rating, since many statements could not be used due to adequate level responses being rated higher than desired service level responses.

These results lead to some concern about the predictive value of the SERVQUAL instrument for MSS and MSA values; basically the inability of these measures to explain a

larger portion of variance in service expectations of adequate service and desired service levels. The perceptions-only value had higher predictive validity. Without Winnipeg, the results were comparable to Parasuraman et al., 1994, with similar patterns seen for the three-column format. Their adjusted R² values for perceptions-only, MSS and MSA were slightly higher across all companies, ranging from 0.72 to 0.86, 0.51 to 0.60, and 0.24 to 0.41, respectively.

Response error was determined for each SERVQUAL statement as part of the assessment on the instrument's validity. Analyses of the percent error rates reveal that statements 10 and 18 are significantly higher, 22% and 18%, respectively, differing significantly from all other statements at alpha=0.05 (Figure 5-B and Table 5-R). All Bases are considered equal with respect to the proportion of errors per statement. These higher response errors for statements 10 and 18 indicate that the validity of the SERVQUAL dimensions assurance and tangibles could be compromised. Statement #10, "Making customers feel safe in their transactions", and Statement #18, "Modern equipment" require further testing. Respondents may have had difficulty with these statements because 1) "transactions" seems more relative to financial services rather than food services; and 2) diners are probably more concerned with whether the food services equipment is functioning properly.

Parasuraman et al. (1994) concluded that the threat to the SERVQUAL scale's validity was small as a result of response error analysis, with a percent error rate range of 0.6 to 2.7% for the three-column format. However, they defined response error as "when the adequate-service rating exceeds the desired-service rating", which does not incorporate the number of "No Responses", "No Opinions" and "No Recognizable Responses". These three responses were included in this study's response error definition because it cannot be assumed that errors only occurred as a result of adequate levels rated higher than desired levels. For example, diners may have left a question blank or circled "No Opinion" because they had difficulty comprehending the question, and therefore, creating a threat to the instrument's validity.

Overall, these validity results question the claim by the SERVQUAL researchers Parasuraman, Berry and Zeithaml, that SERVQUAL is a generic instrument which can be used across all service industries. A four year longitudinal study in Australia reached similar conclusions (Triplett et al., 1994). When SERVQUAL was used to assess food services outlets, modifications and additions to the statements were made; however, factor analysis indicated that the catering industry did not conform to the five dimension structure of service quality (Johns and Tyas, 1996).

6.8 Future Research Recommendations

Future research on the SERVQUAL instrument should attempt to introduce food and value as measurable dimensions, similar to the study by Johns and Tyas, 1996; however, unlike their study, the three-column format of SERVQUAL should be used. Incorporation of these attributes of food and service will allow analyses to determine where perception levels of quality fit into diners' expectations with respect to these attributes. As a result, besides the internal consistency method (Cronbach's alpha) for reliability, and response error and regression (adjusted R²) for validity, factor analysis should be used to assess these modifications, to determine where the factors (statements) are loading under the dimensions of food and service quality.

As part of these changes to the scale, the dimensions which include the statements that have a high error rate should be reworded to "fit" more aptly into the food services industry. Any changes to the SERVQUAL scale will require assessment of factor loading, validity and reliability.

Prior to quantitative analysis through surveying diners, these modifications to the scale should be pre-tested first using qualitative analysis in the form of separate focus groups of diners, food services staff and managers to help assess content validity.

Before full implementation as a performance measurement tool, the modified instrument should undergo analyses over several years, in order to assess 1) its ability to evaluate diners' perceptions and expectations; and 2) its stability and usefulness in the food services industry, over time.

6.9 Limitations of SERVQUAL Instrument

With the use of the generic, three-column SERVQUAL instrument, this study was limited to the five dimensions referring to service quality, not food or value, which are very important in the food services industry. It appears that SERVQUAL is not as generic as Parasuraman et al. (1994) profess it to be. The current format of the SERVQUAL instrument focuses on service quality, not food or value.

Any changes to the SERVQUAL instrument require statistical analysis for validity and reliability.

Responses from diners are confined to a 9-point Likert scale. This limitation could possibly miss more in-depth responses. Despite the low response rate for the open-ended questions, they should form a part of the questionnaire. Diners who do want to comment on food and/or service should be given the opportunity and the space to do so.

SERVQUAL only provides a general assessment of service quality levels; further investigation is required by management to pinpoint areas that require corrective action. When initially used, SERVQUAL is limited to providing baseline data on customers' expectation and perception

levels. For practical purposes, the instrument must be used consistently on a regular basis to assess diner satisfaction with the service quality in the dining room.

6.10 Practical Implications

Initial use of the SERVQUAL instrument provides baseline data on diner expectations and perceptions with respect to service quality. SERVQUAL should be used prior to any change that would have the potential to impact on customer satisfaction with the level of dining service (for example, prior to changing the menu, prices, dining room decor, contracting out), and then after any change in order to assess diner satisfaction with the change.

If used on a regular basis, management would know exactly where the dining room's service level is as perceived by diners, with respect to their expectations of adequate and desired levels. With a SERVQUAL instrument modified to incorporate quality of food and value, managers will also know where the diners stand with respect to food and value for their money.

There are possible implications of using SERVQUAL for comparison of service quality levels between dining rooms and Bases; however, further investigation is required in this area. Differences in expectation and perception levels of service quality can be determined among various diner characteristics (i.e. mode of payment, rank level, age group). It is essential for management to know and

understand their target market, their diners, in order to provide the best customer service.

In the food service industry, management is under constant pressure to provide consistent, timely service to diners in a cost-effective manner. The ability of SERVQUAL to fit into these parameters is questionable. In order to be useful to management as a performance assessment tool, experience with data coding, data entry and statistical analysis is required, which would mean hiring a consultant, or training upper management in this area. Placing this assessment at a more "corporate" level could deter its use as a convenient and effective performance tool at the Base level.

CHAPTER 7 - CONCLUSIONS

The main objective of this research, to determine whether the SERVQUAL instrument could be used to accurately measure diner expectations and perceptions of service quality in DND Food Services dining rooms, was assessed. For all the dining rooms, the median overall service quality perceived by the diners for each dimension was within their applicable zone of tolerance, or levels of expectations.

However, SERVQUAL, in its current generic form, does not accurately measure food services. The claim of Parasuraman, Berry and Zeithaml that it can be used across the service industry is incorrect. Despite the high internal reliability of the instrument, the validity of SERVQUAL within food services, in its current form, is questionable.

Use of the SERVQUAL instrument can determine differences in expectation and perception levels of service quality with respect to diner characteristics, such as rank levels, which would be helpful to managers when assessing trends in the diner population.

Prior to implementation as part of a performance measurement system, SERVQUAL requires modifications to incorporate food quality and value with respect to food and service and assessment of its longterm stability. Any changes require complete analysis to determine the reliability and validity of the new instrument.

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Appendix 1-A DND Food Services System

DEPARTMENT OF NATIONAL DEFENCE (DND) FOOD SERVICES SYSTEM

The types of and extent of food services support provided at a unit depend on the operational role(s) and size of that particular Base. Static feeding mainly comprises feeding personnel in dining rooms at Canadian Forces Bases (CFBs) across Canada.

CF Dining Rooms

The majority of military members dining in CF dining rooms is generally a young, fit population, especially amongst the JrNCOs and Junior Officers. The greater proportion of diners in the dining rooms are those members who are living in single quarters on a permanent basis, or who are temporarily in quarters due to being on a course at another Base.

There are three types of dining room service for the different ranks - modified table service, limited table service and cafeteria service. Modified table service is generally provided to Officers, usually in the Officers' Mess dining room. This service encompasses steamline service (either from a steamline in the kitchen or a hot buffet set up in the dining room), self-serve salad and dessert buffets, with set tables. Diners do not clear their dishes from the table. The Officer rank levels are, in order of ascending rank: Officer Cadet (in training), Second

Lieutenant, Lieutenant, Captain, Major, Lieutenant-Colonel, Colonel and the three General ranks.

Limited table service is normally provided to the Senior Non-Commissioned Officers (SrNCOs) in the SrNCOs' dining room. This service is similar to modified table service, except dishes are cleared from the table by the diner. The SrNCO rank levels are, in order of ascending rank: Sergeant, Warrant Officer, Master Warrant Officer and Chief Warrant Officer.

The Junior Non-Commissioned Officers (or Junior Ranks) (JrNCOs/Jr Ranks) receive full cafeteria-style service in the Jr Ranks' dining hall. Service and amenities are equivalent to that provided in an industrial cafeteria. The JrNCO rank levels are, in order of ascending rank: Private, Corporal and Master Corporal. Personnel who are the civilian equivalent of the respective military rank level are also entitled to dine in their applicable dining room.

Some Bases provide food services to diners of different rank levels within the same dining establishment. These dining rooms are referred to as All Ranks' dining halls where all CF rank levels may dine, and Mixed dining rooms where Officers and SrNCOs, or SrNCOs and JrNCOs may dine.

Due to fiscal restraints, the various types of dining service, number of dining rooms and hours of operation have been modified across the DND. For example, very few

Officers' Mess dining rooms still offer full table service (waiter/waitress service), and even then may only provide this type of service at lunch and supper. For breakfast and on weekends, the dining room is closed due to very low attendance. The diners take their meals in the SrNCOs' dining room.

Hours of Operation

Dining facilities within DND had operated for years on seven days per week, thirteen hours a day; and hence had been opened for every meal period regardless of whether their services were required. Dining room hours and days of the week of dining room operations now vary depending on the Base and its internal requirements. Some dining rooms now even offer à la carte service, which is also available between scheduled meal hours.

Physical Facilities

In general, the size of the Base and number of rank levels consuming meals, determine the physical layout and size of the dining rooms. On the larger Bases, the dining rooms may be in separate buildings (referred to as Messes) with their own kitchens. The Officers' dining room is located upstairs in the Officers' Mess in a separate building. At smaller Bases, the SrNCOs' and Jr Ranks' dining rooms can be located in the same building, separated

by a kitchen.

Recently, emphasis has been placed on renovations to existing facilities for a more attractive and user-friendly establishment for the diner, and an efficient operation for the Food Services' staff. Many DND dining and kitchen facilities still require modification, particularly the servery layout, to accommodate diners as a result of closure of impractical kitchen operations and to effectively incorporate the user-pay system.

Staff and Chain of Command

Food Services staff working in the kitchens and dining rooms consist of military and civilian personnel. Military personnel are cooks and working kitchen supervisors, and civilian personnel are cooks, shift supervisors and kitchen helpers.

There are two separate chains of command in the Mess - the kitchen and dining room are the responsibility of the Food Services Officer, while the rest of the Mess, which includes the bar area, is the responsibility of the Personnel Services Officer.

Sanitation, Security and Safety

Sanitation and hygiene practices are governed by "The Sanitation Code for Canada's Food Services Industry" (1990). Frequent, detailed inspections are carried out by Food Services management personnel and the Base Preventative

Medicine section.

Security and safety regulations are stated in the DND Food Services Manual (1983). Safety practices are also governed by the Workplace Hazardous Material Information System (WHMIS). Safety inspections are frequent, detailed and are carried out by food services management personnel and, on an annual basis, by the Base Safety Officer.

Contract Management

The DND Food Services' experience with contracts stems from summer catering contracts for cadet and militia camps across the country, which are managed and supervised according to the DND Food Services Manual - Catering Contracts (1993). The types of contracts include provision of food and/or food services at either DND or non-DND locations. The Food Services Officer of the camp's supporting Base is the contract supervisor.

Accounting Methods

In April 1994, the implementation of the Cost Accounting Food Allotment Control System (CAFACS) for public accounting at all static units has made the move to a user-pay system feasible. As of April 1997, the two types of funding, public and non-public, have been combined into a single cost accounting system. DND Food Services operates on a non-profit basis; therefore, funds are "tagged" to ensure correct allocation of funds.

SERVQUAL Dimensions by Statement

Reliability

1. Providing services as promised.
2. Dependability in handling diners' service problems.
3. Performing services right the first time.
4. Providing services at the promised time.

Responsiveness

5. Keeping diners informed about when services will be provided.
6. Prompt service to diners.
7. Willingness to help diners.
8. Readiness to respond to diners' requests.

Assurance

9. Employees who instill confidence in diners.
10. Making customers feel safe in their transactions.
11. Employees who are consistently courteous.
12. Employees who have the knowledge to answer diner questions.

Empathy

13. Giving diners individual attention.
14. Employees who deal with diners in a caring fashion.
15. Having the diner's best interests at heart.
16. Employees who understand the needs of their diners.
17. Convenient dining hours.

Tangibles

18. Modern equipment.
19. Visually appealing facilities.
20. Employees who have a neat, professional appearance.
21. Visually-appealing materials associated with service (ie. table settings, menus).

Modified from Table 1 of SERVQUAL Battery,
Parasuraman et al., 1994.

Appendix 4-A Profiles of Base Dining Rooms

APPENDIX 4-A

PROFILE OF BASE DINING ROOMS - WINNIPEG			
CHARACTERISTIC	OFFICERS'	SRNCOS'	JRNCOS'
Type of Dining Room Service	Modified	Limited	Cafeteria
Data Collection Date	18 Jun 96	17 Jun 96	24 Jun 96
Lunch Plate Count on Date	89	25	105
Daily Ration Strength (DRS) for Date	140	35	125
Average Daily Ration Strength (ADRS) for Month	103	43	70
Seating Capacity	202	100	150
Date of Construction	Unknown	1954	
Recent Major Renovations	1996	1996	1984
Management Rank Levels	1 Sgt 1 MCpl	1 WO 2 Sgts	
Meal Schedule			
Breakfast	Weekday 0630-0830	Weekday 0630-0800	
Lunch	Weekday 1130-1330	Weekday 1130-1300	
Supper	Weekday 1630-1830	Weekday 1630-1800	
	Weekend All Meals à la carte		
	0630-1830	0630-1800	

APPENDIX 4-A

PROFILE OF BASE DINING ROOMS - TRENTON		
CHARACTERISTIC	OFFICERS'	MIXED JR/SRNCOS'
Type of Dining Room Service	Modified	Cafeteria
Data Collection Date	29 Oct 96	28 Oct 96
Lunch Plate Count on Date	17	153
Daily Ration Strength (DRS) for Date	114	614
Average Daily Ration Strength (ADRS) for Month	52	295
Seating Capacity	150	250
Date of Construction	1948	1956
Recent Major Renovations	1992	None - New Dining Room Opened in Feb 97
Management Rank Levels	1 Sgt 1 MCpl 1 FOS3/B3	1 WO 1 Sgt 2 FOS3/B3
Meal Schedule		
Breakfast	Weekday 0630-0830	Weekday 0600-0800
Lunch	Weekday 1130-1330	Weekday 1130-1300 Weekend Brunch 0600-1300
Supper	Weekday 1700-1830 Weekend Closed	1630-1800

APPENDIX 4-A

PROFILE OF BASE DINING ROOMS - HALIFAX				
CHARACTERISTIC	OFFICERS'	SRNCOS'	JRNCOS'	ALL RANKS'
Type of Dining Room Service	Modified	Limited	Cafeteria	Modified/Cafeteria
Data Collection Date	19 Nov 96	18 Nov 96	21 Nov 96	20 Nov 96
Lunch Plate Count on Date	80	28	179	151
Daily Ration Strength (DRS) for Date	75	73	312	236
Average Daily Ration Strength (ADRS) for Month	91	76	501	201
Seating Capacity	180	102	400	80 Officers/ 156 JrNCOs
Date of Construction	1950	1963	1949	1953
Recent Major Renovations	N/A	N/A	N/A	Officers' /SrNCOs' Jan 96
				JrNCOs' - for Spring 97
Management Rank Levels	1 WO 1 Sgt	1 Sgt 1 MCpl	1 MWO 2 Sgts	1 WO 1 Sgt
Meal Schedule Breakfast	Weekday 0645-0830 Weekend 0700-0900	Weekday 0630-0815 Weekend 0700-1030	Weekday 0600-0745 Weekend 0700-1000	Weekday 0630-0815 Weekend 0630-1000
	Lunch	Weekday 1145-1300 Weekend 1100-1300	Weekday 1130-1300 Weekend 1130-1230	Weekday 1130-1300 Weekend 1100-1245
Supper	1700-1830	1630-1800	1630-1800	1630-1830

APPENDIX 4-A

PROFILE OF BASE DINING ROOMS - GAGETOWN			
CHARACTERISTIC	OFFICERS'	SRNCOS'	JRNCOS'
Type of Dining Room Service	Modified	Limited	Cafeteria
Data Collection Date	26 Nov 96	25 Nov 96	28 Nov 96
Lunch Plate Count on Date	108	87	191
Daily Ration Strength (DRS) for Date	117	116	429
Average Daily Ration Strength (ADRS) for Month	124	108	614
Seating Capacity	72	102	250
Date of Construction	1950	1950	Unknown
Recent Major Renovations	1995	1994	1994
Management Rank Levels	1 Sgt 1 MCpl	1 Sgt 1 MCpl	1 WO 2 Sgts
Meal Schedule	Weekday 0630-0900 Weekend 0700-1000	Weekday 0630-0900 Weekend 0900-1000	Weekday 0600-0900 Weekend 0600-1000
Lunch	Weekday 1115-1330 Weekend 1100-1300	Weekday 1130-1300 Weekend 1100-1300	Weekday 1130-1300 Weekend 1100-1800 (à la carte)
Supper	1700-1830	1630-1800	Weekday 1630-1800

Appendix 4-B Questionnaire with Covering Letter



THE UNIVERSITY OF MANITOBA

FACULTY OF HUMAN ECOLOGY

418 Human Ecology

Department of Foods and Nutrition

Winnipeg, Manitoba

Canada R3T 2N2

**SERVICE QUALITY QUESTIONNAIRE
FOR CANADIAN FORCES FOOD SERVICES DINING ROOMS**

Dear Diner,

The purpose of this study is to find out what you think of the quality of service provided to you in your dining room. This study is being done in the CF dining rooms at other Bases. The results of this survey will benefit both you and Food Services. In today's competitive environment, it is essential that we have your opinion so we can provide the best service possible.

Your time is valuable, so I have designed the survey to take no more than 15 minutes. Your answers to the following questions are very important to the success of this study. So that all information remains confidential, please return the completed survey directly to me.

This study is voluntary. You may withdraw from the study any time or omit answering any of the questions. All the information will remain confidential and will not be linked to any individual. My advisor and I are the only people who will see your responses.

If you have any questions while filling out this questionnaire, please come and talk to me. While I'm on the Base, I can be reached through the Food Services Office (phone number below). If you have any questions, please contact me at the Graduate Student office at (204) XXX-XXXX or my advisor, XXX, at (204) XXX-XXXX. Thank you for your time and effort in completing the survey.

Sincerely,

Joanne Denny-McKinstry
Graduate Student

CTC Gagetown:	XXX-XXXX
Formation Halifax:	XXX-XXXX
8 Wing Trenton:	XXX-XXXX
17 Wing Winnipeg:	XXX-XXXX

APPENDIX 4-B

PART 1 - PERSONAL INFORMATION

Base__
 DR__
 ID no__

DIRECTIONS: The following questions are to give me an idea of your background. All information is confidential. Please answer by placing a mark in the space (X).

1. Your gender is: Male () Female ()

2. What age group are you in?

20 or less	()	41 - 45	()
21 - 25	()	46 - 50	()
26 - 30	()	51 - 55	()
31 - 35	()	56 - 60	()
36 - 40	()	61+	()

3. Please describe your current living situation at this base. Check only ONE category.

Living in PMQs	()
Staying in single quarters	()
Living off Base	()
Other	() (Please specify _____)

4. You are a member of the:

Regular Force	()	Reserve Force	()
Cadet Organization	()	Civilian	()
Other	() (Please specify _____)		

5. Please provide your specific rank (position level for civilians):

_____ Other () (Please specify _____)

6. What is your current status on this base?

Staff	()
Student	() (includes those awaiting training)
Other	() (Please specify _____)

7. Are you currently:

At your posted location	()
On temporary duty	()
On a social visit	()
Other	() (Please specify _____)

8. When did you join the Canadian Forces (for civilian members, when did you start working for the Department of National Defence)? Please give the month and year (for example: June 1992).

_____ Not applicable ()

PART 2 - SERVICE QUALITY

DIRECTIONS: I would like your impressions about how well the service in this dining room meets your expectations. **Service quality** can be defined as "the customer's assessment of the overall excellence of the service."

For each of the following statements, please indicate:

- (1) your *minimum service level* by circling one of the numbers in Column 1.

MINIMUM SERVICE LEVEL - the *minimum* level of service performance you would consider acceptable.

- (2) your *desired service level* by circling one of the numbers in Column 2. This score will be equal to or higher than Column 1.

DESIRED SERVICE LEVEL - the level of service performance you believe an excellent dining room *can and should* deliver.

- (3) what you think of the service in this dining room by circling one of the numbers in Column 3.

Please rate each statement on service quality of the dining room on the scales provided on the next pages. If you feel the level is **extremely poor**, circle the number "1". If you feel it is **extremely good**, please circle the number "9". If your feelings are in between, please circle the appropriate number. There is an example on the next page to get you started.

There are no right or wrong answers - I am interested in the three ratings on each statement that best represents your minimum service level, desired service level, and perception of this dining room's service performance.

APPENDIX 4-8

EXAMPLE: Here is an example using the barber shop/hairdresser. Your *desired* level should be the same as or higher than your *minimum* level.

Note: "N" = No Opinion "1" = Extremely Poor "9" = Extremely Good

	COLUMN 1	COLUMN 2	COLUMN 3
When it comes to:	My <i>Minimum</i> Service Level Is:	My <i>Desired</i> Service Level Is:	I Think The Service In <i>This Barber Shop</i> Is:
1. Performing services right the first time	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
2. Willingness to help customers	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
3. Making customers feel safe in their transactions	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N

NOW, PLEASE RATE dining room service by circling a number in each column.

Note: "N" = No Opinion "1" = Extremely Poor "9" = Extremely Good

	COLUMN 1	COLUMN 2	COLUMN 3
When it comes to:	My <i>Minimum</i> Service Level Is:	My <i>Desired</i> Service Level Is:	I Think The Service In <i>This Dining Room</i> Is:
1. Providing services as promised	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N

APPENDIX 4-B

	COLUMN 1	COLUMN 2	COLUMN 3
When it comes to:	My <i>Minimum</i> Service Level is:	My <i>Desired</i> Service Level is:	I Think The Service In <i>This Dining Room</i> Is:
2. Dependability in handling diners' service problems	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
3. Performing services right the first time	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
4. Providing services at the promised time	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
5. Keeping diners informed about when services will be provided	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
6. Prompt service to diners	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
7. Willingness to help diners	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
8. Readiness to respond to diners' requests	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N

APPENDIX 4-B

	COLUMN 1	COLUMN 2	COLUMN 3
When it comes to:	My <i>Minimum</i> Service Level Is:	My <i>Desired</i> Service Level Is:	I Think The Service In <i>This Dining Room</i> Is:
9. Employees who instill confidence in diners	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
10. Making customers feel safe in their transactions	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
11. Employees who are consistently courteous	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
12. Employees who have the knowledge to answer diner questions	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
13. Giving diners individual attention	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
14. Employees who deal with diners in a caring fashion	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
15. Having the diner's best interests at heart	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N

APPENDIX 4-B

	COLUMN 1	COLUMN 2	COLUMN 3
When it comes to:	My <i>Minimum</i> Service Level Is:	My <i>Desired</i> Service Level Is:	I Think The Service In <i>This Dining Room</i> Is:
16. Employees who understand the needs of their diners	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
17. Convenient dining hours	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
18. Modern equipment	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
19. Visually appealing facilities	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
20. Employees who have a neat, professional appearance	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N
21. Visually-appealing materials associated with service (ie. table settings, menus)	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9	LOW HIGH 1 2 3 4 5 6 7 8 9 N

22. **PLEASE RATE** the overall service quality of this dining room on the scale provided below. If you feel the overall service quality is **extremely poor**, circle the number "1". If you feel it is **extremely good**, please circle the number "9". If your feelings are in between, please circle the appropriate number.

Extremely Poor								Extremely Good	
1	2	3	4	5	6	7	8	9	No Opinion

DIRECTIONS: The following question is to allow you to give your opinion of the service quality in your dining room. This is voluntary and does not have to be completed.

23. What is your opinion of the service quality in this dining room? Are there any improvements you would like to see made?

PART 3 - GENERAL DINING INFORMATION

DIRECTIONS: The following questions are designed to gather general information regarding your use of the Food Services dining room. Please answer by placing a mark in the space (X) or by filling in the space (_____).

1. Are you currently dining here:

- on ration strength (paying) ()
- on ration strength (separation expense) ()
- on meal ticket purchase ()
- on meal entitlement (duty) ()

2. For how long have you been dining in this dining room? (example: 2 weeks; 3 days) _____

3. Which meals do you eat during a typical week?

Circle "In", if you usually eat the meal in this dining room.
 Circle "Out", if you usually eat the meal in a place other than this dining room.
 Circle "N/A", if you usually do not eat that meal at all.

	Breakfast			Lunch/Brunch			Supper		
Mon	In	Out	N/A	In	Out	N/A	In	Out	N/A
Tue	In	Out	N/A	In	Out	N/A	In	Out	N/A
Wed	In	Out	N/A	In	Out	N/A	In	Out	N/A
Thu	In	Out	N/A	In	Out	N/A	In	Out	N/A
Fri	In	Out	N/A	In	Out	N/A	In	Out	N/A
Sat	In	Out	N/A	In	Out	N/A	In	Out	N/A
Sun	In	Out	N/A	In	Out	N/A	In	Out	N/A

4. When you eat out (at a non-military location), where do you get the best service for your money? Please name one food outlet / restaurant.

No Opinion ()

APPENDIX 4-B

DIRECTIONS: For questions #5 to #8, please rate the quality of the characteristics.

"1" = Extremely Poor "9" = Extremely Good "N" = No Opinion

5. For the food served in **this dining room**, how would you rate the quality of these characteristics overall?

appearance	1	2	3	4	5	6	7	8	9	N
taste	1	2	3	4	5	6	7	8	9	N
freshness	1	2	3	4	5	6	7	8	9	N
texture	1	2	3	4	5	6	7	8	9	N
temperature	1	2	3	4	5	6	7	8	9	N
nutritional value	1	2	3	4	5	6	7	8	9	N
variety	1	2	3	4	5	6	7	8	9	N

6. How would you rate the quality of these food items provided by this dining room?

Salads	1	2	3	4	5	6	7	8	9	N
Soups	1	2	3	4	5	6	7	8	9	N
Cooked vegetables	1	2	3	4	5	6	7	8	9	N
Potatoes or substitutes	1	2	3	4	5	6	7	8	9	N
Sauce or gravy	1	2	3	4	5	6	7	8	9	N
Meat, poultry, fish	1	2	3	4	5	6	7	8	9	N
Breads and cereals	1	2	3	4	5	6	7	8	9	N
Desserts	1	2	3	4	5	6	7	8	9	N
Beverages	1	2	3	4	5	6	7	8	9	N

7. In **this dining room**, what quality of food do you feel you get for your money?

1 2 3 4 5 6 7 8 9 N

8. In **this dining room**, what quality of service do you feel you get for your money?

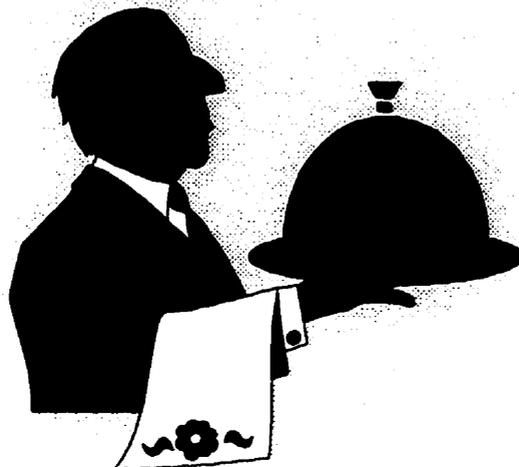
1 2 3 4 5 6 7 8 9 N

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS QUESTIONNAIRE. PLEASE RETURN IT DIRECTLY TO JOANNE DENNY-McKINSTRY.

Appendix 4-C Poster

QUALITY OF SERVICE IN YOUR DINING ROOM

APPENDIX 4-C



DOES IT MEET YOUR NEEDS?

*A University of Manitoba survey of
CANADIAN FORCES DINING ROOMS*

On behalf of Directorate of Food Services, NDHQ

Your help with this study is greatly appreciated!

**Members will be randomly approached in the dining room and asked to
complete a survey about the service quality of the dining room.**

YOUR OPINION COUNTS!

Date/Time: _____

The survey takes about 15 minutes to complete.

**DEPARTMENT OF FOODS AND NUTRITION
FACULTY OF HUMAN ECOLOGY
UNIVERSITY OF MANITOBA.
WINNIPEG, MANITOBA R3T 2N2 (204) XXX-XXXX**

Appendix 4-D Sample Profile Form of Dining Room

PROFILE OF OPERATIONAL DINING ROOM

1. Dining Facility Building Name and Number:

2. Type of Dining Facility: _____
3. Average daily ration strength (eat-in diners only; do not include dispersed meals or staff):

	Sep 9X	Oct 9X	Nov 9X
Regular Force			
Reserves and Cadets			
Staff			

4. Average Daily Ration Strength for:
 - Mon X Nov 9X _____ (SrNCOs')
 - Tue X Nov 9X _____ (OFFICERS')
 - Wed X Nov 9X _____ (ALL RANKS)
 - Thu X Nov 9X _____ (JrNCOs')
5. Daily Ration Allowance for:
 - FY 96/97 _____
6. Average weekday plate count for the lunch meal (do not include second servings or staff):
 - a. Sep 9X - _____
 - b. Oct 9X - _____
 - c. Nov 9X - _____
7. Actual plate count for the lunch and supper meals (do not include second servings or staff):

DINING ROOM	LUNCH	SUPPER
SrNCOs' (Mon X Nov 9X)		
OFFICERS' (Tue X Nov 9X)		
ALL RANKS' (Wed X Nov 9X)		
JrNCOs' (Thu X Nov 9X)		

8. Types of service provided and volume (average daily number of meals or number of meal tickets collected, as applicable):

	Sep 9X	Oct 9X	Nov 9X
cafeteria service			
limited table service			
full table service			
casual meal service			

9. Scaled size of kitchen/dining room: _____ diners
10. Actual seating capacity: _____
11. Date of construction: _____
12. Last major renovation to dining room:
 Date: _____
 Type: _____
13. Date when dining room last painted: _____
14. Type of lighting in dining room: _____
15. Type of heating system: _____
16. Type of cooling system: _____
17. Number of serving lines operated at noon meal: _____
18. Dated kitchen equipment in use (state age):

19. Dish return system in use: _____
20. Length of cycle menu: _____
21. Rank level and number of management personnel for dining facility:

22. Hours of operation of dining room (as applicable):
 Weekdays: Breakfast _____
 Lunch _____
 Supper _____
 Night Meal _____

APPENDIX 4-D

Weekends: Breakfast _____
 Brunch _____
 Lunch _____
 Supper _____
 Night Meal _____

23. Rank levels dining in facility:

Adapted from Robinson, 1990

Appendix 4-E Sample Letter to Wing/Base/Formation Commander
Commander Requesting Authorization and Support
for Research in Dining Rooms



THE UNIVERSITY OF MANITOBA

FACULTY OF HUMAN ECOLOGY

Department of Foods and Nutrition

418 Human Ecology
Winnipeg, Manitoba
Canada R3T 2N2

(204) xxx-xxxx Tel
(204) xxx-xxxx Fax

4500-8 (file no.)

September 1996

Distribution

**REQUEST FOR ASSISTANCE -
RESEARCH PROJECT: SERVICE QUALITY
IN FOOD SERVICES DINING HALLS**

Reference: 4500-8 (D Food S) 22 February 1996 (enclosed)

1. As part of my post-graduate training in Foods and Nutrition, I am conducting research on the measurement of diners' expectations and perceptions of service quality in CF dining rooms. Your assistance is requested in the use of XXX's Food Services' dining rooms to conduct this research.
2. My research will be focusing on the SERVQUAL instrument, a multiple-item scale for assessing customer perceptions of service quality. Its purpose is to uncover broad areas of a company's service quality shortfalls and strengths. Over time, using the SERVQUAL scale allows managers to track the customer trend in expectations and perceptions. Many proprietary service quality studies have productively used SERVQUAL. The instrument has been used as a tool in the military environment; for example, SERVQUAL was used to evaluate the Officers' Open Mess at Nellis Air Force Base, Nevada.
3. It is planned that the service quality at the CF Food Services dining halls undergoing the Alternate Service Delivery (ASD) testing - Formation Halifax, CTC Gagetown and 8 Wg Trenton, will be assessed using the modified SERVQUAL questionnaire. 17 Wing Winnipeg Food Services management, staff and diners have pretested the questionnaire to ensure there are no problem areas related to format, grammar, length, etc. Both the questionnaire

APPENDIX 4-E

and the research procedures have been approved by the Faculty of Human Ecology Ethics Review Committee. A copy of the questionnaire is enclosed for your information. The questionnaire will be available to the diners in French at the time of data collection.

4. The administration of the questionnaire to the diners will be conducted by myself. The diners will be randomly approached in the dining rooms during the lunch hour over an approximate one week period. A letter describing the purpose of the study will be placed on the tables a few days prior to the data collection.

5. I request formal permission to conduct my research at XXX. Upon receipt of D Food S(now D Sup 4)/Command authorization at reference, direct liaison with Captain XXX, Food Svcs O, was initiated in order to discuss the study. The tentative timeframe for data collection is November 1996.

6. Results from the analysis of the data will be forwarded to the Food Services Officer for his/her information purposes. Your consideration and support in this matter is very much appreciated. Should any additional information be required, I may be contacted at XXX-XXXX.

J.M. Denny-McKinstry
Captain
Graduate Student

Enclosures: 2

Distribution

Action Addressee

Information Addressee

Appendix 4-F Letter to Diners Providing
Information on Study



THE UNIVERSITY OF MANITOBA

FACULTY OF HUMAN ECOLOGY

Department of Foods and Nutrition

418 Human Ecology
Winnipeg, MB
R3T 2N2

**SURVEY OF SERVICE QUALITY IN
CANADIAN FORCES DINING ROOMS**

Dear Diner,

On behalf of the Directorate of Food Services, National Defence Headquarters, I am conducting research on diners' expectations and perceptions of service quality in CF dining rooms. This study is to find out what you think of the quality of service provided to you in your dining room.

CF dining rooms at other Bases are part of the study. The results will benefit both you and Food Services. In today's competitive environment, it is essential that we have your opinion so we can provide the best service possible.

My research uses a questionnaire called SERVQUAL. It is a series of questions to find out what you think of the service in this dining room. Over time, this survey will allow us to track customer trends. Variations of this study have been used successfully across the service industry worldwide - in banking, in retail, in the hotel industry, in the military, etc.

During the lunch and supper meals in the dining room, I will be asking diners at random whether they would like to complete the questionnaire. Your time is valuable, so I have designed the survey to take no more than 15 minutes. Your participation is very important to the success of this study. This study is voluntary. All the information will remain confidential and will not be linked to any individual.

While I'm on the Base, I can be reached through the Food Services Office (phone number below). If you have any more questions, please contact me at the Graduate Student office at (204)XXX-XXXX, or my advisor, XXX, at (204)XXX-XXXX.

Sincerely,

Joanne Denny-McKinstry
Graduate Student

CTC Gagetown	XXX-XXXX
Formation Halifax	XXX-XXXX
8 Wing Trenton	XXX-XXXX
17 Wing Winnipeg	XXX-XXXX

**Appendix 4-G Checklist for Non-Respondents
of Questionnaire**

CHECKLIST FOR NON-RESPONDENTS OF QUESTIONNAIRE

	Male/Female	Rank	Reason			
			No Time	No Interest	Socialize	Don't Feel Like It
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						

Appendix 4-H Sample Letter to Food Services
Officers Providing Instructions



THE UNIVERSITY OF MANITOBA

Department of Foods and Nutrition

FACULTY OF HUMAN ECOLOGY

**418 Human Ecology
Winnipeg, Manitoba
Canada R3T 2N2**

4500-8 (file)

XX October 1996

Food Services Officer Addressee

**GENERAL INFORMATION ON RESEARCH:
SERVICE QUALITY IN CF DINING ROOMS**

References: A. Our telecon 16 October 1996

B. 4500-8 (file) 9 September 1996

1. IAW refs, enclosed are the posters and letters to the diners to advertise the subject study, and to inform the diners of its purpose prior to its commencement. Please post the posters (6 English, 6 French) in visible locations in the dining rooms (entrance doors, by meal cards or menu, etc.) , and the letters (60 English, 60 French) on the dining room tables (underneath the plastic table covers?) in the JrNCOs', SrNCOs' and Officers' Mess dining rooms (DR) prior to the survey distribution. It would be appreciated if copies of the letter are provided at each dining table. Timings are as follows:

- | | | | |
|----|--|---|--------------|
| a. | posters up in SrNCOs' DR | - | Wed X Nov 96 |
| b. | letters on tables in SrNCOs' DR | - | Thu X Nov 96 |
| c. | posters up in Officers' Mess DR | - | Thu X Nov 96 |
| d. | letters on tables in Officers' Mess DR | - | Fri X Nov 96 |
| e. | posters up in JrNCOs' DR | - | Sat X Nov 96 |
| f. | letters on tables in JrNCOs' DR | - | Sun X Nov 96 |

APPENDIX 4-H

- g. survey in SrNCOs' DR at lunch and supper - Mon X Nov 96
- h. survey in Officers' DR at lunch and supper - Tue X Nov 96
- i. survey in JrNCOs' DR at lunch and supper - Thu X Nov 96

2. I will arrive in XXX on X Nov 96. The French/English questionnaires and pencils will be brought by myself. In the meantime, if anything changes with your dining room operations which will effect the survey, please let me know.

3. If you have any questions/comments, I can be contacted at (204) XXX-XXXX. Your support in this matter is greatly appreciated. I am looking forward to this part of my research! Thanks!

J.M. Denny-McKinstry
Captain
Graduate Student

Enclosures: XXX

Appendix 5-A Demographic Characteristics of Diners
by Base and Dining Room

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - WINNIPEG						
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'	
	N	%	N	%	N	%
DINING ROOM	37	43	11	13	39	45
SAMPLE						
Random	37	80	11	48	39	75
Volunteer	9	20	12	52	13	25
GENDER						
Male	30	81	11	100	34	87
Female	7	19	-	-	4	10
AGE GROUP						
20 or <	3	8	-	-	1	3
21-25	13	35	-	-	11	28
26-30	6	16	-	-	14	36
31-35	8	22	1	9	11	28
36-40	4	11	3	27	2	5
41-45	2	5	2	18	-	-
46-50	-	-	3	27	-	-
51-55	1	3	2	18	-	-
56-60	-	-	-	-	-	-
61+	-	-	-	-	-	-
CURRENT LIVING SITUATION AT THIS BASE						
Living in PMQs	2	5	-	-	1	3
Staying in single quarters	28	77	7	64	35	90
Living off Base	6	16	4	36	3	8
Other	1	3	-	-	-	-

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - WINNIPEG						
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'	
	N	%	N	%	N	%
MEMBER						
Regular Force	31	84	7	64	34	87
Reserve Force	3	8	4	36	4	10
Cadet Organization	-	-	-	-	-	-
Civilian	3	8	-	-	1	3
Other	-	-	-	-	-	-
RANK LEVEL						
OCdt	8	22	-	-	-	-
2Lt	5	14	-	-	1	3
Lt	1	3	-	-	-	-
Capt	14	38	-	-	1	3
Maj	2	5	-	-	-	-
LCol	1	3	-	-	-	-
Col	-	-	-	-	-	-
Pte	-	-	-	-	2	5
Cpl	-	-	-	-	27	69
MCpl	-	-	-	-	6	15
Sgt	-	-	7	64	1	3
WO	-	-	2	18	-	-
MWO	-	-	1	9	-	-
CWO	-	-	1	9	-	-
Other	3	8	-	-	-	-

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - WINNIPEG						
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'	
	N	%	N	%	N	%
CURRENT STATUS ON THIS BASE						
Staff	11	30	8	73	16	41
Student	25	68	2	18	1	3
Visitor	-	-	-	-	-	-
Other	-	-	1	9	22	56
REASON ON BASE						
At posted location	16	43	7	64	15	38
On temporary duty	20	54	4	36	23	59
On a social visit	1	3	-	-	-	-
Other	-	-	-	-	1	3
YEAR OF JOINING CF						
1992-1996	11	30	-	-	4	10
1987-1991	9	24	-	-	23	59
1982-1986	6	16	1	9	7	18
1977-1981	5	14	2	18	4	10
1972-1976	5	14	3	27	-	-
1967-1971	-	-	3	27	-	-
1966 or before	-	-	2	18	-	-
METHOD OF PAYMENT						
on ration strength (paying)	6	16	-	-	10	26
on ration strength (separation expense)	2	5	3	27	3	8
on meal ticket purchase	8	22	1	9	1	3
on meal entitlement (duty)	21	57	7	64	22	56

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - WINNIPEG						
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'	
	N	%	N	%	N	%
LENGTH OF TIME DINING IN THIS DINING ROOM						
1 day or <	-	-	-	-	2	5
1 wk or <, but > 1 day	7	19	1	9	18	46
1 mth or <, but > 1 wk	7	19	5	45	1	3
3 mths or <, but > 1 mth	10	27	3	27	6	15
6 mths or <, but > 3 mths	-	-	1	9	1	3
1 yr or <, but > than 6 mths	4	11	1	9	-	-
> 1 yr	7	19	-	-	8	21
LANGUAGE OF QUESTIONNAIRE						
French	-	-	-	-	-	-
English	46	100	23	100	52	100

WINNIPEG DINER CONSUMPTION PATTERNS**OFFICERS' DINING ROOM**

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	23(62)	4(11)	6(16)	30(81)	4(11)	0(0)	26(70)	7(19)	0(0)
Tue	24(65)	4(11)	5(14)	28(76)	5(14)	0(0)	26(70)	7(19)	0(0)
Wed	23(62)	4(11)	6(16)	29(78)	4(14)	0(0)	26(70)	7(19)	0(0)
Thu	24(65)	4(11)	5(14)	28(76)	5(14)	0(0)	26(70)	7(19)	0(0)
Fri	23(62)	4(11)	6(16)	28(76)	6(16)	0(0)	23(62)	10(27)	0(0)
Sat	13(35)	5(14)	12(32)	23(62)	10(27)	0(0)	22(59)	10(27)	0(0)
Sun	13(35)	6(16)	11(30)	24(65)	9(16)	0(0)	22(59)	10(27)	0(0)

APPENDIX 5-A

WINNIPEG SRNCOS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	3(27)	4(36)	2(18)	8(73)	1(9)	0(0)	4(36)	4(36)	1(9)
Tue	3(27)	4(36)	2(18)	6(55)	3(27)	0(0)	3(27)	5(45)	1(9)
Wed	3(27)	4(36)	2(18)	8(73)	1(9)	0(0)	4(36)	4(36)	1(9)
Thu	3(27)	4(36)	2(18)	8(73)	1(9)	0(0)	3(27)	5(45)	1(9)
Fri	3(27)	4(36)	2(18)	5(45)	3(27)	1(9)	4(36)	4(36)	1(9)
Sat	2(18)	4(36)	2(18)	3(27)	6(55)	1(9)	3(27)	4(36)	1(9)
Sun	3(27)	4(36)	2(18)	3(27)	6(55)	1(9)	3(27)	4(36)	1(9)

JRNCOS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	16(41)	3(8)	10(26)	22(56)	5(13)	1(3)	21(54)	7(18)	1(3)
Tue	17(44)	3(8)	9(23)	23(59)	4(10)	1(3)	20(51)	7(18)	2(5)
Wed	16(41)	4(10)	9(23)	21(54)	6(15)	1(3)	21(54)	7(18)	1(3)
Thu	17(44)	3(8)	9(23)	22(56)	5(13)	1(3)	20(51)	7(18)	2(5)
Fri	17(44)	3(8)	9(23)	21(54)	6(15)	1(3)	19(49)	9(23)	2(5)
Sat	11(28)	4(10)	11(28)	16(41)	10(26)	2(5)	15(38)	12(31)	3(8)
Sun	11(28)	5(13)	11(28)	17(44)	9(23)	2(5)	15(38)	12(31)	3(8)

"In"= eat meal in this dining room.

"Out"= eat meal in a place other than this dining room

"Not"= do not eat that meal at all

Where N totals and percentages for characteristics are not equal to dining room N total/%, missing values include No Response, Not Applicable or No Recognizable Response except for 1) Language (Total Number of Respondents Used = Volunteers and Random), and 2) Sample shows total respondents.

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - TRENTON				
CHARACTERISTICS	OFFICERS'		MIXED JR/SRNCOS'	
	N	%	N	%
DINING ROOM	9	15	50	85
SAMPLE				
Random	9	32	50	79
Volunteer	19	68	13	21
GENDER				
Male	9	100	42	84
Female	-	-	4	8
AGE GROUP				
20 or <	-	-	-	-
21-25	2	22	2	4
26-30	1	11	12	24
31-35	2	22	15	30
36-40	2	22	9	18
41-45	1	11	6	12
46-50	1	11	-	-
51-55	-	-	3	6
56-60	-	-	-	-
61+	-	-	1	2
CURRENT LIVING SITUATION AT THIS BASE				
Living in PMQs	-	-	1	2
Staying in single quarters	8	89	36	72
Living off Base	1	11	8	16
Other	-	-	3	6

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - TRENTON				
CHARACTERISTICS	OFFICERS'		MIXED JR/SRNCOS'	
	N	%	N	%
MEMBER				
Regular Force	6	67	44	88
Reserve Force	2	22	1	2
Cadet Organization	-	-	1	2
Civilian	1	11	1	2
Other	-	-	1	2
RANK LEVEL				
OCdt	1	11	-	-
2Lt	-	-	-	-
Lt	-	-	-	-
Capt	6	67	2	4
Maj	1	11	-	-
LCol	-	-	-	-
Col	-	-	-	-
Pte	-	-	-	-
Cpl	-	-	26	52
MCpl	-	-	11	22
Sgt	-	-	3	6
WO	-	-	4	8
MWO	-	-	1	2
CWO	-	-	-	-
Other	1	11	-	-

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - TRENTON				
CHARACTERISTICS	OFFICERS'		MIXED JR/SRNCOS'	
	N	%	N	%
CURRENT STATUS ON THIS BASE				
Staff	5	56	32	64
Student	4	44	10	20
Visitor	-	-	-	-
Other	-	-	4	8
REASON ON BASE				
At posted location	4	44	30	60
On temporary duty	4	44	16	32
On a social visit	-	-	-	-
Other	1	11	1	2
YEAR OF JOINING CF				
1992-1996	2	22	1	2
1987-1991	2	22	10	20
1982-1986	1	11	13	26
1977-1981	2	22	13	26
1972-1976	1	11	6	12
1967-1971	-	-	-	-
1966 or before	1	11	3	6
METHOD OF PAYMENT				
on ration strength (paying)	2	22	17	34
on ration strength (separation expense)	2	22	6	12
on meal ticket purchase	1	11	4	8
on meal entitlement (duty)	3	33	18	36

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - TRENTON				
CHARACTERISTICS	OFFICERS'		MIXED JR/SRNCOS'	
	N	%	N	%
LENGTH OF TIME DINING IN THIS DINING ROOM				
1 day or <	-	-	1	2
1 wk or <, but > 1 day	-	-	1	2
1 mth or <, but > 1 wk	2	22	15	30
3 mths or <, but > 1 mth	3	33	12	24
6 mths or <, but > 3 mths	-	-	5	10
1 yr or <, but > than 6 mths	-	-	3	6
> 1 yr	3	33	9	18
LANGUAGE OF QUESTIONNAIRE				
French	3	11	2	3
English	25	89	61	97

TRENTON DINER CONSUMPTION PATTERNS**OFFICERS' DINING ROOM**

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	5(56)	2(22)	1(11)	8(89)	0(0)	0(0)	8(89)	0(0)	0(0)
Tue	7(78)	0(0)	1(11)	7(78)	1(11)	0(0)	8(89)	0(0)	0(0)
Wed	7(78)	0(0)	1(11)	8(89)	0(0)	0(0)	8(89)	0(0)	0(0)
Thu	7(78)	0(0)	1(11)	7(78)	1(11)	0(0)	8(89)	0(0)	0(0)
Fri	7(78)	0(0)	1(11)	8(89)	0(0)	0(0)	5(56)	3(33)	0(0)
Sat	0(0)	5(56)	3(33)	1(11)	6(67)	0(0)	2(22)	6(67)	0(0)
Sun	0(0)	5(56)	3(33)	1(11)	6(67)	0(0)	1(11)	6(67)	0(0)

APPENDIX 5-A

TRENTON MIXED JR/SRNCOS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	33(66)	3(6)	6(12)	42(84)	2(4)	1(2)	37(74)	4(8)	2(4)
Tue	33(66)	3(6)	7(14)	42(84)	2(4)	1(2)	37(74)	4(8)	2(4)
Wed	33(66)	3(6)	6(12)	42(84)	2(4)	1(2)	33(66)	8(16)	2(4)
Thu	31(62)	3(6)	7(14)	42(84)	1(2)	1(2)	36(72)	4(8)	2(4)
Fri	31(62)	3(6)	6(12)	40(80)	2(4)	1(2)	26(52)	12(24)	2(4)
Sat	17(34)	9(18)	10(20)	23(46)	8(16)	5(10)	21(42)	13(26)	2(4)
Sun	15(30)	10(20)	10(20)	23(46)	8(16)	5(10)	23(46)	11(22)	2(4)

"In"= eat meal in this dining room.

"Out"= eat meal in a place other than this dining room

"Not"= do not eat that meal at all

Where N totals and percentages for characteristics are not equal to dining room N total/%, missing values include No Response, Not Applicable or No Recognizable Response except for 1) Language (Total Number of Respondents Used = Volunteers and Random), and 2) Sample shows total respondents.

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - HALIFAX								
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'		ALL RANKS'	
	N	%	N	%	N	%	N	%
DINING ROOM	28	18	10	6	71	46	46	30
SAMPLE								
Random	28	68	10	37	71	73	46	75
Volunteer	13	32	17	63	26	27	15	25
GENDER								
Male	25	89	8	80	59	83	39	85
Female	3	11	2	20	11	15	3	7
AGE GROUP								
20 or <	-	-	-	-	3	4	-	-
21-25	5	18	-	-	20	28	-	-
26-30	8	29	1	10	19	27	13	28
31-35	10	36	-	-	18	25	12	26
36-40	1	4	6	60	6	8	9	20
41-45	3	11	3	30	2	3	3	7
46-50	-	-	-	-	1	1	5	11
51-55	1	4	-	-	-	-	3	7
56-60	-	-	-	-	-	-	1	2
61+	-	-	-	-	-	-	-	-
CURRENT LIVING SITUATION AT THIS BASE								
Living in PMOs	1	4	1	10	2	3	1	2
Staying in single quarters	26	93	9	90	48	68	27	59
Living off Base	1	4	-	-	18	25	18	39
Other	-	-	-	-	2	3	-	-

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - HALIFAX								
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'		ALL RANKS'	
	N	%	N	%	N	%	N	%
MEMBER								
Regular Force	24	86	7	70	55	77	35	76
Reserve Force	4	14	3	30	5	7	4	9
Cadet Organization	-	-	-	-	-	-	-	-
Civilian	-	-	-	-	10	14	6	13
Other	-	-	-	-	-	-	1	2
RANK LEVEL								
OCdt	-	-	-	-	-	-	-	-
2Lt	-	-	-	-	-	-	-	-
Lt	7	25	-	-	-	-	1	2
Capt	16	57	-	-	-	-	3	7
Maj	3	11	-	-	-	-	-	-
LCol	1	4	-	-	-	-	-	-
Col	1	4	-	-	-	-	-	-
Pte	-	-	-	-	16	23	-	-
Cpl	-	-	-	-	27	38	18	39
MCpl	-	-	-	-	15	21	9	20
Sgt	-	-	5	50	1	1	2	4
WO	-	-	2	20	-	-	4	9
MWO	-	-	3	30	-	-	2	4
CWO	-	-	-	-	-	-	1	2
Other	-	-	-	-	10	14	6	13

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - HALIFAX								
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'		ALL RANKS'	
	N	%	N	%	N	%	N	%
CURRENT STATUS ON THIS BASE								
Staff	10	36	8	80	10	14	14	30
Student	17	61	1	10	43	61	19	41
Visitor	-	-	-	-	-	-	-	-
Other	1	4	1	10	14	20	10	22
REASON ON BASE								
At posted location	10	36	5	50	22	31	18	39
On temporary duty	18	64	5	50	36	51	26	57
On a social visit	-	-	-	-	-	-	1	2
Other	-	-	-	-	10	14	1	2
YEAR OF JOINING CF								
1992-1996	3	11	-	-	25	35	2	4
1987-1991	13	46	1	10	23	32	11	24
1982-1986	6	21	3	30	9	13	10	22
1977-1981	2	7	4	40	5	7	7	15
1972-1976	3	11	-	-	-	-	3	7
1967-1971	-	-	2	20	-	-	3	7
1966 or before	1	4	-	-	-	-	3	7
METHOD OF PAYMENT								
on ration strength (paying)	5	18	3	30	12	17	5	11
on ration strength (separation expense)	6	21	2	20	18	25	5	11
on meal ticket purchase	-	-	-	-	10	14	11	24
on meal entitlement (duty)	16	57	5	50	20	28	18	39

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - HALIFAX								
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'		ALL RANKS'	
	N	%	N	%	N	%	N	%
LENGTH OF TIME DINING IN THIS DINING ROOM								
1 day or <	-	-	-	-	3	4	1	2
1 wk or <, but > 1 day	6	21	2	20	5	7	3	7
1 mth or <, but > 1 wk	5	18	3	30	5	7	9	20
3 mths or <, but > 1 mth	7	25	-	-	16	23	9	20
6 mths or <, but > 3 mths	3	11	-	-	17	24	2	4
1 yr or <, but > than 6 mths	1	4	3	30	7	10	3	7
> 1 yr	5	18	2	20	4	6	9	20
LANGUAGE OF QUESTIONNAIRE								
French	5	12	1	4	-	-	5	8
English	36	88	26	96	97	100	56	92

HALIFAX DINER CONSUMPTION PATTERNS

OFFICERS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	20 (71)	1 (5)	6 (21)	23 (82)	3 (11)	1 (5)	27 (96)	0 (0)	0 (0)
Tue	19 (68)	1 (5)	7 (25)	23 (82)	3 (11)	1 (5)	23 (82)	4 (14)	0 (0)
Wed	20 (71)	1 (5)	6 (21)	23 (82)	3 (11)	1 (5)	25 (89)	2 (7)	0 (0)
Thu	19 (68)	2 (7)	6 (21)	22 (79)	3 (11)	1 (5)	23 (82)	4 (14)	0 (0)
Fri	20 (71)	1 (5)	6 (21)	23 (82)	3 (11)	1 (5)	17 (61)	8 (29)	0 (0)
Sat	16 (57)	2 (7)	9 (32)	17 (61)	7 (25)	3 (11)	14 (50)	12 (43)	1 (5)
Sun	16 (57)	4 (14)	7 (25)	17 (61)	7 (25)	3 (11)	21 (75)	4 (14)	1 (5)

"In"= eat meal in this dining room.

"Out"= eat meal in a place other than this dining room

"Not"= do not eat that meal at all

SRNCOS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	4 (40)	1 (10)	3 (30)	9 (90)	1 (10)	0 (0)	6 (60)	3 (30)	0 (0)
Tue	4 (40)	1 (10)	3 (30)	9 (90)	1 (10)	0 (0)	6 (60)	3 (30)	0 (0)
Wed	4 (40)	1 (10)	3 (30)	9 (90)	1 (10)	0 (0)	6 (60)	3 (30)	0 (0)
Thu	4 (40)	1 (10)	3 (30)	9 (90)	1 (10)	0 (0)	6 (60)	3 (30)	0 (0)
Fri	4 (40)	1 (10)	3 (30)	9 (90)	1 (10)	0 (0)	6 (60)	3 (30)	0 (0)
Sat	6 (60)	0 (0)	3 (30)	9 (90)	1 (10)	0 (0)	9 (90)	1 (10)	0 (0)
Sun	7 (70)	0 (0)	2 (20)	9 (90)	1 (10)	0 (0)	9 (90)	1 (10)	0 (0)

APPENDIX 5-A

JRNCOS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	33(46)	10(14)	11(15)	55(77)	1(1)	1(1)	38(54)	12(17)	1(1)
Tue	34(48)	10(14)	10(14)	54(76)	2(3)	1(1)	37(52)	12(17)	1(1)
Wed	33(46)	10(14)	11(15)	55(77)	2(3)	1(1)	35(49)	15(21)	1(1)
Thu	34(48)	10(14)	10(14)	56(79)	1(1)	1(1)	36(51)	13(18)	1(1)
Fri	34(48)	10(14)	10(14)	52(73)	3(4)	1(1)	31(44)	19(27)	1(1)
Sat	28(39)	12(17)	10(14)	31(44)	19(27)	0(0)	25(35)	23(32)	1(1)
Sun	28(39)	12(17)	10(14)	32(45)	18(25)	0(0)	0(0)	0(0)	0(0)

ALL RANKS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	20(43)	6(13)	3(7)	39(85)	0(0)	0(0)	21(46)	6(13)	1(2)
Tue	20(43)	6(13)	3(7)	36(78)	0(0)	0(0)	22(48)	6(13)	1(2)
Wed	20(43)	6(13)	3(7)	39(85)	0(0)	0(0)	21(46)	6(13)	1(2)
Thu	20(43)	6(13)	3(7)	36(78)	0(0)	0(0)	21(46)	7(15)	1(2)
Fri	19(41)	6(13)	4(9)	36(78)	2(4)	0(0)	16(35)	9(20)	1(2)
Sat	9(20)	7(15)	8(17)	14(30)	9(20)	2(4)	13(28)	10(22)	2(4)
Sun	7(15)	7(15)	9(20)	15(33)	7(15)	3(7)	0(0)	0(0)	0(0)

"In"= eat meal in this dining room.

"Out"= eat meal in a place other than this dining room

"Not"= do not eat that meal at all

Where N totals and percentages for characteristics are not equal to dining room N total/%, missing values include No Response, Not Applicable or No Recognizable Response except for 1) Language (Total Number of Respondents Used = Volunteers and Random), and 2) Sample shows total respondents.

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - GAGETOWN						
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'	
	N	%	N	%	N	%
DINING ROOM	48	34	34	24	61	43
SAMPLE						
Random	48	84	34	79	61	63
Volunteer	9	16	9	21	36	37
GENDER						
Male	46	96	31	91	59	97
Female	2	4	1	3	2	3
AGE GROUP						
20 or <	-	-	-	-	6	10
21-25	9	19	1	3	23	38
26-30	26	54	3	9	13	21
31-35	11	23	16	47	11	18
36-40	2	4	11	32	6	10
41-45	-	-	1	3	1	2
46-50	-	-	-	-	1	2
51-55	-	-	1	3	-	-
56-60	-	-	-	-	-	-
61+	-	-	-	-	-	-
CURRENT LIVING SITUATION AT THIS BASE						
Living in PMQs	3	6	2	6	2	3
Staying in single quarters	44	92	23	68	49	80
Living off Base	1	2	8	24	6	10
Other	-	-	-	-	2	3

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - GAGETOWN						
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'	
	N	%	N	%	N	%
MEMBER						
Regular Force	48	100	30	88	48	79
Reserve Force	-	-	3	9	7	11
Cadet Organization	-	-	-	-	-	-
Civilian	-	-	-	-	5	8
Other	-	-	-	-	-	-
RANK LEVEL						
OCdt	-	-	-	-	-	-
2Lt	1	2	-	-	-	-
Lt	16	33	-	-	-	-
Capt	30	63	-	-	-	-
Maj	1	2	-	-	-	-
LCol	-	-	-	-	-	-
Col	-	-	-	-	-	-
Pte	-	-	-	-	24	39
Cpl	-	-	-	-	20	33
MCpl	-	-	-	-	11	18
Sgt	-	-	23	68	-	-
WO	-	-	9	26	-	-
MWO	-	-	1	3	-	-
CWO	-	-	-	-	-	-
Other	-	-	-	-	3	5

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - GAGETOWN						
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'	
	N	%	N	%	N	%
CURRENT STATUS ON THIS BASE						
Staff	4	8	9	26	22	36
Student	43	90	24	71	30	49
Visitor	-	-	-	-	-	-
Other	1	2	-	-	9	15
REASON ON BASE						
At posted location	5	10	7	21	26	43
On temporary duty	43	90	25	74	31	51
On a social visit	-	-	-	-	1	2
Other	-	-	1	3	3	5
YEAR OF JOINING CF						
1992-1996	2	4	-	-	30	49
1987-1991	33	69	4	12	15	25
1982-1986	11	23	14	41	8	13
1977-1981	2	4	11	32	4	7
1972-1976	-	-	1	3	-	-
1967-1971	-	-	1	3	-	-
1966 or before	-	-	1	3	-	-
METHOD OF PAYMENT						
on ration strength (paying)	3	6	2	6	27	44
on ration strength (separation expense)	17	35	11	32	8	13
on meal ticket purchase	1	2	1	3	4	7
on meal entitlement (duty)	24	50	20	59	13	21

DEMOGRAPHIC CHARACTERISTICS OF DINERS BY BASE AND DINING ROOM - GAGETOWN						
CHARACTERISTICS	OFFICERS'		SRNCOS'		JRNCOS'	
	N	%	N	%	N	%
LENGTH OF TIME DINING IN THIS DINING ROOM						
1 day or <	-	-	-	-	4	7
1 wk or <, but > 1 day	1	2	1	3	1	2
1 mth or <, but > 1 wk	31	65	12	35	11	18
3 mths or <, but > 1 mth	9	19	17	50	20	33
6 mths or <, but > 3 mths	1	2	1	3	5	8
1 yr or <, but > than 6 mths	2	4	-	-	3	5
> 1 yr	2	4	3	9	10	16
LANGUAGE OF QUESTIONNAIRE						
French	10	18	10	23	10	10
English	47	85	33	77	87	90

GAGETOWN DINER CONSUMPTION PATTERNS**OFFICERS' DINING ROOM**

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	37(77)	1(2)	6(13)	46(96)	0(0)	0(0)	44(92)	0(0)	1(2)
Tue	37(77)	1(2)	6(13)	45(94)	0(0)	0(0)	45(94)	0(0)	0(0)
Wed	37(77)	1(2)	6(13)	46(96)	0(0)	0(0)	44(92)	1(2)	0(0)
Thu	37(77)	1(2)	6(13)	45(94)	0(0)	0(0)	44(92)	0(0)	1(2)
Fri	36(75)	2(4)	6(13)	46(96)	0(0)	0(0)	38(79)	6(13)	1(2)
Sat	22(46)	6(13)	11(23)	32(67)	11(23)	1(2)	23(48)	16(33)	1(2)
Sun	23(48)	6(13)	11(23)	34(71)	8(17)	1(2)	32(67)	10(21)	1(2)

SRNCOS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	17(50)	4(18)	11(32)	34(100)	0(0)	0(0)	29(85)	4(12)	0(0)
Tue	18(53)	4(18)	10(30)	34(100)	0(0)	0(0)	29(85)	4(12)	0(0)
Wed	17(50)	4(18)	11(32)	33(97)	1(3)	0(0)	28(82)	5(15)	0(0)
Thu	19(56)	4(18)	9(26)	33(97)	1(3)	0(0)	28(82)	5(15)	0(0)
Fri	17(50)	4(18)	11(32)	33(97)	1(3)	0(0)	25(74)	8(24)	0(0)
Sat	15(44)	5(15)	12(35)	24(71)	6(18)	1(3)	24(71)	7(21)	1(3)
Sun	13(38)	5(15)	14(41)	24(71)	5(15)	2(6)	28(82)	4(18)	0(0)

JRNCOS' DINING ROOM

DAY	Breakfast			Lunch/Brunch			Supper		
	N(%)			N(%)			N(%)		
	IN	OUT	NOT	IN	OUT	NOT	IN	OUT	NOT
Mon	30(49)	8(13)	13(42)	49(80)	4(7)	0(0)	47(77)	4(7)	1(2)
Tue	31(52)	8(13)	13(42)	49(80)	4(7)	0(0)	47(77)	5(8)	1(2)
Wed	30(49)	8(13)	13(42)	49(80)	4(7)	0(0)	46(75)	5(8)	1(2)
Thu	30(49)	8(13)	13(42)	51(84)	2(3)	0(0)	48(79)	4(7)	0(0)
Fri	31(52)	8(13)	13(42)	47(77)	6(10)	0(0)	33(54)	16(26)	2(3)
Sat	15(25)	13(21)	17(28)	37(61)	14(23)	1(2)	26(43)	19(31)	4(7)
Sun	17(28)	11(18)	18(30)	41(67)	10(16)	1(2)	37(61)	10(16)	3(5)

"In"= eat meal in this dining room.

"Out"= eat meal in a place other than this dining room

"Not"= do not eat that meal at all

Where N totals and percentages for characteristics are not equal to dining room N total/%, missing values include No Response, Not Applicable or No Recognizable Response except for 1) Language (Total Number of Respondents Used = Volunteers and Random), and 2) Sample shows total respondents.

Appendix 5-B Differences in Median OSQ Rating For
Rank Levels within Dining Rooms For
Winnipeg, Trenton and Halifax

APPENDIX 5-B

Differences in Median OSQ Rating For Rank Levels within Dining Rooms By Base.

CFB	DINING ROOM	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Winnipeg	Officers'	OCdt	8	8.0000	0.3308	No.
		2Lt	5	7.0000		
		Lt	1	7.0000		
		Capt	13	7.0000		
		Maj	2	8.5000		
		Other	3	7.0000		
	SrNCOs'	Sgt	7	7.0000	0.2330	No.
		WO	2	8.5000		
		MWO	1	7.0000		
	JrNCOs'	Pte	1	7.0000	0.4112	No.
		Cpl	23	6.0000		
		MCpl	5	7.0000		
Trenton	Officers'	Ocdt	1	7.0000	0.4753	No.
		Capt	4	7.5000		
		Maj	1	8.0000		
		Other	1	7.0000		
	Mixed Jr/SrNCOs'	JrNCOs	31	7.0000	0.0714	No.
		SrNCOs	8	7.0000		
Halifax	Officers'	Lt	6	7.0000	0.7097	No.
		Capt	14	7.0000		
		Maj	2	6.0000		
		LCol	1	8.0000		
		Col	1	8.0000		
	SrNCOs'	Sgt	5	8.0000	0.6892	No.
		WO	2	7.0000		
		MWO	3	7.0000		
	JrNCOs'	Pte	14	5.5000	0.1587	No.
		Cpl	24	7.0000		
		MCpl	15	6.0000		
		Other	6	8.0000		
	All Ranks'	JrNCOs	23	7.0000	0.1068	No.
		SrNCOs	7	7.0000		
		Officers	4	8.0000		
		Other	4	8.5000		

Appendix 5-C Median OSQ Rating for Each SERVQUAL
Dimension Rated Average 5 or Above for
Winnipeg, Trenton and Halifax Dining
Rooms

APPENDIX 5-C

Median OSQ Rating for Each SERVQUAL Dimension Rated Average (5) or Above.

CFB	DINING ROOM	DIMENSION	N	MEDIAN OSQ RATING	P-VALUE
Winnipeg	Officers'	Reliability	36	7.0000	1.000
		Responsiveness	37	7.5000	1.000
		Assurance	35	7.5000	1.000
		Empathy	36	8.0000	1.000
		Tangibles	37	7.5000	1.000
	SrNCOs'	Reliability	10	7.2500	0.998
		Responsiveness	10	8.0000	0.999
		Assurance	11	7.0000	1.000
		Empathy	11	7.0000	1.000
		Tangibles	11	8.0000	1.000
	JrNCOs'	Reliability	32	7.0000	1.000
		Responsiveness	32	6.0000	1.000
		Assurance	30	6.8750	1.000
		Empathy	33	7.0000	1.000
		Tangibles	36	7.0000	1.000
Trenton	Officers'	Reliability	8	7.0000	0.996
		Responsiveness	8	8.0000	0.996
		Assurance	7	8.0000	0.992
		Empathy	8	7.0000	0.996
		Tangibles	8	7.7500	0.996
	Mixed Jr/SrNCOs'	Reliability	45	7.0000	1.000
		Responsiveness	47	7.0000	1.000
		Assurance	43	7.0000	1.000
		Empathy	45	7.0000	1.000
		Tangibles	46	6.2500	1.000

APPENDIX 5-C

CFB	DINING ROOM	DIMENSION	N	MEDIAN OSQ RATING	P-VALUE
Halifax	Officers'	Reliability	23	7.0000	1.000
		Responsiveness	25	8.0000	1.000
		Assurance	25	7.0000	1.000
		Empathy	24	7.0000	0.999
		Tangibles	27	7.0000	1.000
	SrNCOs'	Reliability	8	6.5000	0.969
		Responsiveness	10	7.2500	0.996
		Assurance	10	7.2500	0.998
		Empathy	9	7.0000	0.992
		Tangibles	10	7.7500	0.992
	JrNCOs'	Reliability	63	6.5000	1.000
		Responsiveness	63	7.0000	1.000
		Assurance	59	6.7500	1.000
		Empathy	60	6.0000	0.999
		Tangibles	62	7.0000	1.000
	All Ranks'	Reliability	38	7.0000	1.000
		Responsiveness	40	7.0000	1.000
		Assurance	38	7.0000	1.000
		Empathy	37	6.0000	1.000
		Tangibles	39	7.0000	1.000

Appendix 5-D Median OSQ Rating for All Dimensions By
Statement

APPENDIX 5-D

Median OSQ Rating for All Dimensions By Statement for
Winnipeg Dining Rooms.

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Winnipeg Officers'	Reliability	1	37	7.000
		2	34	7.000
		3	37	7.000
		4	35	8.000
	Responsiveness	5	36	7.750
		6	37	7.000
		7	37	8.000
		8	37	8.000
	Assurance	9	35	7.000
		10	31	8.000
		11	37	8.000
		12	34	7.500
	Empathy	13	36	7.000
		14	36	8.000
		15	36	7.000
		16	37	7.000
		17	37	8.000
	Tangibles	18	37	8.000
		19	37	8.000
		20	37	8.000
		21	37	7.000

APPENDIX 5-D

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Winnipeg SrNCOs'	Reliability	1	11	6.000
		2	10	8.000
		3	11	7.000
		4	9	8.000
	Responsiveness	5	10	8.000
		6	11	8.000
		7	9	8.000
		8	10	7.500
	Assurance	9	11	7.000
		10	11	8.000
		11	11	7.000
		12	10	7.000
	Empathy	13	11	7.000
		14	10	7.000
		15	11	7.000
		16	10	7.000
		17	11	8.000
	Tangibles	18	11	8.000
		19	11	8.000
		20	11	8.000
		21	11	8.000

APPENDIX 5-D

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Winnipeg JrNCOs'	Reliability	1	34	6.000
		2	30	7.000
		3	37	7.000
		4	35	7.000
	Responsiveness	5	31	6.500
		6	33	6.000
		7	33	7.000
		8	33	7.000
	Assurance	9	31	7.000
		10	27	7.000
		11	34	7.000
		12	31	6.000
	Empathy	13	32	7.000
		14	35	7.000
		15	33	6.000
		16	31	7.000
		17	36	8.000
	Tangibles	18	31	7.000
		19	36	7.000
		20	35	7.000
		21	35	7.000

APPENDIX 5-D

Median OSQ Rating for all Dimensions By Statement for Trenton Dining Rooms.

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Trenton Officers'	Reliability	1	8	7.000
		2	8	8.000
		3	8	7.500
		4	8	8.000
	Responsiveness	5	7	7.000
		6	7	8.000
		7	8	8.000
		8	8	7.000
	Assurance	9	7	8.000
		10	6	8.000
		11	8	8.500
		12	7	7.000
	Empathy	13	7	7.000
		14	8	7.500
		15	8	8.000
		16	8	7.000
		17	8	6.000
	Tangibles	18	6	7.000
		19	8	7.000
		20	8	8.000
		21	8	8.000

APPENDIX 5-D

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Trenton Mixed Jr/SrNCOs'	Reliability	1	46	6.000
		2	43	7.000
		3	47	7.000
		4	47	7.000
	Responsiveness	5	45	7.000
		6	46	7.000
		7	45	7.000
		8	47	7.000
	Assurance	9	41	7.000
		10	39	7.000
		11	47	7.000
		12	46	7.000
	Empathy	13	46	7.000
		14	47	7.000
		15	46	6.000
		16	44	7.000
		17	46	6.000
	Tangibles	18	44	6.000
		19	45	6.000
		20	47	7.000
		21	47	6.000

APPENDIX 5-D

Median OSQ Ratings for Each Statement Within a Dimension for Halifax Dining Rooms.

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Halifax Officers'	Reliability	1	23	7.000
		2	23	7.000
		3	24	7.000
		4	26	8.000
	Responsiveness	5	27	8.000
		6	26	7.000
		7	27	8.000
		8	24	8.000
	Assurance	9	27	7.000
		10	20	7.000
		11	27	8.000
		12	24	7.000
	Empathy	13	26	6.500
		14	25	7.000
		15	23	7.000
		16	23	7.000
		17	27	7.000
	Tangibles	18	18	7.000
		19	27	7.000
		20	27	7.000
		21	27	7.000

APPENDIX 5-D

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Halifax SrNCOs'	Reliability	1	9	7.000
		2	8	7.000
		3	10	7.000
		4	8	6.500
	Responsiveness	5	9	6.000
		6	10	7.500
		7	10	7.000
		8	10	7.000
	Assurance	9	10	7.000
		10	9	7.000
		11	10	8.000
		12	10	7.000
	Empathy	13	9	7.000
		14	10	7.500
		15	9	7.000
		16	9	7.000
		17	10	8.000
	Tangibles	18	10	7.000
		19	10	8.000
		20	10	8.000
		21	10	8.000

APPENDIX 5-D

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Halifax JrNCOs'	Reliability	1	65	6.000
		2	62	6.000
		3	62	7.000
		4	63	7.000
	Responsiveness	5	62	7.000
		6	62	7.000
		7	63	6.000
		8	65	6.000
	Assurance	9	60	6.250
		10	55	7.000
		11	62	7.000
		12	60	7.000
	Empathy	13	58	6.000
		14	60	5.750
		15	63	6.000
		16	60	6.000
		17	61	7.000
	Tangibles	18	56	8.000
		19	62	7.000
		20	63	6.000
		21	57	6.000

APPENDIX 5-D

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Halifax All Ranks'	Reliability	1	41	7.000
		2	36	7.000
		3	40	7.000
		4	40	7.000
	Responsiveness	5	40	7.000
		6	40	7.000
		7	37	7.000
		8	39	7.000
	Assurance	9	38	7.000
		10	34	7.000
		11	38	7.000
		12	37	7.000
	Empathy	13	37	6.000
		14	37	7.000
		15	37	7.000
		16	37	6.000
		17	37	7.000
	Tangibles	18	34	7.000
		19	39	7.000
		20	39	8.000
		21	39	7.000

APPENDIX 5-D

Median OSQ Ratings for Each Statement Within a Dimension for Gagetown Dining Rooms.

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Gagetown Officers'	Reliability	1	45	7.000
		2	44	7.000
		3	45	7.000
		4	45	7.000
	Responsiveness	5	45	6.000
		6	46	6.500
		7	44	7.500
		8	46	7.000
	Assurance	9	43	7.000
		10	30	6.500
		11	46	8.000
		12	41	7.000
	Empathy	13	43	7.000
		14	41	7.000
		15	43	7.000
		16	43	7.000
		17	45	7.000
	Tangibles	18	36	6.500
		19	45	7.000
		20	45	7.000
		21	45	7.000

APPENDIX 5-D

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Gagetown SrNCOs'	Reliability	1	34	7.000
		2	33	7.000
		3	31	7.000
		4	33	7.000
	Responsiveness	5	33	7.000
		6	33	7.000
		7	32	8.000
		8	33	7.000
	Assurance	9	32	7.000
		10	28	7.000
		11	33	8.000
		12	29	7.000
	Empathy	13	33	7.000
		14	32	7.000
		15	31	7.000
		16	33	7.000
		17	33	7.000
	Tangibles	18	30	7.000
		19	33	7.000
		20	33	7.000
		21	33	7.000

APPENDIX 5-D

DINING ROOM	DIMENSION	STATEMENT	N	MEDIAN OSQ RATING
Gagetown JrNCOs'	Reliability	1	56	6.000
		2	53	6.000
		3	53	7.000
		4	51	7.000
	Responsiveness	5	54	7.000
		6	54	6.250
		7	52	6.000
		8	51	6.000
	Assurance	9	51	6.000
		10	50	7.000
		11	53	7.000
		12	48	7.000
	Empathy	13	51	6.000
		14	49	6.000
		15	52	6.000
		16	51	6.000
		17	54	7.000
	Tangibles	18	51	7.000
		19	54	6.000
		20	54	7.000
		21	54	5.500

APPENDIX 5-D

Lowest and Highest Median OSQ Rating of All Dimensions By Statement Number for Each Dining Room.

DINING ROOM	LOWEST OSQ RATING	DIMENSION (STATEMENT)	HIGHEST OSQ RATING	DIMENSION (STATEMENT)
WINNIPEG Officers' (n≥31)	7.000	Rel (1, 2, 3)	8.000	Rel (4)
		Resp (6)		Resp (7, 8)
		Assur (9)		Assur (10, 11)
		Emp (13, 15, 16)		Emp (14, 17)
		Tan (21)		Tan (18-20)
SrNCOs' (n≤11)	6.000	Rel (1)	8.000	Rel (2, 4)
				Resp (5, 6, 7)
				Assur (10)
				Emp (17)
			Tan (18-21)	
JrNCOs' (n≥27)	6.000	Rel (1)	8.000	Emp (17)
		Resp (6)		
		Assur (12)		
		Emp (15)		
TRENTON Officers' (n≤8)	6.000	Emp (17)	8.500	Assur (11)
Mixed Jr/ SrNCOs' (n≥39)	6.000	Rel (1)	7.000	All Statements Except Those in Col. 3
		Emp (15, 17)		
		Tan (18, 19, 21)		
HALIFAX Officers' (n≥18)	6.500	Emp (13)	8.000	Rel (4)
				Resp (5, 7, 8)
				Assur (11)
SrNCOs' (n≤10)	6.000	Resp (5)	8.000	Assur (11)
				Emp (17)
				Tan (19-21)
JrNCOs' (n≥55)	5.750	Emp (14)	8.000	Tan (18)
All Ranks' (n≥34)	6.000	Emp (13, 16)	8.000	Tan (20)

Appendix 5-E Differences in Median OSQ Rating, By
Dimension, Between Types of Service for
Winnipeg, Trenton and Halifax Dining
Rooms

APPENDIX 5-E

Differences in OSQ Rating, By Dimension, Between Types of Service for Winnipeg Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF ^a
Reliability	Limited	10	7.50	0.0913	No.
	Modified	37	7.00		
	Cafeteria	31	7.00		
Responsiveness	Limited	10	8.00	0.0014	Yes. 2, 4 ^b 3, 4
	Modified	38	7.50		
	Cafeteria	31	6.00		
Assurance	Limited	11	7.00	0.0235	Yes. 3, 4
	Modified	36	7.50		
	Cafeteria	29	7.00		
Empathy	Limited	11	7.00	0.0949	No.
	Modified	37	8.00		
	Cafeteria	32	7.00		
Tangibles	Limited	11	8.00	0.0027	Yes. 2, 4 ^b 3, 4
	Modified	38	7.50		
	Cafeteria	35	7.00		

^a In Column 6, 2=Limited table service, 3=Modified table service, 4=Cafeteria service

^b Difference is suspect due to small sample size for limited table service

APPENDIX 5-E

Differences in OSQ Rating, By Dimension, Between Types of Service for Trenton Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	Modified	8	7.000	0.1211	No.
	Cafeteria	45	7.000		
Responsiveness	Modified	8	8.000	0.0592	No.
	Cafeteria	47	7.000		
Assurance	Modified	7	8.000	0.0378	Yes.*
	Cafeteria	43	7.000		
Empathy	Modified	8	7.000	0.2545	No.
	Cafeteria	45	7.000		
Tangibles	Modified	8	7.750	0.0058	Yes.*
	Cafeteria	46	6.250		

* Difference is suspect due to small sample size for modified table service

Differences in OSQ Rating, By Dimension, Between Types of Service for Halifax Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.*
Reliability	Limited	8	6.500	0.1149	No.
	Modified	35	7.000		
	Cafeteria	89	6.500		
Responsiveness	Limited	10	7.250	0.0207	Yes. 3,4
	Modified	37	8.000		
	Cafeteria	91	7.000		
Assurance	Limited	10	7.250	0.0157	Yes. 3,4
	Modified	37	7.500		
	Cafeteria	85	6.500		
Empathy	Limited	9	7.000	0.0203	Yes. 3,4
	Modified	35	7.000		
	Cafeteria	86	6.000		
Tangibles	Limited	10	7.750	0.4398	No.
	Modified	38	7.000		
	Cafeteria	90	7.000		

*In Column 6, 3=Modified table service, 4=Cafeteria service.

Appendix 5-F Differences in Median OSQ Rating, By
Dimension, Between Rank Levels for All Base
Dining Rooms

APPENDIX 5-F

Differences in OSQ Rating By Dimension, Between Rank Levels for Wpg Officers' Dining Room.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	OCdt	8	8.000	0.5712	No.
	2Lt	5	7.500		
	Lt	1	7.000		
	Capt	14	7.000		
	Maj	2	8.000		
	LCol	1	8.000		
	Other	2	7.500		
Responsiveness	OCdt	8	7.500	0.8047	No.
	2Lt	5	7.500		
	Lt	1	7.000		
	Capt	14	7.500		
	Maj	2	7.750		
	LCol	1	8.000		
	Other	3	8.000		
Assurance	OCdt	8	7.750	0.5845	No.
	2Lt	5	7.000		
	Lt	1	7.500		
	Capt	12	8.000		
	Maj	2	8.000		
	LCol	1	8.000		
	Other	3	8.000		
Empathy	OCdt	8	8.000	0.6738	No.
	2Lt	5	7.000		
	Lt	1	6.000		
	Capt	13	8.000		
	Maj	2	8.000		
	LCol	1	7.000		
	Other	3	8.000		
Tangibles	OCdt	8	7.750	0.3917	No.
	2Lt	5	7.500		
	Lt	1	7.500		
	Capt	14	7.500		
	Maj	2	8.750		
	LCol	1	8.000		
	Other	3	7.500		

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between Rank Levels for the SrNCOs' Dining Room at Winnipeg.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	Sgt	6	7.000	0.2875	No.
	WO	2	8.000		
	MWO	1	6.000		
	CWO	1	7.500		
Responsiveness	Sgt	6	7.750	0.4567	No.
	WO	2	8.000		
	MWO	1	7.500		
	CWO	1	8.000		
Assurance	Sgt	7	7.500	0.4596	No.
	WO	2	7.500		
	MWO	1	6.500		
	CWO	1	7.000		
Empathy	Sgt	7	7.000	0.3954	No.
	WO	2	8.500		
	MWO	1	7.000		
	CWO	1	7.000		
Tangibles	Sgt	7	8.000	0.8627	No.
	WO	2	8.500		
	MWO	1	8.000		
	CWO	1	8.000		

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between the Rank Levels for the JrNCOs' Dining Room at Winnipeg.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	Pte	2	6.750	0.2603	No.
	Cpl	23	6.500		
	MCpl	5	7.000		
Responsiveness	Pte	2	5.500	0.2953	No.
	Cpl	23	6.500		
	MCpl	4	6.500		
Assurance	Pte	2	6.750	0.6599	No.
	Cpl	21	7.000		
	MCpl	4	6.500		
Empathy	Pte	2	7.000	0.4044	No.
	Cpl	23	7.000		
	MCpl	4	7.000		
Tangibles	Pte	2	6.000	0.3647	No.
	Cpl	26	7.000		
	MCpl	5	7.000		

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between the Rank Levels for the Officers' Dining Room at Trenton.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	OCdt	1	7.00	0.6044	No.
	Capt	5	7.00		
	Maj	1	8.00		
	Other	1	7.00		
Responsiveness	OCdt	1	7.00	0.3816	No.
	Capt	5	8.00		
	Maj	1	9.00		
	Other	1	8.00		
Assurance	OCdt	1	9.00	0.2116	No.
	Capt	5	7.50		
	Maj	1	8.00		
	Other	0	-		
Empathy	OCdt	1	7.00	0.4680	No.
	Capt	5	8.00		
	Maj	1	7.00		
	Other	1	5.50		
Tangibles	OCdt	1	7.00	0.3006	No.
	Capt	5	8.00		
	Maj	1	8.00		
	Other	1	7.00		

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between Group Rank Levels for the Mixed Jr/SrNCOs' Mixed Dining Room at Trenton.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	JrNCO	36	7.000	0.3344	No.
	SrNCO	8	7.000		
Responsiveness	JrNCO	37	7.000	0.0492	Yes.*
	SrNCO	8	8.000		
Assurance	JrNCO	35	7.000	0.0090	Yes.*
	SrNCO	7	8.000		
Empathy	JrNCO	36	6.000	0.0541	No.
	SrNCO	8	7.500		
Tangibles	JrNCO	35	6.000	0.0302	Yes.*
	SrNCO	8	7.250		

* Differences are suspect due to small number of SrNCOs.

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between the Rank Levels for the Mixed Jr/SrNCOs' Dining Room at Trenton.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	F-VALUE	SIGN. DIFF. ^a
Reliability	Cpl	25	6.000	0.0857	No.
	MCpl	11	7.000		
	Sgt	3	7.000		
	WO	4	7.000		
	MWO	1	8.000		
Responsiveness	Cpl	26	6.750	0.1393	No.
	MCpl	11	7.000		
	Sgt	3	7.500		
	WO	4	8.000		
	MWO	1	8.000		
Assurance	Cpl	24	6.500	0.0251	Yes. 2, 3 2, 5 ^b
	MCpl	11	7.000		
	Sgt	2	7.500		
	WO	4	7.750		
	MWO	1	8.500		
Empathy	Cpl	25	6.000	0.0838	No.
	MCpl	11	7.000		
	Sgt	3	7.000		
	WO	4	7.500		
	MWO	1	8.000		
Tangibles	Cpl	25	5.500	0.0640	No.
	MCpl	11	7.000		
	Sgt	3	7.500		
	WO	4	6.750		
	MWO	1	8.000		

^a In Column 6, 2=Cpl; 3=MCpl, 5=WO

^b Difference is suspect due to small number of WOs.

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between the Rank Levels for the Officers' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	Lt	4	7.5000	0.6278	No.
	Capt	14	7.0000		
	Maj	3	7.0000		
	LCol	1	8.0000		
	Col	1	7.5000		
Responsiveness	Lt	7	8.0000	0.2316	No.
	Capt	13	8.0000		
	Maj	3	8.0000		
	LCol	1	9.0000		
	Col	1	9.0000		
Assurance	Lt	6	7.0000	0.4181	No.
	Capt	15	7.0000		
	Maj	2	6.6250		
	LCol	1	8.0000		
	Col	1	8.5000		
Empathy	Lt	5	7.0000	0.2881	No.
	Capt	14	6.5000		
	Maj	3	5.0000		
	LCol	1	7.0000		
	Col	1	8.0000		
Tangibles	Lt	7	7.0000	0.1462	No.
	Capt	15	7.0000		
	Maj	3	5.0000		
	LCol	1	8.0000		
	Col	1	7.0000		

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between the Rank Levels for the SrNCOs' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	Sgt	4	7.000	0.9001	No.
	WO	2	6.500		
	MWO	2	6.000		
Responsiveness	Sgt	5	8.000	0.5753	No.
	WO	2	7.250		
	MWO	3	7.000		
Assurance	Sgt	5	7.500	0.7584	No.
	WO	2	6.750		
	MWO	3	8.000		
Empathy	Sgt	5	8.000	0.6691	No.
	WO	2	7.000		
	MWO	2	6.500		
Tangibles	Sgt	5	8.000	0.3413	No.
	WO	2	6.000		
	MWO	3	8.000		

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, between the Rank Levels for the JrNCOs' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF ^a
Reliability	Pte	15	6.000	0.2470	No.
	Cpl	23	7.000		
	MCpl	15	6.000		
	Other	7	7.000		
Responsiveness	Pte	15	5.500	0.0031	Yes. ^b 1,16 2,16 3,16
	Cpl	23	7.000		
	MCpl	15	6.000		
	Other	7	8.000		
Assurance	Pte	13	6.000	0.0291	Yes. ^b 1,16 2,16 3,16
	Cpl	21	7.000		
	MCpl	15	6.000		
	Other	6	8.000		
Empathy	Pte	13	5.500	0.2194	No.
	Cpl	23	6.000		
	MCpl	14	6.000		
	Other	7	7.000		
Tangibles	Pte	13	6.000	0.1620	No.
	Cpl	25	7.000		
	MCpl	15	6.000		
	Other	6	7.250		

^a In Column 6, 1=Pte; 2=Cpl; 3=MCpl; 16=Others.

^b Differences are suspect due to small number of 'Other'.

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between the Rank Levels for the All Ranks' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGN. DIFF.
Reliability	JrNCO	23	6.500	0.1642	No.
	SrNCO	8	7.250		
	Officer	4	7.250		
	Other	3	9.000		
Responsiveness	JrNCO	22	6.500	0.0139	Yes.* JrNCO, Other
	SrNCO	8	7.250		
	Officer	4	7.750		
	Other	5	9.000		
Assurance	JrNCO	21	6.250	0.0136	Yes.* JrNCO, Officer JrNCO, Other
	SrNCO	8	7.500		
	Officer	4	7.500		
	Other	4	8.250		
Empathy	JrNCO	22	6.000	0.0030	Yes.* JrNCO, Officer JrNCO, Other JrNCO, SrNCO
	SrNCO	6	8.000		
	Officer	4	7.000		
	Other	4	8.500		
Tangibles	JrNCO	23	7.000	0.1198	No.
	SrNCO	4	7.500		
	Officer	5	6.750		
	Other	7	9.000		

* Differences are suspect due to small numbers of SrNCOs, Officers and 'Other'.

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between the Rank Levels for the Officers' Dining Room at Gagetown.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGNIFICANT DIFFERENCE
Reliability	2Lt	1	5.500	0.0909	No.
	Lt	16	7.000		
	Capt	27	7.000		
	Maj	1	5.500		
Responsiveness	2Lt	1	5.500	0.0730	No.
	Lt	16	7.000		
	Capt	28	6.500		
	Maj	1	5.500		
Assurance	2Lt	1	6.000	0.4060	No.
	Lt	14	7.250		
	Capt	24	6.500		
	Maj	1	6.000		
Empathy	2Lt	1	6.000	0.4875	No.
	Lt	16	7.000		
	Capt	24	6.000		
	Maj	1	6.000		
Tangibles	2Lt	1	6.500	0.3030	No.
	Lt	16	7.000		
	Capt	27	7.000		
	Maj	1	6.000		

APPENDIX 5-F

Differences in OSQ Rating, By Dimension, Between the Rank Levels for the SrNCOs' Dining Room at Gagetown.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGNIFICANT DIFFERENCE
Reliability	Sgt	22	7.00	0.4690	No.
	WO	9	8.00		
	MWO	1	7.50		
Responsiveness	Sgt	23	7.00	0.2565	No.
	WO	9	8.00		
	MWO	1	8.00		
Assurance	Sgt	21	7.00	0.2132	No.
	WO	9	8.00		
	MWO	1	8.50		
Empathy	Sgt	22	7.00	0.1963	No.
	WO	9	8.00		
	MWO	1	8.00		
Tangibles	Sgt	22	7.00	0.2326	No.
	WO	9	7.50		
	MWO	1	8.50		

APPENDIX 5-F

Differences in OSQ Rating, By Dimensions, Between the Rank Levels for the JrNCOs' Dining Room at Gagetown.

DIMENSION	RANK LEVEL	N	MEDIAN OSQ RATING	P-VALUE	SIGNIFICANT DIFFERENCE
Reliability	Pte	22	6.2500	0.8588	No.
	Cpl	17	6.0000		
	MCpl	11	6.0000		
	Other	2	6.5000		
Responsiveness	Pte	21	6.0000	0.8500	No.
	Cpl	18	6.2500		
	MCpl	10	6.2500		
	Other	2	6.7500		
Assurance	Pte	21	6.0000	0.6294	No.
	Cpl	18	7.0000		
	MCpl	8	6.2500		
	Other	2	7.2500		
Empathy	Pte	22	6.0000	0.8395	No.
	Cpl	17	6.0000		
	MCpl	8	7.0000		
	Other	2	5.5000		
Tangibles	Pte	22	6.0000	0.8942	No.
	Cpl	18	6.8750		
	MCpl	10	5.7500		
	Other	2	6.5000		

Appendix 5-G Differences in MSA Rating, By Dimension,
Between Rank Levels for All Base Dining Rooms

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for Wpg Officers' Dining Room.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF ^a
Reliability	OCdt	8	1.500	0.4974	No.
	2Lt	5	1.500		
	Lt	1	1.000		
	Capt	14	1.750		
	Maj	2	3.000		
	LCol	1	1.500		
	Other	2	1.500		
Responsiveness	OCdt	8	1.000	0.3830	No.
	2Lt	5	1.500		
	Lt	1	1.500		
	Capt	14	1.500		
	Maj	2	2.750		
	LCol	1	0.500		
	Other	3	1.500		
Assurance	OCdt	8	1.000	0.5581	No.
	2Lt	5	1.000		
	Lt	1	1.000		
	Capt	12	1.250		
	Maj	2	2.250		
	LCol	1	0.500		
	Other	3	2.500		
Empathy	OCdt	7	1.000	0.2609	No.
	2Lt	5	1.000		
	Lt	1	0.000		
	Capt	13	1.000		
	Maj	2	2.000		
	LCol	1	0.000		
	Other	3	2.000		
Tangibles	OCdt	8	1.000	0.0222	Yes. ^b 8,9 8,11 8,12 8,16
	2Lt	5	2.000		
	Lt	0	-		
	Capt	14	2.000		
	Maj	2	2.750		
	LCol	1	2.000		
	Other	3	2.000		

* In Column 6, 8=OCdt; 9=2Lt; 11=Capt; 12=Maj; 16=Other.
^b Differences are suspect due to small number of OCdts.

APPENDIX 5-G

Differences in MSA Rating By Dimension between Rank Levels for the SrNCOs' Dining Room at Winnipeg.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	Sgt	6	0.8750	0.2264	No.
	WO	2	1.5000		
	MWO	1	0.0000		
	CWO	1	2.5000		
Responsiveness	Sgt	6	1.0000	0.3357	No.
	WO	2	1.5000		
	MWO	1	1.5000		
	CWO	1	3.0000		
Assurance	Sgt	7	0.5000	0.3578	No.
	WO	2	1.2500		
	MWO	1	0.5000		
	CWO	1	2.0000		
Empathy	Sgt	7	1.0000	0.0424	Yes.*
	WO	2	2.5000		
	MWO	1	1.0000		
	CWO	1	2.0000		
Tangibles	Sgt	7	1.0000	0.3600	No.
	WO	2	2.0000		
	MWO	1	1.0000		
	CWO	1	3.0000		

* Is a difference; however, further analyses between individual rank levels were not done because sound conclusions cannot be drawn from extremely small sample sizes

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for the JrNCOs' Dining Room at Winnipeg.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	Pte	2	0.250	0.2125	No.
	Cpl	23	0.500		
	MCpl	5	1.000		
Responsiveness	Pte	1	1.000	0.9369	No.
	Cpl	23	1.000		
	MCpl	4	1.000		
Assurance	Pte	2	0.500	0.6116	No.
	Cpl	21	1.000		
	MCpl	4	1.000		
Empathy	Pte	2	1.250	0.9954	No.
	Cpl	23	1.000		
	MCpl	5	1.000		
Tangibles	Pte	2	0.250	0.6026	No.
	Cpl	26	1.000		
	MCpl	5	1.000		

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for Trenton Officers' Dining Room.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	OCdt	1	1.00	0.7649	No.
	Capt	5	1.00		
	Maj	1	1.00		
	Other	1	2.00		
Responsiveness	OCdt	1	1.00	0.5002	No.
	Capt	5	1.50		
	Maj	1	1.50		
	Other	1	2.00		
Assurance	OCdt	1	0.00	0.2116	No.
	Capt	5	2.00		
	Maj	1	1.00		
	Other	0	-		
Empathy	OCdt	1	1.00	0.7697	No.
	Capt	5	2.00		
	Maj	1	2.00		
	Other	1	1.00		
Tangibles	OCdt	1	0.50	0.1854	No.
	Capt	5	2.50		
	Maj	1	2.00		
	Other	1	1.00		

Differences in MSA Rating By Dimensions between Group Rank Levels for the Mixed Jr/SrNCOs' Mixed Dining Room at Trenton.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	JrNCO	37	1.000	0.6852	No.
	SrNCO	8	0.750		
Responsiveness	JrNCO	37	1.000	0.7872	No.
	SrNCO	8	0.500		
Assurance	JrNCO	37	0.500	0.6630	No.
	SrNCO	8	1.000		
Empathy	JrNCO	37	0.000	0.1850	No.
	SrNCO	8	1.000		
Tangibles	JrNCO	37	1.000	0.7089	No.
	SrNCO	8	0.500		

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for the Mixed Jr/SrNCOs' Dining Room at Trenton.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF ^a
Reliability	Cpl	24	0.500	0.0330	Yes. 2,3 3,5 ^b
	MCpl	11	2.000		
	Sgt	3	1.000		
	WO	4	0.000		
	MWO	1	2.000		
Responsiveness	Cpl	25	0.000	0.0791	No.
	MCpl	11	2.000		
	Sgt	3	0.500		
	WO	4	0.500		
	MWO	1	2.000		
Assurance	Cpl	24	0.000	0.0039	Yes. 2,3
	MCpl	11	1.500		
	Sgt	2	1.750		
	WO	4	0.000		
	MWO	1	3.000		
Empathy	Cpl	24	0.000	0.0102	Yes. 2,3
	MCpl	11	2.000		
	Sgt	3	1.000		
	WO	4	0.500		
	MWO	1	3.000		
Tangibles	Cpl	25	0.500	0.0642	No.
	MCpl	11	2.000		
	Sgt	3	1.500		
	WO	4	0.000		
	MWO	1	3.000		

^a In Column 6, 2=Cpl; 3=MCpl; 5=WO

^b Difference is suspect due to small numbers of WOs.

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for the Officers' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	Lt	4	1.5000	0.8460	No.
	Capt	13	1.0000		
	Maj	3	1.0000		
	LCol	1	1.0000		
	Col	1	0.0000		
Responsiveness	Lt	7	1.0000	0.8194	No.
	Capt	13	0.0000		
	Maj	3	1.5000		
	LCol	1	1.5000		
	Col	1	2.0000		
Assurance	Lt	6	1.0000	0.8577	No.
	Capt	15	1.5000		
	Maj	2	1.6250		
	LCol	1	1.0000		
	Col	1	1.5000		
Empathy	Lt	5	2.0000	0.4698	No.
	Capt	14	2.0000		
	Maj	3	-1.0000		
	LCol	1	1.0000		
	Col	1	0.0000		
Tangibles	Lt	7	2.0000	0.2611	No.
	Capt	15	2.0000		
	Maj	3	1.0000		
	LCol	1	0.0000		
	Col	1	0.0000		

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for Halifax SrNCOs' Dining Room.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	Sgt	4	0.750	0.9843	No.
	WO	2	0.750		
	MWO	2	1.000		
Responsiveness	Sgt	5	1.500	0.7437	No.
	WO	2	0.750		
	MWO	3	0.000		
Assurance	Sgt	5	1.500	0.8067	No.
	WO	2	0.250		
	MWO	3	0.000		
Empathy	Sgt	5	1.000	0.8227	No.
	WO	1	1.000		
	MWO	2	1.000		
Tangibles	Sgt	5	2.000	0.4111	No.
	WO	2	0.750		
	MWO	3	1.000		

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for Halifax JrNCOs' Dining Room.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF
Reliability	Pte	14	0.0000	0.5314	No.
	Cpl	21	0.5000		
	MCpl	14	0.0000		
	Other	6	0.0000		
Responsiveness	Pte	13	-1.0000	0.0919	No.
	Cpl	21	0.5000		
	MCpl	14	-0.6250		
	Other	7	0.0000		
Assurance	Pte	13	0.0000	0.3559	No.
	Cpl	22	0.7500		
	MCpl	14	0.0000		
	Other	6	0.0000		
Empathy	Pte	12	0.0000	0.3881	No.
	Cpl	20	0.5000		
	MCpl	14	-1.0000		
	Other	6	0.0000		
Tangibles	Pte	12	-0.5000	0.2506	No.
	Cpl	25	0.5000		
	MCpl	14	0.0000		
	Other	6	0.0000		

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for the All Ranks' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	JrNCO	22	1.0000	0.4313	No.
	SrNCO	7	1.5000		
	Officer	4	0.2500		
	Other	3	1.0000		
Responsiveness	JrNCO	23	0.0000	0.4450	No.
	SrNCO	7	1.5000		
	Officer	4	1.0000		
	Other	3	2.0000		
Assurance	JrNCO	21	1.0000	0.2055	No.
	SrNCO	7	1.5000		
	Officer	4	1.0000		
	Other	2	3.6250		
Empathy	JrNCO	22	0.0000	0.3939	No.
	SrNCO	6	2.0000		
	Officer	4	1.0000		
	Other	3	1.0000		
Tangibles	JrNCO	22	1.0000	0.5091	No.
	SrNCO	6	1.5000		
	Officer	4	2.5000		
	Other	2	2.0000		

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for the Officers' Dining Room at Gagetown.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	2Lt	1	-1.000	0.1051	No.
	Lt	16	1.000		
	Capt	27	0.000		
	Maj	1	0.000		
Responsiveness	2Lt	1	-0.500	0.2567	No.
	Lt	16	1.000		
	Capt	28	0.500		
	Maj	1	-0.500		
Assurance	2Lt	1	-0.500	0.0999	No.
	Lt	14	1.250		
	Capt	24	1.000		
	Maj	1	0.000		
Empathy	2Lt	1	0.000	0.2568	No.
	Lt	16	2.000		
	Capt	24	1.000		
	Maj	1	0.000		
Tangibles	2Lt	1	1.000	0.7215	No.
	Lt	16	0.750		
	Capt	27	1.000		
	Maj	1	0.000		

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for the SrNCOs' Dining Room at Gagetown.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	Sgt	16	0.50	0.9926	No.
	WO	9	0.50		
	MWO	1	0.50		
Responsiveness	Sgt	21	0.50	0.5057	No.
	WO	9	1.00		
	MWO	1	1.00		
Assurance	Sgt	19	0.00	0.8768	No.
	WO	7	1.00		
	MWO	1	1.00		
Empathy	Sgt	19	0.00	0.2768	No.
	WO	9	1.00		
	MWO	1	1.00		
Tangibles	Sgt	20	0.00	0.5477	No.
	WO	9	1.00		
	MWO	1	1.00		

APPENDIX 5-G

Differences in MSA Rating By Dimensions between Rank Levels for the JrNCOs' Dining Room at Gagetown.

DIMENSION	RANK LEVEL	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	Pte	20	0.000	0.1830	No.
	Cpl	16	0.000		
	MCpl	10	0.750		
	Other	1	0.500		
Responsiveness	Pte	18	-0.500	0.1178	No.
	Cpl	15	0.000		
	MCpl	10	0.500		
	Other	2	1.250		
Assurance	Pte	18	0.000	0.1495	No.
	Cpl	17	0.000		
	MCpl	8	0.000		
	Other	1	2.000		
Empathy	Pte	19	0.000	0.3683	No.
	Cpl	16	0.000		
	MCpl	8	0.000		
	Other	1	0.000		
Tangibles	Pte	20	0.000	0.8119	No.
	Cpl	16	0.000		
	MCpl	10	0.500		
	Other	2	0.000		

Appendix 5-H Differences in MSA Rating, By Dimension,
Between Types of Service for Winnipeg,
Trenton and Halifax Dining Rooms

APPENDIX 5-H

Differences in MSA Rating, By Dimension, Between Types of Service for Winnipeg Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF. *
Reliability	Limited	10	1.000	0.0297	Yes. 3,4
	Modified	35	1.500		
	Cafeteria	29	1.000		
Responsiveness	Limited	10	1.250	0.0125	Yes. 3,4
	Modified	36	1.500		
	Cafeteria	30	1.000		
Assurance	Limited	11	0.500	0.2760	No.
	Modified	35	1.000		
	Cafeteria	30	1.000		
Empathy	Limited	11	1.000	0.5937	No
	Modified	35	1.000		
	Cafeteria	31	1.000		
Tangibles	Limited	11	1.000	0.0142	Yes. 3,4
	Modified	37	2.000		
	Cafeteria	34	1.000		

*In Column 6, 3=Modified table service, 4=Cafeteria service.

Differences in Median MSA Rating, By Dimension, Between Types of Service for Trenton Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.
Reliability	Modified	8	1.00	0.2968	No.
	Cafeteria	44	1.00		
Responsiveness	Modified	8	1.50	0.2535	No.
	Cafeteria	46	1.00		
Assurance	Modified	7	1.00	0.2404	No.
	Cafeteria	43	0.50		
Empathy	Modified	8	1.50	0.1043	No.
	Cafeteria	44	1.00		
Tangibles	Modified	8	2.00	0.0159	Yes.*
	Cafeteria	45	0.50		

* Difference is suspect due to small sample size for modified table service.

APPENDIX 5-H

Differences in MSA Rating, By Dimension, Between Types of Service for Halifax Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN MSA RATING	P-VALUE	SIGN. DIFF.*
Reliability	Limited	9	1.0000	0.1194	No.
	Modified	32	1.0000		
	Cafeteria	83	0.5000		
Responsiveness	Limited	11	1.5000	0.0417	Yes. 3,4
	Modified	35	1.0000		
	Cafeteria	84	0.0000		
Assurance	Limited	11	0.5000	0.0410	Yes. 3,4
	Modified	35	1.0000		
	Cafeteria	81	0.0000		
Empathy	Limited	9	1.0000	0.0064	Yes. 3,4
	Modified	33	2.0000		
	Cafeteria	80	0.0000		
Tangibles	Limited	11	1.5000	0.0030	Yes. 3,4
	Modified	36	1.0000		
	Cafeteria	84	0.3750		

*In Column 6, 3=Modified table service, 4=Cafeteria service.

Appendix 5-I Differences in MSS Rating, By Dimension,
Between Rank Levels for All Base Dining Rooms

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for Wpg Officers' Dining Room.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	OCdt	8	-0.500	0.0601	No.
	2Lt	5	-0.500		
	Lt	1	0.500		
	Capt	14	-1.000		
	Maj	2	1.000		
	LCol	1	-0.500		
	Other	2	-1.500		
Responsiveness	OCdt	8	-0.250	0.2215	No.
	2Lt	5	0.000		
	Lt	1	1.000		
	Capt	14	-1.000		
	Maj	2	1.000		
	LCol	1	-1.000		
	Other	3	0.000		
Assurance	OCdt	8	0.000	0.1212	No.
	2Lt	5	-0.500		
	Lt	1	1.000		
	Capt	12	-0.750		
	Maj	2	1.250		
	LCol	1	-1.000		
	Other	3	0.000		
Empathy	OCdt	7	0.000	0.2197	No.
	2Lt	5	0.000		
	Lt	1	0.000		
	Capt	13	0.000		
	Maj	2	1.250		
	LCol	1	-2.000		
	Other	3	-1.000		
Tangibles	OCdt	8	-0.250	0.4381	No.
	2Lt	5	0.000		
	Lt	1	0.000		
	Capt	14	-0.750		
	Maj	2	1.750		
	LCol	1	-1.000		
	Other	3	-1.000		

APPENDIX 5-I

Differences in MSS Rating By Dimension between Rank Levels for the SrNCOs' Dining Room at Winnipeg.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	Sgt	6	-0.750	0.3568	No.
	WO	2	-0.250		
	MWO	1	-2.000		
	CWO	1	-0.500		
Responsiveness	Sgt	6	0.000	0.3373	No.
	WO	2	0.250		
	MWO	1	-0.500		
	CWO	1	0.000		
Assurance	Sgt	7	-0.500	0.1897	No.
	WO	2	0.000		
	MWO	1	-2.000		
	CWO	1	-0.500		
Empathy	Sgt	7	-1.000	0.1096	No.
	WO	2	1.000		
	MWO	1	-1.000		
	CWO	1	-1.000		
Tangibles	Sgt	7	0.000	0.2445	No.
	WO	2	0.500		
	MWO	1	-1.500		
	CWO	1	-0.500		

APPENDIX 5-1

Differences in MSS Rating By Dimensions between Rank Levels for the JrNCOs' Dining Room at Winnipeg.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	Pte	2	-1.5000	0.4900	No.
	Cpl	23	-1.0000		
	MCpl	5	-1.0000		
Responsiveness	Pte	1	-1.0000	0.8607	No.
	Cpl	23	-1.0000		
	MCpl	4	-0.5000		
Assurance	Pte	2	-0.5000	0.8316	No.
	Cpl	21	-0.5000		
	MCpl	4	-0.6250		
Empathy	Pte	2	-0.5000	0.6101	No.
	Cpl	23	0.0000		
	MCpl	5	-1.0000		
Tangibles	Pte	2	-1.7500	0.6163	No.
	Cpl	26	-1.0000		
	MCpl	5	-1.0000		

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for the Officers' Dining Room at Trenton.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	OCdt	1	-1.00	0.2250	No.
	Capt	5	-1.00		
	Maj	1	0.00		
	Other	1	0.00		
Responsiveness	OCdt	1	-1.00	0.4835	No.
	Capt	5	-0.50		
	Maj	1	0.00		
	Other	1	0.00		
Assurance	OCdt	1	0.00	0.2116	No.
	Capt	5	-0.50		
	Maj	1	0.50		
	Other	0	-		
Empathy	OCdt	1	-1.00	0.3523	No.
	Capt	5	0.00		
	Maj	1	0.00		
	Other	1	0.00		
Tangibles	OCdt	1	-2.00	0.4844	No.
	Capt	5	0.00		
	Maj	1	0.00		
	Other	1	0.00		

Differences in MSS Rating By Dimensions between Group Rank Levels for the Mixed Jr/SrNCOs' Mixed Dining Room at Trenton.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	JrNCO	37	-0.500	0.4800	No.
	SrNCO	8	-0.250		
Responsiveness	JrNCO	37	-1.000	0.1142	No.
	SrNCO	8	0.000		
Assurance	JrNCO	37	-0.500	0.0936	No.
	SrNCO	8	0.000		
Empathy	JrNCO	37	-1.000	0.0634	No.
	SrNCO	8	0.000		
Tangibles	JrNCO	37	-1.000	0.2096	No.
	SrNCO	8	-0.250		

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for the Mixed Jr/SrNCOs' Dining Room at Trenton.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	Cpl	24	-0.750	0.2167	No.
	MCpl	11	0.000		
	Sgt	3	-1.000		
	WO	4	-0.250		
	MWO	1	2.000		
Responsiveness	Cpl	25	-1.000	0.2431	No.
	MCpl	11	0.000		
	Sgt	3	0.000		
	WO	4	0.000		
	MWO	1	1.000		
Assurance	Cpl	24	-0.750	0.1283	No.
	MCpl	11	0.000		
	Sgt	2	-0.500		
	WO	4	0.000		
	MWO	1	1.500		
Empathy	Cpl	24	-1.500	0.1062	No.
	MCpl	11	-1.000		
	Sgt	3	0.000		
	WO	4	-0.500		
	MWO	1	2.000		
Tangibles	Cpl	25	-1.000	0.2446	No.
	MCpl	11	-1.000		
	Sgt	3	0.000		
	WO	4	-0.750		
	MWO	1	1.500		

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for the Officers' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	Lt	4	-1.500	0.4015	No.
	Capt	13	-1.000		
	Maj	3	-1.000		
	LCol	1	0.000		
	Col	1	0.000		
Responsiveness	Lt	7	-1.000	0.3189	No.
	Capt	13	0.000		
	Maj	3	0.000		
	LCol	1	1.000		
	Col	1	2.000		
Assurance	Lt	6	-1.000	0.3462	No.
	Capt	15	-0.250		
	Maj	2	-1.000		
	LCol	1	0.000		
	Col	1	1.000		
Empathy	Lt	5	-1.000	0.5925	No.
	Capt	14	0.000		
	Maj	3	-4.000		
	LCol	1	0.000		
	Col	1	0.000		
Tangibles	Lt	7	0.000	0.3117	No.
	Capt	15	-0.500		
	Maj	3	-1.000		
	LCol	1	0.000		
	Col	1	0.000		

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for the SrNCOs' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	Sgt	4	0.00	0.9315	No.
	WO	2	0.00		
	MWO	2	-1.50		
Responsiveness	Sgt	5	-1.00	0.7060	No.
	WO	2	0.00		
	MWO	3	-1.00		
Assurance	Sgt	5	0.00	0.7852	No.
	WO	2	0.00		
	MWO	3	-1.00		
Empathy	Sgt	5	0.00	0.9359	No.
	WO	1	0.00		
	MWO	2	-1.00		
Tangibles	Sgt	5	0.00	0.8821	No.
	WO	2	0.00		
	MWO	3	0.00		

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for the JrNCOs' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF ^a
Reliability	Pte	14	-2.00	0.2109	No.
	Cpl	21	-0.50		
	MCpl	14	-2.00		
	Other	6	-0.50		
Responsiveness	Pte	13	-2.50	0.0441	Yes. ^b 1,16 3,16
	Cpl	21	-1.00		
	MCpl	13	-1.50		
	Other	7	0.00		
Assurance	Pte	13	-0.50	0.1560	No.
	Cpl	22	-1.00		
	MCpl	14	-2.00		
	Other	6	-0.50		
Empathy	Pte	12	-1.00	0.1798	No.
	Cpl	20	-2.00		
	MCpl	14	-3.00		
	Other	6	-0.50		
Tangibles	Pte	12	-1.50	0.6245	No.
	Cpl	25	-0.50		
	MCpl	14	-2.00		
	Other	6	-1.50		

^a In Column 6, 1=Pte; 3=MCpl; 16=Other.

^b Differences are suspect due to small number of 'Other'.

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for the All Ranks' Dining Room at Halifax.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	JrNCO	22	-1.0000	0.2498	No.
	SrNCO	7	0.0000		
	Officer	4	-0.2500		
	Other	2	-0.5000		
Responsiveness	JrNCO	23	-1.0000	0.0378	No.
	SrNCO	7	0.0000		
	Officer	4	-0.2500		
	Other	3	0.0000		
Assurance	JrNCO	21	-1.0000	0.2119	No.
	SrNCO	7	0.0000		
	Officer	4	0.0000		
	Other	2	0.1250		
Empathy	JrNCO	22	-2.0000	0.0878	No.
	SrNCO	6	0.0000		
	Officer	4	0.0000		
	Other	3	0.0000		
Tangibles	JrNCO	22	-1.0000	0.2374	No.
	SrNCO	6	0.0000		
	Officer	4	-0.2500		
	Other	2	-0.7500		

APPENDIX 5-I

Differences in MSS Rating By Dimension between Rank Levels for Gagetown Officers' Dining Room

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	2Lt	1	-2.50	0.3474	No.
	Lt	16	-1.00		
	Capt	27	-1.00		
	Maj	1	-0.50		
Responsiveness	2Lt	1	-2.00	0.5680	No.
	Lt	16	-1.00		
	Capt	28	-1.00		
	Maj	1	-2.00		
Assurance	2Lt	1	-1.50	0.5187	No.
	Lt	14	-0.50		
	Capt	24	-1.00		
	Maj	1	0.00		
Empathy	2Lt	1	-1.00	0.9996	No.
	Lt	16	-1.00		
	Capt	24	-1.00		
	Maj	1	-1.00		
Tangibles	2Lt	1	-0.50	0.5396	No.
	Lt	16	-1.00		
	Capt	27	-0.50		
	Maj	1	0.00		

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for Gagetown SrNCOs' Dining Room

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	Sgt	16	-1.000	0.2395	No.
	WO	9	0.000		
	MWO	1	0.500		
Responsiveness	Sgt	21	-0.500	0.1694	No.
	WO	9	0.000		
	MWO	1	0.500		
Assurance	Sgt	19	-1.000	0.2908	No.
	WO	7	0.000		
	MWO	1	0.500		
Empathy	Sgt	19	-1.000	0.0828	No.
	WO	9	0.000		
	MWO	1	0.000		
Tangibles	Sgt	20	-0.750	0.1517	No.
	WO	9	0.000		
	MWO	1	0.500		

APPENDIX 5-I

Differences in MSS Rating By Dimensions between Rank Levels for the JrNCOs' Dining Room at Gagetown.

DIMENSION	RANK LEVEL	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	Pte	20	-1.000	0.8555	No.
	Cpl	16	-1.500		
	MCpl	11	-1.000		
	Other	1	-1.500		
Responsiveness	Pte	19	-2.000	0.2845	No.
	Cpl	15	-2.000		
	MCpl	10	-1.000		
	Other	2	0.250		
Assurance	Pte	18	-1.250	0.3431	No.
	Cpl	17	-0.500		
	MCpl	8	-1.000		
	Other	1	-1.000		
Empathy	Pte	19	-2.000	0.2758	No.
	Cpl	16	-1.500		
	MCpl	8	-1.000		
	Other	1	-3.000		
Tangibles	Pte	20	-1.750	0.7362	No.
	Cpl	16	-1.000		
	MCpl	10	-1.500		
	Other	2	-1.000		

Appendix 5-J Differences in MSS Rating, By Dimension,
Between Types of Service for Winnipeg,
Trenton and Halifax Dining Rooms

APPENDIX 5-J

Differences in MSS Rating, By Dimension, Between Types of Service for Winnipeg Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF. ^a
Reliability	Limited	10	-0.50	0.3011	No.
	Modified	35	-0.50		
	Cafeteria	30	-1.00		
Responsiveness	Limited	10	0.00	0.0086	Yes. 2,4 ^b 3,4
	Modified	36	-0.50		
	Cafeteria	29	-1.00		
Assurance	Limited	11	-0.50	0.5108	No.
	Modified	35	0.00		
	Cafeteria	30	-0.50		
Empathy	Limited	11	-1.00	0.6512	No
	Modified	35	0.00		
	Cafeteria	31	-1.00		
Tangibles	Limited	11	0.00	0.0404	Yes. 3,4
	Modified	37	0.00		
	Cafeteria	34	-1.00		

^a In Column 6, 2=Limited table service, 3=Modified table service, 4=Cafeteria service.

^b Difference is suspect due to small sample size for limited table service.

Differences in Median MSS Rating, By Dimension, Between Types of Service for Trenton Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF.
Reliability	Modified	8	-1.000	0.6344	No.
	Cafeteria	44	-0.500		
Responsiveness	Modified	8	-0.250	0.9703	No.
	Cafeteria	46	-0.500		
Assurance	Modified	7	0.000	0.4600	No.
	Cafeteria	43	-0.500		
Empathy	Modified	8	0.000	0.1433	No.
	Cafeteria	44	-1.000		
Tangibles	Modified	8	0.000	0.1536	No.
	Cafeteria	45	-1.000		

APPENDIX 5-J

Differences in MSS Rating, By Dimension, Between Types of Service for Halifax Dining Rooms.

DIMENSION	TYPE OF SERVICE	N	MEDIAN MSS RATING	P-VALUE	SIGN. DIFF. ^a
Reliability	Limited	9	0.000	0.0456	Yes. 3,4
	Modified	32	-0.750		
	Cafeteria	82	-1.000		
Responsiveness	Limited	11	-1.000	0.0093	Yes. 3,4
	Modified	35	0.000		
	Cafeteria	84	-1.000		
Assurance	Limited	11	0.000	0.0291	Yes. 3,4
	Modified	35	0.000		
	Cafeteria	81	-1.000		
Empathy	Limited	9	0.000	0.0038	Yes. 3,4
	Modified	33	0.000		
	Cafeteria	80	-2.000		
Tangibles	Limited	11	0.000	0.0030	Yes. 2,4 ^b 3,4
	Modified	36	0.000		
	Cafeteria	84	-1.000		

^a In Column 6, 2=Limited table service, 3=Modified table service, 4=Cafeteria service.

^b Difference is suspect due to small sample size for limited table service.

Appendix 5-K Median Perceptions-Only, Desired and Adequate Overall Service Quality Ratings with MSS and MSA Values for SERVQUAL Dimensions for Winnipeg, Trenton and Halifax Dining Rooms, with Figures of Zones of Tolerance

APPENDIX 5-K

Median Perceptions-Only, Desired and Adequate Overall Service Quality Ratings with MSS and MSA Values for SERVQUAL Dimensions for Winnipeg Dining Rooms.

DIMENSION	P-ONLY*	MSS	DESIRED	MSA	ADEQUATE
Officers' (n≥35) Reliability	7.000	-0.500	7.500	1.500	5.500
Responsiveness	7.500	-0.500	8.000	1.500	6.000
Assurance	7.500	0.000	7.500	1.000	6.500
Empathy	8.000	0.000	8.000	1.000	7.000
Tangibles	7.500	0.000	7.500	2.000	5.500
SrNCOs' (n≤11) Reliability	7.500	-0.500	8.000	1.000	6.500
Responsiveness	8.000	0.000	8.000	1.250	6.750
Assurance	7.000	-0.500	7.500	0.500	6.500
Empathy	7.000	-1.000	8.000	1.000	6.000
Tangibles	8.000	0.000	8.000	1.000	7.000
JrNCOs' (n≥30) Reliability	7.000	-1.000	8.000	0.750	6.250
Responsiveness	6.000	-1.000	7.000	1.000	5.000
Assurance	7.000	-0.500	7.500	1.000	6.000
Empathy	7.000	-1.000	8.000	1.000	6.000
Tangibles	7.000	-1.000	8.000	1.000	6.000

Median Perceptions-Only, Desired and Adequate Overall Service Quality Ratings with MSS and MSA Values for SERVQUAL Dimensions for Trenton Dining Rooms.

DIMENSION	P-ONLY*	MSS	DESIRED	MSA	ADEQUATE
Officers' (n≤8) Reliability	7.000	-1.000	8.000	1.000	6.000
Responsiveness	8.000	-0.250	8.250	1.500	6.500
Assurance	8.000	0.000	8.000	1.000	7.000
Empathy	7.000	0.000	7.000	1.500	5.500
Tangibles	7.750	0.000	7.750	2.000	5.750
Mixed Jr/SrNCOs' (n≥43) Reliability	7.000	-0.500	7.500	1.000	6.000
Responsiveness	7.000	-0.500	7.500	1.000	6.000
Assurance	7.000	-0.500	7.500	0.500	6.500
Empathy	7.000	-1.000	8.000	1.000	6.000
Tangibles	6.250	-1.000	7.250	0.500	5.750

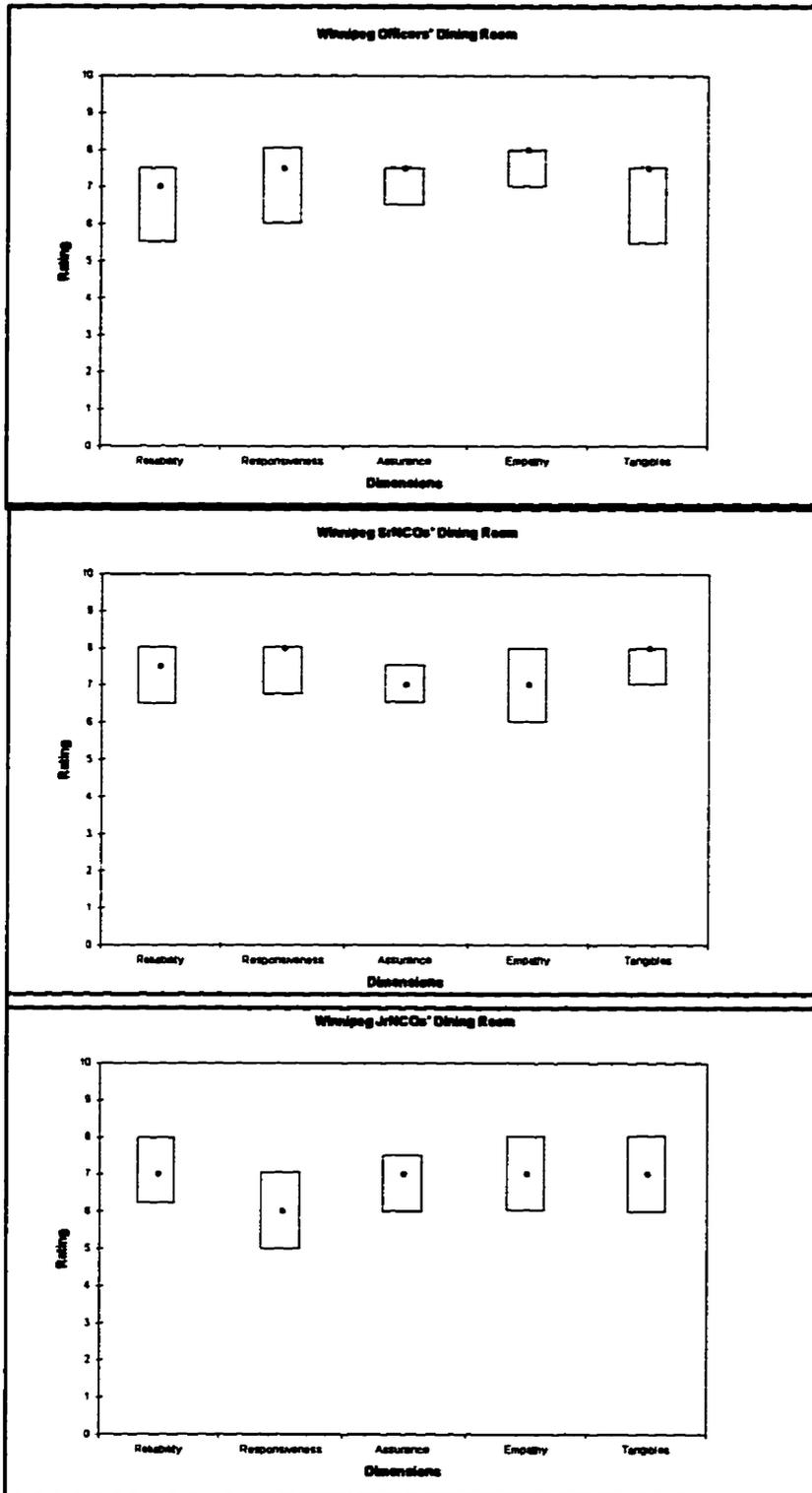
* Perceptions-Only

APPENDIX 5-K

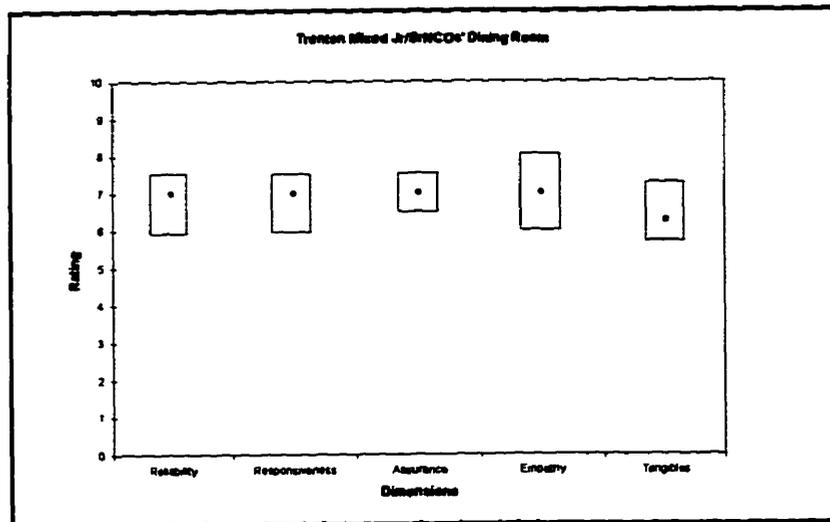
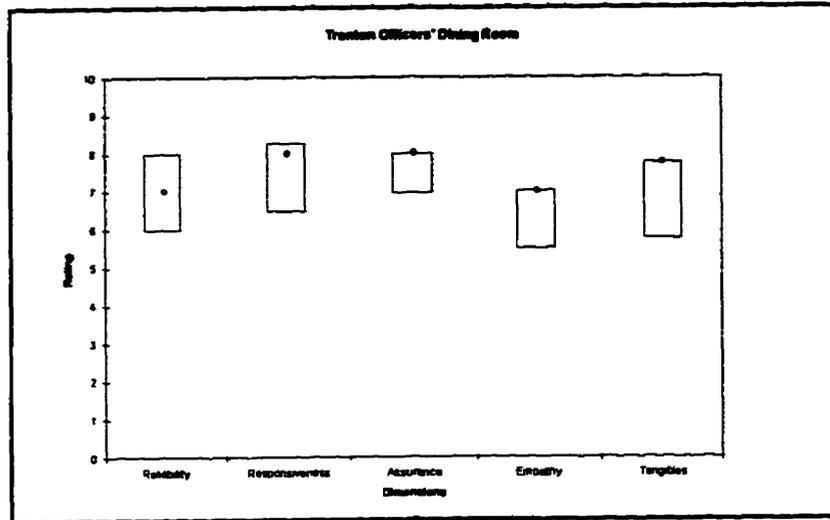
Median Perceptions-Only, Desired and Adequate Overall Service Quality Ratings with MSS and MSA Values for SERVQUAL Dimensions for Halifax Dining Rooms.

DIMENSION	P-ONLY*	MSS	DESIRED	MSA	ADEQUATE
Officers' (n≥22) <u>Reliability</u>	7.000	-1.000	8.000	1.000	6.000
Responsiveness	8.000	0.000	8.000	1.000	7.000
Assurance	7.000	-1.000	8.000	1.000	6.000
Empathy	7.000	-0.250	7.250	2.000	5.000
Tangibles	7.000	0.000	7.000	1.000	6.000
SrNCOs' (n≤10) <u>Reliability</u>	6.500	0.000	6.500	1.000	5.500
Responsiveness	7.250	-1.000	8.250	1.500	5.750
Assurance	7.250	0.000	7.250	0.500	6.750
Empathy	7.000	0.000	7.000	1.000	6.000
Tangibles	7.750	0.000	7.750	1.500	6.250
JrNCOs' (n≥55) <u>Reliability</u>	6.500	-1.250	7.750	0.000	6.500
Responsiveness	7.000	-1.000	8.000	0.000	7.000
Assurance	6.750	-1.000	7.750	0.000	6.750
Empathy	6.000	-2.000	8.000	0.000	6.000
Tangibles	7.000	-1.000	8.000	0.000	7.000
All Ranks' (n≥34) <u>Reliability</u>	7.000	-1.000	8.000	1.250	5.750
Responsiveness	7.000	-1.000	8.000	1.000	6.000
Assurance	7.000	-0.500	7.500	1.000	6.000
Empathy	6.000	-1.000	7.000	1.000	5.000
Tangibles	7.000	-0.750	7.750	1.000	6.000

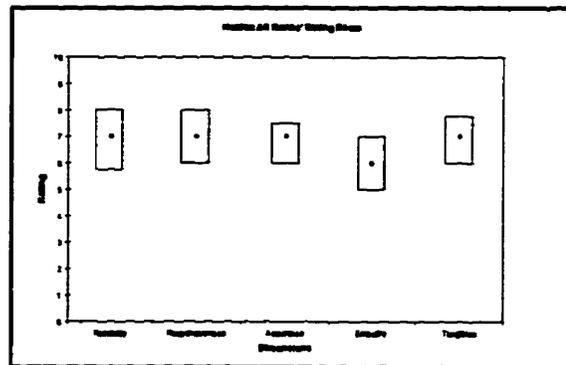
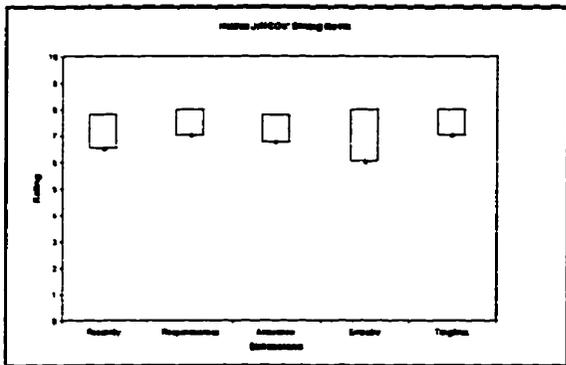
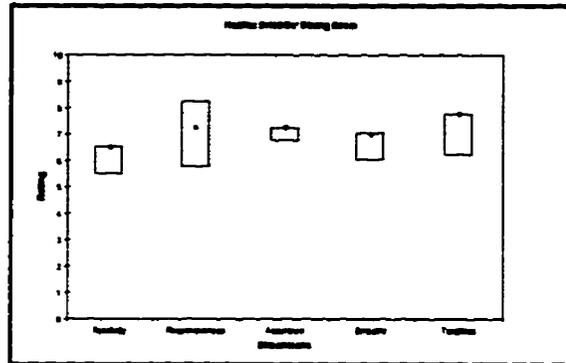
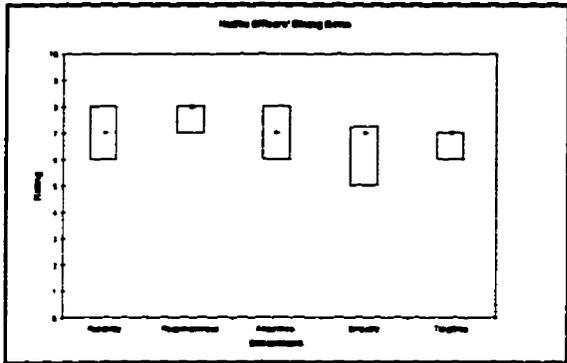
* Perceptions-Only



APPENDIX 5-K



APPENDIX 5-K



Appendix 5-L Confidence Coefficients and Intervals for
Perceptions-Only, MSS and MSA Ratings for
Winnipeg, Trenton and Halifax Dining Rooms

APPENDIX 5-L

Confidence Coefficients and Intervals for Perceptions-Only, MSS and MSA Ratings for Winnipeg Dining Rooms.

DIMENSION	Conf. Coef.	Interval					
		P-Only ¹		MSA		MSS	
Officers' (n≥35) Reliability	.9500	7.000	8.000	1.500	2.000	-1.000	0.000
Responsiveness	.9500	7.500	8.000	1.000	2.000	-1.000	0.000
Assurance	.9500	7.000	8.000	1.000	2.000	-0.500	0.000
Empathy	.9500	7.000	8.000	1.000	2.000	-1.000	0.000
Tangibles	.9500	7.500	8.000	1.000	2.500	-1.000	0.000
SrNCOs' (n≤11) Reliability	.8906	7.000	8.000	0.000	2.000	-1.000	-0.500
Responsiveness	.8906	7.500	8.000	1.000	2.000	-0.500 ²	0.500 ²
Assurance	.9346	7.000	8.000	0.250	1.500	-0.500	0.000
Empathy	.9346	7.000	8.500	1.000	2.000	-1.000	0.500
Tangibles	.9346	7.000	9.000	0.500	2.500	-0.500	1.000
JrNCOs' (n≥30) Reliability	.9500	6.000	7.000	0.000	1.000	-1.500	-0.500
Responsiveness	.9500	5.500	7.000	0.000	1.000	-2.000	0.000
Assurance	.9500	6.000	7.000	0.500	1.000	-1.500	0.000
Empathy	.9500	6.000	7.000	0.500	2.000	-1.000	0.000
Tangibles	.9500	6.000	7.000	0.000	1.500	-1.500	0.000

¹ Perceptions-Only

² Confidence coefficient = .9786

APPENDIX 5-L

Confidence Coefficients and Intervals for Perceptions-Only, MSS and MSA Ratings for Trenton Dining Rooms.

DIMENSION	Conf. Coef.	Interval					
		P-Only*		MSA		MSA	
<u>Officers'</u> (n=8) Reliability	.9300	6.50	8.00	1.00	2.00	-1.50	0.00
Responsiveness	.9300	7.00	8.50	1.00	2.00	-1.00	0.00
Assurance	.8750	7.50	8.00	1.00	2.00	-0.50	0.00
Empathy	.9300	6.00	8.00	1.00	3.00	-1.00	0.00
Tangibles	.9300	7.00	8.00	1.00	3.00	-1.00	0.50
<u>Mixed</u> <u>Jr/SrNCOs'</u> (n=43)							
Reliability	.9500	6.00	7.00	0.50	1.00	-1.00	0.00
Responsiveness	.9500	6.50	7.50	0.00	1.50	-1.00	0.00
Assurance	.9500	6.50	7.50	0.00	1.00	-1.00	0.00
Empathy	.9500	6.00	7.00	0.00	1.00	-2.00	0.00
Tangibles	.9500	5.50	7.00	0.00	1.00	-2.00	-0.50

• Perceptions-Only

APPENDIX 5-L

Confidence Coefficients and Intervals for Perceptions-Only, MSS and MSA Ratings for Halifax Dining Rooms.

DIMENSION	Conf. Coef.	Interval					
		P-Only ¹		MSA		MSS	
Officers' (n≥22) Reliability	.9500	6.500	8.000	0.000	2.000	-1.500	0.000
Responsiveness	.9500	7.500	8.000	0.000	1.500	-1.000	0.000
Assurance	.9500	7.000	8.000	0.000	1.500	-1.000	0.000
Empathy	.9500	6.000	7.500	0.000	2.000	-2.000	0.000
Tangibles	.9500	7.000	7.500	0.500	2.000	-1.000	0.000
SrNCOs' (n≤10) Reliability	.9296	5.000	8.000	0.000	2.000	-1.500	0.500
Responsiveness	.8906	6.000	8.000	0.000	2.000	-1.000	0.000
Assurance	.8906	6.500	8.000	0.000	2.000	-1.500	1.000
Empathy	.9610	5.000	8.000	0.000 ²	3.000 ²	-2.000 ²	1.000 ²
Tangibles	.8906	5.000	8.000	0.000	2.000	-1.000	0.500
JrNCOs' (n≥55) Reliability	.9500	6.000	7.000	0.000	0.500	-2.000	-0.500
Responsiveness	.9500	6.000	7.000	0.000	0.500	-2.000	-0.500
Assurance	.9500	6.000	7.000	0.000	0.500	-2.000	-0.500
Empathy	.9500	5.000	7.000	0.000	1.000	-2.000	-1.000
Tangibles	.9500	6.000	7.250	0.000	1.000	-2.000	-0.500
All Ranks' (n≥34) Reliability	.9500	6.000	7.000	0.000	1.500	-1.500	-0.500
Responsiveness	.9500	6.500	7.500	0.000	2.000	-1.250	-0.500
Assurance	.9500	6.000	7.500	0.000	2.000	-1.000	0.000
Empathy	.9500	6.000	7.000	0.000	2.000	-2.000	0.000
Tangibles	.9500	6.750	8.000	0.500	2.000	-1.250	0.000

¹ Perceptions-Only

² Confidence coefficient = .9296

Appendix 5-M P-Values Determining Whether Median
Quality Rating of Each Food
Characteristic Is Rated Average 5 or
Above, Median Quality Rating for
Characteristics, and Overall Food
Quality Rating Determined from
Characteristics

APPENDIX 5-M

DINING ROOM	FOOD CHARACTERISTIC	MEDIAN RATING	P-VALUE
WINNIPEG Officers' (n=35)	Appearance	8.0000	1.000
	Taste	7.0000	1.000
	Freshness	8.0000	1.000
	Texture	7.0000	1.000
	Temperature	7.0000	1.000
	Nutritional Value	7.0000	1.000
	Variety	8.0000	1.000
SrNCOs' (n=11)	Appearance	7.0000	0.999
	Taste	7.0000	1.000
	Freshness	7.0000	1.000
	Texture	7.0000	0.998
	Temperature	7.0000	1.000
	Nutritional Value	7.0000	0.994
	Variety	8.0000	0.998
JrNCOs' (n=29)	Appearance	6.5000	1.000
	Taste	7.0000	1.000
	Freshness	7.0000	1.000
	Texture	6.0000	1.000
	Temperature	6.0000	0.999
	Nutritional Value	7.0000	1.000
	Variety	7.0000	1.000
TRENTON Officers' (n=9)	Appearance	7.0000	0.998
	Taste	7.0000	0.992
	Freshness	7.0000	0.998
	Texture	7.0000	0.996
	Temperature	7.0000	0.914
	Nutritional Value	7.0000	0.914
	Variety	7.0000	0.973
Mixed Jr/SrNCOs' (n=44)	Appearance	6.0000	0.994
	Taste	7.0000	1.000
	Freshness	7.0000	1.000
	Texture	7.0000	1.000
	Temperature	6.0000	0.997
	Nutritional Value	6.0000	0.992
	Variety	6.0000	0.995

APPENDIX 5-M

DINING ROOM	FOOD CHARACTERISTIC	MEDIAN RATING	P-VALUE
HALIFAX Officers' (n≥24)	Appearance	7.0000	1.000
	Taste	7.0000	1.000
	Freshness	7.0000	1.000
	Texture	7.0000	1.000
	Temperature	7.0000	1.000
	Nutritional Value	6.0000	0.971
	Variety	7.0000	0.971
SrNCOs' (n≤9)	Appearance	7.0000	0.984
	Taste	7.0000	0.969
	Freshness	7.0000	0.969
	Texture	7.0000	0.969
	Temperature	6.0000	0.758
	Nutritional Value	7.0000	0.906
	Variety	7.0000	0.992
JrNCOs' (n≥52)	Appearance	6.0000	0.984
	Taste	6.0000	0.930
	Freshness	6.0000	0.996
	Texture	6.0000	0.996
	Temperature	5.0000	0.715
	Nutritional Value	6.0000	0.978
	Variety	6.0000	0.984
All Ranks' (n≥35)	Appearance	7.0000	1.000
	Taste	7.0000	1.000
	Freshness	7.0000	1.000
	Texture	7.0000	1.000
	Temperature	6.0000	0.995
	Nutritional Value	7.0000	1.000
	Variety	7.0000	1.000

APPENDIX 5-M

Overall Median Ratings for Quality of Each Food Characteristic With Median Food Quality Rating for Winnipeg Dining Rooms.

Food Characteristic	Officers' (n=37)	SrNCOs' (n=11)	JrNCOs' (n=34)
Appearance	8.0000	7.0000	6.5000
Taste	7.0000	7.0000	7.0000
Freshness	8.0000	7.0000	7.0000
Texture	7.0000	7.0000	6.0000
Temperature	7.0000	7.0000	6.0000
Nutritional Value	7.0000	7.0000	7.0000
Variety	8.0000	8.0000	7.0000
OVERALL FOOD QUALITY	8.0000	7.0000	6.2500

Overall Median Ratings for Quality of Each Food Characteristic With Median Food Quality Rating for Trenton Dining Rooms.

Food Characteristic	Officers' (n=9)	Mixed Jr/SrNCOs' (n=47)
Appearance	7.0000	6.0000
Taste	7.0000	7.0000
Freshness	7.0000	7.0000
Texture	7.0000	7.0000
Temperature	7.0000	6.0000
Nutritional Value	7.0000	6.0000
Variety	7.0000	6.0000
OVERALL FOOD QUALITY	7.0000	7.0000

Overall Median Ratings for Quality of Each Food Characteristic With Median Food Quality Rating for Halifax Dining Rooms.

Food Characteristic	Officers' (n=26)	SrNCOs' (n=9)	JrNCOs' (n=59)	All Ranks' (n=40)
Appearance	7.0000	7.0000	6.0000	7.0000
Taste	7.0000	7.0000	6.0000	7.0000
Freshness	7.0000	7.0000	6.0000	7.0000
Texture	7.0000	7.0000	6.0000	7.0000
Temperature	7.0000	6.0000	5.0000	6.0000
Nutritional Value	6.0000	7.0000	6.0000	7.0000
Variety	7.0000	7.0000	6.0000	7.0000
OVERALL FOOD QUALITY	7.0000	7.0000	6.0000	7.0000

Appendix 5-N P-Values Determining Whether Median Quality Rating of Each Food Item Is Rated Average 5 or Above, Median Quality Rating for Items, and Overall Food Quality Rating Determined from Items

APPENDIX 5-N

DINING ROOM	FOOD ITEM	MEDIAN RATING	P-VALUE
WINNIPEG Officers' (n≥31)	Salads	7.0000	1.000
	Soups	7.0000	1.000
	Cooked Vegetables	7.0000	1.000
	Potatoes or Substitutes	7.0000	1.000
	Sauce or Gravy	7.0000	1.000
	Meat, Poultry and Fish	8.0000	1.000
	Breads and Cereals	8.0000	1.000
	Desserts	7.5000	1.000
	Beverages	7.0000	1.000
SrNCOs' (n=11)	Salads	7.0000	0.998
	Soups	8.0000	0.998
	Cooked Vegetables	6.0000	0.992
	Potatoes or Substitutes	7.0000	1.000
	Sauce or Gravy	7.0000	0.998
	Meat, Poultry and Fish	7.0000	1.000
	Breads and Cereals	7.5000	0.998
	Desserts	8.0000	0.999
	Beverages	8.0000	0.999
JrNCOs' (n≥26)	Salads	6.0000	0.973
	Soups	6.0000	0.99
	Cooked Vegetables	6.0000	0.999
	Potatoes or Substitutes	7.0000	1.000
	Sauce or Gravy	7.0000	1.000
	Meat, Poultry and Fish	7.0000	1.000
	Breads and Cereals	7.0000	1.000
	Desserts	7.0000	1.000
	Beverages	8.0000	1.000

APPENDIX 5-N

DINING ROOM	FOOD ITEM	MEDIAN RATING	P-VALUE
TRENTON Officers' (n=9)	Salads	7.0000	0.988
	Soups	6.5000	0.992
	Cooked Vegetables	5.0000	0.781
	Potatoes or Substitutes	7.0000	0.969
	Sauce or Gravy	6.0000	0.938
	Meat, Poultry and Fish	7.0000	0.996
	Breads and Cereals	8.0000	0.996
	Desserts	8.0000	0.996
	Beverages	7.0000	0.977
Mixed Jr/SrNCOs' (n=41)	Salads	7.0000	1.000
	Soups	6.0000	1.000
	Cooked Vegetables	6.0000	0.992
	Potatoes or Substitutes	6.0000	0.998
	Sauce or Gravy	6.0000	0.977
	Meat, Poultry and Fish	6.0000	1.000
	Breads and Cereals	7.0000	1.000
	Desserts	8.0000	1.000
	Beverages	8.0000	1.000

APPENDIX 5-N

DINING ROOM	FOOD ITEM	MEDIAN RATING	P-VALUE
HALIFAX Officers' (n=20)	Salads	7.0000	1.000
	Soups	7.0000	1.000
	Cooked Vegetables	6.0000	0.997
	Potatoes or Substitutes	7.0000	1.000
	Sauce or Gravy	7.0000	1.000
	Meat, Poultry and Fish	7.0000	1.000
	Breads and Cereals	8.0000	1.000
	Desserts	7.5000	1.000
	Beverages	7.0000	0.998
SrNCOs' (n=9)	Salads	8.0000	0.988
	Soups	7.0000	0.945
	Cooked Vegetables	7.0000	0.984
	Potatoes or Substitutes	7.0000	0.953
	Sauce or Gravy	7.0000	0.984
	Meat, Poultry and Fish	8.0000	0.996
	Breads and Cereals	8.0000	0.998
	Desserts	7.0000	0.938
	Beverages	8.0000	0.996
JrNCOs' (n=48)	Salads	7.0000	1.000
	Soups	6.5000	1.000
	Cooked Vegetables	6.0000	0.710
	Potatoes or Substitutes	6.0000	0.983
	Sauce or Gravy	6.0000	0.993
	Meat, Poultry and Fish	6.0000	0.976
	Breads and Cereals	8.0000	1.000
	Desserts	7.0000	1.000
	Beverages	8.0000	1.000
All Ranks' (n=34)	Salads	7.5000	1.000
	Soups	7.0000	1.000
	Cooked Vegetables	6.0000	1.000
	Potatoes or Substitutes	6.0000	1.000
	Sauce or Gravy	6.0000	1.000
	Meat, Poultry and Fish	7.0000	1.000
	Breads and Cereals	8.0000	1.000
	Desserts	7.0000	1.000
	Beverages	8.0000	1.000

APPENDIX 5-N

Food Items With Median Food Quality Rating for Winnipeg Dining Rooms.

Food Item	Officers' (n=37)	SrNCOs' (n=11)	JrNCOs' (n=34)
Salads	7.0000	7.0000	6.0000
Soups	7.0000	8.0000	6.0000
Cooked Vegetables	7.0000	6.0000	6.0000
Potatoes or Substitutes	7.0000	7.0000	7.0000
Sauce or Gravy	7.0000	7.0000	7.0000
Meat, Poultry and Fish	8.0000	7.0000	7.0000
Breads and Cereals	8.0000	7.5000	7.0000
Desserts	7.5000	8.0000	7.0000
Beverages	7.0000	8.0000	8.0000
OVERALL FOOD QUALITY	7.0000	7.0000	7.0000

Overall Median Ratings for Quality of Each Food Item With Median Food Quality Rating for Trenton Dining Rooms.

Food Item	Officers' (n=9)	Mixed Jr/SrNCOs' (n=47)
Salads	7.0000	7.0000
Soups	6.5000	6.0000
Cooked Vegetables	5.0000	6.0000
Potatoes or Substitutes	7.0000	6.0000
Sauce or Gravy	6.0000	6.0000
Meat, Poultry and Fish	7.0000	6.0000
Breads and Cereals	8.0000	7.0000
Desserts	8.0000	8.0000
Beverages	7.0000	8.0000
OVERALL FOOD QUALITY	7.0000	7.0000

APPENDIX 5-N

Overall Median Ratings for Quality of Each Food Item With Median Food Quality Rating for Halifax Dining Rooms.

Food Item	Officers' (n=26)	SrNCOs' (n=9)	JrNCOs' (n=59)	All Ranks' (n=40)
Salads	7.0000	8.0000	7.0000	7.5000
Soups	7.0000	7.0000	6.5000	7.0000
Cooked Vegetables	6.0000	7.0000	6.0000	6.0000
Potatoes or Substitutes	7.0000	7.0000	6.0000	6.0000
Sauce or Gravy	7.0000	7.0000	6.0000	6.0000
Meat, Poultry and Fish	7.0000	8.0000	6.0000	7.0000
Breads and Cereals	8.0000	8.0000	8.0000	8.0000
Desserts	7.5000	7.0000	7.0000	7.0000
Beverages	7.0000	8.0000	8.0000	8.0000
OVERALL FOOD QUALITY	7.0000	8.0000	7.0000	7.0000

Appendix 6-A Description of Eating Places

DESCRIPTIONS**TYPE OF EATING PLACE**

Use the following list to decide what to check off for the type of eating place.

- 1) **FAST FOOD/DRIVE-IN**
 - Order food and pick-up at counter (eat-in or take-out). May have drive-through and/or seating in restaurant.
 - Usually specialize in one type of food such as burgers.
 - Inexpensive in price.
 - Food served on paper plates, foam cups, plastic knives, forks, etc.
 - Also includes cafeteria type.
 - e.g. McDonald's, Kentucky Fried Chicken, Pizza Delivery.
- 2) **FAMILY TYPE**
 - Table service or self-serve.
 - May have take-out service.
 - Usually specializes in one type of food.
 - Inexpensive to moderately priced.
 - Often has Children's Menu.
 - e.g. Swiss Chalet, White Spot.
- 3) **INFORMAL/CASUAL**
 - Full table service.
 - Usually no take-out.
 - Can be atmosphere/specialty.
 - Moderate to expensively priced.
 - Includes pub, tavern and bar.
 - e.g. the Keg.
- 4) **FORMAL DINING**
 - Has table cloths with fine silverware, china.
 - Usually premium priced with extensive table service.
 - Often independently owned.
- 5) **COFFEE/DONUT/MUFFIN/TEA SHOP**
 - Table, sit down counter service, take-out.
 - e.g. Tim Horton Donuts, Second Cup Coffee.
- 6) **OTHER**
 - Roadside vendor.
 - Vending machine.
 - Grocery or convenience food store take-out.

Provided by the Canadian Restaurant and Food Services Association,
 adapted from Consumer Restaurant Eating Share Trends (CREST) Canada
 Database, 2nd qtr 1996